Office of Energy Projects

October 2018

Volume II – Appendices A-M

FERC/EIS-0278F

FINAL ENVIRONMENTAL IMPACT STATEMENT

FOR

Venture Global Calcasieu Pass, LLC and TransCameron Pipeline, LLC

Calcasieu Pass Project

Docket Nos. CP15-550-000, CP15-551-000, CP15-551-001

Federal Energy Regulatory Commission
Office of Energy Projects
888 First Street, NE, Washington, DC 20426

Cooperating Agencies:

U.S. Environmental Protection Agency

U.S. Department of Transportation

U.S. Coast Guard

U.S. Department of Energy

U.S. Army Corps of Engineers

LIST OF APPENDICES

VOLUME II

VOLUME III

APPENDIX A

EIS DISTRIBUTION LIST

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U.S. Senate Committee on Energy and Natural Resources Committee, Chairman, Lisa Murkowski, DC

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Local Government Agencies

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Cameron Parish Permitting Office, Permit Technician, Ms. Robin Morales, LA

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Cameron Parish School Board, Superintendent, Mr. Charles Adkins, LA

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Cameron Parish School Board, Board Member, Ms. Rhonda Bourdreaux, LA

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Cameron Parish School Board, Board Member, Mr. John Canik, LA

Cameron Parish School Board, Board Member, Ms. Sharon Picou, LA

Cameron Parish School Board, Board Member, Ms. Paula Smythe, LA

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Cameron Parish, Assistant District Attorney, The Honorable Tom Barrett, LA

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West Cameron Port Commission, Port Commissioner, Mr. Chris Foundation, LA

West Cameron Port Commission, Port Commissioner, Kay Picou, LA

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Port of Lake Charles, Commissioner, Mr. Elcie Guillory, LA

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Port of Lake Charles, Commissioner, Mr. David Darbone, LA

Port of Lake Charles, Assistant Secretary/Treasurer, Mr. Carl Krielow, LA

Cameron Parish, Sheriff, Sheriff Ron Johnson, LA

Cameron Parish Fire Department, Fire Chief, Chief Paul Sellers, LA

Lake Charles Fire Department, Fire Chief, Chief Keith Murray, LA

Cameron Parish, Director of Emergency Preparedness, Mr. Danny Lavergne, LA

Cameron Parish Ambulance District 1, Director, Mr. Bryon Broussard, LA

Cameron Parish Ambulance District 2, Director, Ms. Rhonda Coleman, LA

Cameron Parish Police Jury, LA

Cameron Parish Sewerage, District #1, LA

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Sewerage District No 1 of the Parish of Cameron, LA

West Cameron Port Commission, LA

Lower Cameron Hospital Service District, LA

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Choctaw Nation of Oklahoma, Chief, Gary Batton, OK

Jena Band of Choctaw Indians, Chief, Chief B. Cheryl Smith, LA

Coushatta Tribe of Louisiana, Chairman, David Sickey, LA

Tunica-Biloxi Indians of Louisiana, Tribal Chairman, Mr. Earl J. Barbry Sr., LA

Mississippi Band of Choctaw, Chief, Chief Phyllis Anderson, MS

Libraries

Cameron Main Library, Branch Manager, Angel Baccigalopi, LA

Media

American Press, Lake Charles, LA

Cameron Pilot, DeQuincy, LA

Southwest Daily News, Sulphur, LA

Port Arthur News, TX

Companies and Organizations

4K Services, Inc., LA

A. M. Cox Properties, L.L.C., Attn: Althea M. Cox, LA

Abear-Nunez Farms, L.L.C., Attn: Carl Hebert, Registered Agent & Principal Member, LA

Avavia Investments LLC, Attn: Chad E Mudd, LA

C. F. Henry Properties, LLC, Attn: Ell Ray Henry, LA

C.F. Henry Properties, LLC, LA

Calcasieu Kiwanis Club, Mr. Russell Ham, LA

Cameron Commercial Property LLC, Attn: Chad E Mudd, LA

Cameron Lions Club, President, LA

Cameron Main Library, Branch Manager, Angel Baccigalopi, LA

Cameron Masonic Club, Inc., LA

Cameron Parish Chamber of Commerce, President, Mr. Greg Wicke, LA

Cameron Parish Farm Bureau, Parish President, Mr. James Cox, LA

Cameron Parish School Board, LA

Cameron Rental Properties, LA

Cameron Water Works, Secretary and Treasurer, Kim Murphy, LA

Can AM LA Properties LLC, OR

Carter-Butler Properties, LA

Catholic Society of Religious & Literary Education, LA

CEM Properties LLC, LA

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Coastal Cans LLC, Brent and Amanda Morales, LA

DAN3177, LLC, Attn: Robert Quigley, Jr., TX

Davis Lands, L.L.C., Attn: E. Scott Henry, LA

Graham Royalty, LTD, LA

Greater Lake Charles Rotary Club, President, Mr. Ryan Abell, LA

Henry Venture, LLC, Attn: EllRay Henry, LA

Henry, Henry, & Martin LLC, Attn: Ellray Henry, LA

Imperial Calcasieu Human Resource Management Association, President, Janell Johnson, LA

Imperial Calcasieu Regional Planning and Development Commission, Director, Cheri Soileau, LA

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Lake Charles Pilots, President, Captain Brett Palmer, LA

LeBoeuf Land & Investments, L.L.C., OK

Louisiana Oil and Gas Association, Assistant to the President, Cece Richter, LA

Louisiana Oil and Gas Association, President, Mr. Don Briggs, LA

Companies and Organizations (cont'd)

LSU Center for Energy Studies, Executive Director, Dr. David Dismukes, LA

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Mermentau Mineral and Land Company, Inc., LA

Millrich Properties L.L.C., Attn: Kirk Sanner, LA

Mudd Land Company LLC, LA

Punk's Properites, L.L.C., Attn: Ester Liggio, LA

R & D Resources LTD, c/o Gloria Connors, Canada

Rotary Club of Lake Charles, President, Mr. Brian Abshire, LA

S. E. Carter Properties, L.L.C., Attn: Jenny Carter, LA

Safety Management Systems, Regional Manager, Mr. Todd LaPorte, LA

SM Ingram LLC, Attn: Scott McCoy Ingram, TX

South Cameron Memorial Hospital, LA

Southwest Louisiana Association of Realtors, CEO, Cynde Pettie, LA

Southwest Louisiana Economic Development Alliance, President/CEO, Mr. George Swift, LA

SOWELA Technical Community College, Chancellor, Dr. Neil Aspinwall, LA

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The Ardoin Limited Partnership, LA

The EEL & PDL, LLC, TX

The Flying F, LLC, Attn: Arthur L. French and Susan W. French, TX

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Deborah Drost, NC

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Debra Lynne Miller, LA

Debra Primeaux, LA

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Evelyn Alford Smith, LA

Evelyn F. Landry, LA

Fann Family Living Trust, Attn: Brian Joseph Haven, TX

Faye Cormier, TX

Ferdinand Bishop, LA

Floyd January, LA

Floyd Lee Benoit, LA

Individuals (cont'd)

Frances C. Savoy Living Trust, c/o: Frances Savoy, WA

Frances Khoury Freedlund, LA

Frances Murphy DeVall, LA

Frances Piner Mudd, LA

Frances Welch Perry, LA

Francis Brent Little, LA

Francis Hector Guilbeau, Jr., LA

Francis Romain Theriot, LA

Francis W Haymark, et al, LA

Frank Murray, LA

Fred A. Johnson, LA

Fred W. Schenk, TX

Frederick Carter, LA

Frederick James Nunez Granger, LA

Fredrick B. Boudoin, LA

Gabe LaLande, LA

Gail Kovach Bonsall, LA

Gary M. Billedeaux, LA

Gary Wayne LeBoeuf, LA

Gemi Blake, TX

Genelle Conner Crochet, LA

George Allen Savoy, LA

George C. Quinn, Jr., LA

George Houston Miller, LA

George LaBove, LA

George Saikin, TX

George Simpson, TX

Georgia Herpin Baker, TX

Gerald Elvis Ruley, TX

Geraldine Oresile Boudreaux Richard, LA

Geraldine Savoie McDaniel, LA

Geraldine Savoy January, c/o Gertrude Savoy, LA

Geri Ann Jones, TX

Gertrude Amelia Nunez Holland, Attn: A.J. Holland, LA

Gertrude Ann Savoy, LA

Gilbert S. Mudd, LA

Glada Labove Guidry, LA

Gladis Savoy Hardin, LA

Glinda LaBove Boudreaux, LA

Gloria Savoie Kelley, LA

Gregory Delane Boudreaux, LA

Gregory Keith Trahan, TX

Greta Maureen Kahl, LA

Guy Murphy, Jr., LA

Gwendlynn Faith Roberts Broussard, LA

Gwendolyn Boudreaux Hebert, LA

Gwendolyn Lou Savoy, LA

Hans Edward Petersen, LA

Hargie Faye Savoy, TX

Harold Hardie, LA

Heidi Welch, Attn: James R. Welch, II, CA

Helen Marie DeRouen Culpepper, LA

Henry James Company, LA

Henry Richard Woodgett, LA

Herman Meredith Primeaux, LA

Hilda Miller Crain, c/o: Rachel Corley, LA

Holly Meaux, LA

Hugh O. Bourque, Jr., GA

Individuals (cont'd)

Hugh Pravate Miller, Attn: Arlene Crochet, LA

Hunter LeBoeuf, LA

Ina Wicke, Attn: Richard & Wendy Wicke, LA

India A. Bartie-Thomas, MA

Irene Corley, LA

Iris Vinson, LA

Ivory Dugas, LA

Ivy LeBoeuf, LA

J.C. Reina, LA

Jack Jaynes, TX

Jack S. Compton, GA

Jackie Reon LaBove, LA

Jacqueline Beam, LA

Jacqueline R. Savoie, LA

Jacquelyn Ann Simoneaux, LA

Jaime Beth Guidry Goos, LA

James Austin Guthrie, LA

James Breaux, LA

James Carroll Beam, LA

James Curtis Richard, LA

James Dale Sells, LA

James David Perry, Jr., LA

James E. Breaux and Betty R. Breaux Revocable Living Trust, LA

James Fitch, LA

James G. Sutton, LA

James Jamar Bishop, OK

James Jeffrey Campbell, LA

James Keith Stanley, TX

James Lee Savoy, LA

James M Jennings Jr, et al, LA

James M. Forsberg, TX

James Oscar Savoie, LA

James Patrick Giblin, LA

James R. Rutherford, TX

James Ralph Welch, II, CA

James Rudolph Savoie, LA

James Scott Granger, LA

Jamie L. Styron, LA

Jamie Leigh Pinch, LA

Jan Allyce Stanley, TX

Jana Lee DeChau, FL

Janelle Hebert Boudoin, LA

Janet Marie Dorsett, TX

Janet S. LeBoeuf Benson, LA

Janetta Agnes Theriot LaLande, LA

Janice Landry, LA

Janice LeBoeuf, LA

Janith Savoie Lockwood, LA

Jared LaBove, LA

Jared LeBoeuf, LA

Jason Moore, LA

Jason Taylor, LA

Jason Travis Neal, TX

Jaynee Smith-Wood, NC

Jeanette R. Benoit, LA

Jeanette Savoie, Attn: Kevin Savoie, LA

Jeannet R. Mudd, LA

Jeff Freeman, Attn: Cynthia Marie Nunez, LA

Jeffery Roberts, LA

Jeffery Rome Larke, LA

Individuals (cont'd)

Jeffrey W. Beam, LA
Jennifer Carter Sutton, LA
Jennifer Khoury Vincent, LA
Jenny Theriot Peterman, LA
Jerome Malcolm Primeaux, LA
Jerry A & Gwendolyn F Mouton, LA
Jerry L. Canik, LA
Jerry Wayne Furs, LA
Jesse Dwayne Trahan, LA
Jim Hassell, TX
Jim Traweek, LA
Jimmie Ann Meaux McLean, LA
Jimmie Ann Rutherford Moriarty, LA
Jimmie D. & Barbara Pelloquin, LA
Jimmy L. Kelley, LA
Jo Ann D. Beam, LA
Joan Alice Carter Liebert, LA
JoAnn Miller, TX
Jodi Kelley Williams, LA
Jodi Mudd Young, LA
Jodi Nunez-Landry, TX
Joe Landry, LA
Joel Roberts, TX
John Brent Meaux, LA
John D. Stevenson, KS
John E. Liebert, LA
John Edward Khoury, II, LA
John Elie Savoie, LA
John F. Boudreaux, LA
John Galton Boudreaux, LA
John Guidry, LA
John Hebert, LA
John Huey Theriot, LA
John Marcus Clark, TX
John Ronald Theriot, TX
John Strom, TX
John W. Rutherford, III, TX
John Whitney Stine III, TX
Jolyn English Stanley, TX
Jonas T. Primeaux, LA
Jonathan Lazzara, CA
Jordon Matthew Sturlese, LA
Joseph Chalmus Roberts, Jr., LA
Joseph Edward Addison, III, LA
Joseph Everette Roy, LA
Joseph Godfrey Miller, LA
Joseph John Higgins, III, LA
Joseph Kelan McCall, LA
Joseph Kirk Rutherford, LA
Joseph Ovey Herpin, III, LA
Joseph Trahan, LA
Joseph W. Dockins, LA
Joseph Watson Hutchins, Jr., LA
Joshua K. Nunez Testamentary Trust, LA
Joshua K. Nunez, LA
Josie Ann Richard Boudreaux, LA
Joyce Agnes Savoie, LA
Joyce T. Freeland, LA
Jude Savoie, LA
Judie Katherine Patterson, TX
Judith Faye Boudoin Trahan Guidry, LA

Individuals (cont'd)

Judith Gail Mudd, LA

Judith Lynette Savoie, LA

Judy Ann Erbelding, LA

Judy Marie Nunez Trahan, LA

Judy Wyers, TX

Julia Courville, LA

Julie Ann Burris Stanley, TX

Justin Kyle LeBoeuf, LA

Kala Sue Billedeaux, LA

Karen Dee Guillory, LA

Karen Elizabeth Savoie McCall, LA

Karen Kay Savoie Clayton, LA

Karen Melancon, LA

Karen Renee Theriot, LA

Karl J. Styron, LA

Karlton H. Styron, LA

Katherine Jane Stanley McCabe, TX

Katherine L Spurlock, TX

Katherine Louise Levy Strom, TX

Katherine Louise Schuehle, Attn: Cynthia Huff, POA, TX

Katheryn Nunez Bednarz, LA

Kathleen L. Guthrie, LA

Kathleen Miller Roberts, LA

Kathryn Carter McBride, LA

Kathryn Lunnell Bourque Fitch, LA

Kathryn Savoy Guilbeau, LA

Kathryn Sturlese Dupuis, TX

Kathy Christian Smith, GA

Kathy Smith Skipper, TX

Keith Joseph Kovach, LA

Kelly C. Smith, TX

Kelly Wescott Khoury, LA

Kelvin Troy Mudd, LA

Kempa Inez Savoie, LA

Ken Joseph Nunez, LA

Ken Thomas Mudd, Attn: Thomas E. Mudd, Jr., LA

Kendall J. Nunez Testamentary Trust, LA

Kenneth Drost, est, Attn: Betty Lou Drost, FL

Kenneth Dupont, LA

Kenneth James LeDano, TX

Kenneth Jude Theriot, LA

Kenneth Larry Landry, LA

Kenneth Paul Nunez, Jr., LA

Kenneth Simpson, TX

Kenneth Theriot, LA

Kenny Jules Sturlese, LA

Kent Crochet, LA

Kent Ray Bennett, TX

Kenzie LeBoeuf, LA

Kevin A. Savoie, LA

Kim B. Murphy, LA

Kimberly Aplin Nunez, LA

Kirk D. Tiller, TX

Kirk H. Landry, LA

Kirk Randolph Quinn, LA

Krissi Jo Savoie Moore, LA

Kristine Stoma Carter, LA

Krystal Dawn Varnado, LA

LaBove Family Limited Partnership, LA

Individuals (cont'd)

Lakeisha Doucet, LA

Lana Nunez, LA

Larre G. Butler, LA

Larry C. Simoneaux, LA

Latricia George, LA

Lauren Davis, Attn: Cynthia Marie Nunez, LA

Laurie Ann Rutherford, c/o: John W. Rutherford, III, TX

Lawrence Carter, LA

Lawrence William LeBoeuf, LA

Layton Gerard Miller, LA

Lela Roy Guidry, LA

Leland Crochet, LA

Lelia Jene Quinn, LA

Lena M. Peloquin, LA

Leon Quentin LeDoux, LA

Leonard C. Harmon, LA

Leonard Vinson, LA

Leslie C. Bishop, TX

Leslie Douglas Griffith, LA

Leslie Russell Welch, LA

Leslie W. Mudd, LA

Lessie Irene Swire, LA

Lester J. Richard, LA

Levy Family Irrevocable Trust, Attn: Martha Levy, LA

Lidian Fae Theriot-Richard, LA

Lillian Cecile Morris, LA

Lillie Green Jones, TX

Lilly Baccigalopi Guillory: Lela Guidry Kershaw and Joseph Everett Roy, LA

Linda Bennett, TX

Linda Diane Ash, TX

Linda Dianna Boudreaux, LA

Linda Gale Welch, LA

Linda Grisham, TX

Linda Mae Swire Aguirre, LA

Linda Marie Miller Conner, LA

Linda Sturlese, LA

Linda Verret Nunez, LA

Linden Marsh, OR

Linford Joseph Miller, LA

Lionel Paul Savoy, LA

Lisa Ann Levy Menard, LA

Lisa Beam Pigno, LA

Lisa Carroll Miller, LA

Lisa Cecchetti, AB

Lisa LaBove Guidry, LA

Lloyd Edward Gullett, LA

Lois Ann Stanley Stapleton, TX

Lola Quinn, LA

Lonnie Davis, Jr, FL

Lorendia Kay Savoy, LA

Lori Lynn Nicholson, LA

Lori Nunez, LA

Louis F. Dupuis, TX

Lovenia Theriot, Attn: Kevin Theriot, LA

Lucas Tod Miller, LA

Lucille Miller Hebert, LA

Lula Granger, LA

Lula Mae LeBlanc, LA

Lynette Reed, LA

Individuals (cont'd)

Lynn Thompson "Thomp" McCall, LA

Mable Thibodeaux, Attn: Jo Ann Camp, TX

Madeline Savoie, LA

Madge Meaux Reina, LA

Margaret Ann Richard Little, LA

Margaret Benoit Mims, LA

Margaret Charlane Compton, LA

Marguerite A. Nunez Kramer, LA

Marguerite McVeaugh LeDoux, LA

Marie Annette Maneille, LA

Marie Johnston, TX

Marion Elizabeth Levy Larke, LA

Marion Glynn Portie, LA

Marjorie Pichnic Rorex, TX

Mark Blaine Boudoin, LA

Mark Carl Pedersen, LA

Mark Domingues, LA

Mark Dwayne LeBoeuf, LA

Mark James Pelloquin Revocable Trust, CO

Marleen M. Theriot, TX

Marlon Coy Mudd, LA

Martha D. Andersen, TX

Martha Johnson, LA

Martha Lou Boudreaux LeBleu, LA

Mary A. LeDano, LA

Mary Angie S. Vincent, LA

Mary Ann Didelot, LA

Mary Ann Richard-Jaynes, TX

Mary Davis & W.F. Henry, Jr., LLC, Attn: E. Scott Henry, LA

Mary Frances Templeton, TX

Mary Gay Mier Richard, LA

Mary Katherine Khoury Campbell, LA

Mary Kathryn Roberts, LA

Mary Nykole LaBove, LA

Mary Savoy George, LA

Mason Graham Lindsay, et al, LA

Maureen Freeman Miller, LA

Maureen Johnson Kahl, LA

Maureen Miller, LA

Maureen Savoie Cruthirds, GA

MCD Trust, Attn: Dolores T. Carter, Trustee, LA

Meceal Ann Nunez Stear, LA

Medina Miller Percle, LA

Melanie Ann Savoie, LA

Melba June Stine, LA

Melissa J. Dupont, LA

Melvin Eugene Bennett, OR

Melvin Fruge, FL

Meredith Montie, LA

Michael Brien Theriot, LA

Michael Glen Bartie, LA

Michael Glen Bartie, LA

Michael Henry Carter, NY

Michael McBride, Attn: Dolores T. Carter, LA

Michael Paul Plaisance, Jr., LA

Michael Richard Pedersen, LA

Michael T. Bertrand, TN

Micheal Dennis Andrus, OR

Michelle Boudoin Trahan, LA

Michelle Renee Mier, LA

Individuals (cont'd)

Mike Devall, LA

Mildred S. Sturlese, LA

Millard Scott Quinn, LA

Milton Collins, LA

Milton Mims, LA

Mirinda L. Morales, LA

Missy LeBoeuf, LA

Mitchell K. Savoie, LA

Mitzi Dean Savoie Garry, LA

Mona Batts, LA

Mona Ray LeBoeuf Pearce, LA

Mona Sturlese Turner, TX

Monica DeRouen, LA

Monty W. Savoy, LA

Muriel Ruth Theriot, LA

Mymae Duhon Savoie, Attn: James Savoie, LA

Myra Rutherford, LA

Myron Kent Little, LA

Nancy R. Fruge, FL

Natalie Abshire, LA

Ned Wilson, LA

Neil S. Carter, LA

Nell Buckley, MS

Nicole Pederson Mudd, Attn: Thomas E. Mudd, Jr., LA

Nicole Roy, LA

Norma Gail Savoie, LA

Novella Sheree Boddie, CA

Olga Vincent Mudd, LA

Osa Cox, Jr., KS

Pamela B. Beam Dionne, LA

Pamela D. Savoy, LA

Pamela DuBois, TX

Pamela George Kelley, LA

Pamela Jeanne Trahan, LA

Pamela Kovach, LA

Pamela Mudd, LA

Pat Jerome Nunez, LA

Patricia Ann Bartie Dugas, LA

Patricia Ann D. Roberie, MD

Patricia Ann Little, LA

Patricia Anne Savoie, LA

Patricia Conner, LA

Patricia Corine Addison, LA

Patricia Lynne Duhon, LA

Patricia W. Kelly Living Trust, Attn: Patricia W. Kelly, FL

Patrick McDonald, LA

Patrick Williams, LA

Patsy Claudette Sells, LA

Paul Doyle, Attn: Cynthia Marie Nunez, LA

Paul Evans Miller, LA

Paul J. Brown, TX

Paul Pigno, LA

Paula Diane Savoie, LA

Paula McPherson McCall, LA

Pauline S. Vandre, FL

PDR Testamentary Trust, Attn: Kala Billedeaux, LA

Peggy Ann Griffith, LA

Penny Trahan, TX

Individuals (cont'd)

Peter Raymond Savoie, LA

Philip Bryan Nunez, LA

Phillip Andrews, LA

Phillip Michael Maneille, LA

Phyllis Doreen Johnston, LA

Phyllis Tarkington, LA

Priscilla Collins, LA

Randall James Boudoin, LA

Randall K. Guillory, LA

Randy James Nunez, LA

Randy Wright, LA

Raymond Bednarz, LA

Raymond George, LA

Raymond J. LeBlanc, LA

Raymond LaBlanc, Jr., LA

Raymond LeBlanc, Jr., LA

Raynaldo Patrick Jones, TX

Rebecca Griffith Kendall, CO

Rebecca Jones LaSalle, Attn: Tiffany LaSalle, LA

Rebecca Melicia Theriot-Trahan, LA

Reggie Murphy, LA

Rene Ingram, TX

Renee Tims, Attn: Arthur Tims, Jr., CA

Richard D. Griffith, Jr., OK

Richard Dean LeBoeuf, LA

Richard Freeman Buckley, TX

Richard Gregory Wicke, LA

Richard Jerome LeDoux, LA

Richard M. Thomas, MA

Richard Martin Sturlese, LA

Richard Michael Savoie, LA

Richard Montgomery, AZ

Richard Ray Richard, LA

Richard Thomas Moriarty, LA

Richard W. Miller, LA

Ricky Tims, Attn: Arthur Tims, Jr., CA

Rita Savoy, LA

Robert D. Savoie, LA

Robert E. Mudd, LA

Robert Harmon, LA

Robert L & Kelly Mudd, LA

Robert L. Benson, LA

Robert Mitchell Kelley, LA

Robert V. Landry, LA

Robert W. Heflin, LA

Robin Davis Courville, TX

Robin Nunez, LA

Robley Menard, LA

Roderick L. Primeaux, LA

Rodger C. Theriot, LA

Rodney F. McLean, V, LA

Roger Dale Broussard, LA

Romona Brasseaux Kelley, LA

Ronald Byron Stear, LA

Ronald D. Andrus, OR

Ronald David Smith, GA

Ronald Doucet, Jr., LA

Ronald G. Nunez, Jr., LA

Ronald Paul Savoie, OK

Ronnie D. LaFosse, TX

Individuals (cont'd)

Rosalie Primeaux Nunez, LA

Rosetta Bartie, TX

Ross Dexter Peloquin, Sr., LA

Roxanne Boudoin, LA

Roy Garry, LA

Ruben Morales, LA

Ruby Swire Nunez, LA

Rudolph Bartie, Jr., VA

Russell Bennett, Jr, LA

Russell C. Savoie, LA

Russell Eugene Bennett, CA

Russell G. Corley, TX

Sadie Mae Trahan William, LA

Samantha Joyce LaBove, c/o: Lisa LaBove Guidry, LA

Samuel Mark DeRouen, LA

Sandra Drost, FL

Sandra Hession, LA

Sandra Tims, Attn: Arthur Tims, Jr., CA

Sara G. Doyle, Attn: Cynthia Marie Nunez, TX

Sarah Dale Granger Hebert, LA

Sarah Frances Kendall, CO

Savoy Jan Granger, LA

Scott Bennett Nunez, LA

Scott David Levy, TX

Scott Trahan, LA

Selma Frank, LA

Shantelle L. Richard, LA

Shareen Louise Buckley, TX

Sharon Ann LeBoeuf Allen, TX

Sharon Faulk, LA

Sharon Kalb Moore, KY

Sharon Kay Boudreaux, LA

Sharon Mae Mount, AL

Sharon Sturlese, LA

Sharrie Theriot, LA

Sheree Boddie, Attn: Nona Boddie, CA

Sherry Ann Veazy Rogers, LA

Shirley Nunez, LA

Shirley Reon Dupont, LA

Shirley Ruth Stine Marshall, LA

Sikica Crosby, TX

SilverBow, TX

Smith Family Trust, Attn: Jaynee Smith-Wood, NC

Solomon Saul Savoy, LA

Sonya Savoy Roberts Ballard, LA

Stacey Darlene Miller, LA

State of Louisiana, LA

Stephanie Ellen Bartie, LA

Stephen B. Butler, CO

Stephen Butler Stanley, TX

Stephen Edward Levy, TX

Stephen L. Carter, II, LA

Sterling Constance, LA

Sterling Vaughan, LA

Steve Landry, LA

Steven Walter Nicholson, TX

Stewart Vandre, FL

Sue Wright, AL

Suella Nunez McCardle, LA

Individuals (cont'd)

Susan Brown, TX

Susan C. Johnson, LA

Susan L. Montgomery, AZ

Susan Saikin, TX

Sylvia Savoy, LA

Tamara Cryer Pedersen, LA

Tammi A. Schenk, TX

Tammy Aldridge Lazarra, CA

Tammy Jo Miller, LA

Tammy Sue Pedersen, LA

Tara LaVonne Moore, TX

Tara Poole, LA

Tara Seals, AL

Taten Peterman, LA

Taylor A. Brown, TX

Telicia LaSalle, LA

Terence Lee Savoie, LA

Teresa L. Beam Doucet, LA

Teresa Sells, TX

Terry A. Rutherford, LA

Terry Dean Murphy, LA

Terry Elizabeth Savoie, OK

Terry Hendrix, LA

Terry Roberie, MD

Thania Savoie Elliott, LA

Thaunia Rae Savoie Hardie, LA

The Adam Hebert, Jr. and Elma R. Hebert Revocable Living Trust, LA

The Butch and Linda Smith Family Trust, TX

The Charles William Morris & Barbara Pizanie Morris, Revocable Living Trust, LA

The Estate of Absie Mitchel LeBoeuf, TX

The Estate of Annette Marie Simpson, TX

The Estate of Harold Rupert Buckley, MS

The Estate of Olevia Bartie Seals, Attn: Rosetta Bartie, TX

The Estate of Ralph A. Hebert, Attn: Jim Traweek, LA

The Estate of Walter L. Rogers, Jr., LA

The Estate of Willie P. Miller, c/o: Sandra Hession, LA

The Succession of Alford Clooney Savoie, Attn: Una Savoie, LA

The Succession of Eugene Carter, LA

The Succession of Grace Mary Virginia Savoie, Attn: David Kent Savoie, LA

The Succession of James Calvin Vallette, Attn: Candace Little, LA

The Succession of Joyce Virginia Nunez Sturlese, Attn: Tony Sturlese, LA

The Succession of Walton L. Crosby and Lucille Doxey Crosby, TX

The Successsion of Beverly Butler Domingues, LA

Theo Richard Mier, LA

Theodore Ardly Broussard, LA

Theresa Ann Theriot Bertrand, TN

Theresa Theriot Welch, LA

Thomas David Theriot, LA

Thomas Dude Savoy, LA

Thomas E. Mudd, Jr., LA

Thomas H. Courville, LA

Individuals (cont'd)

Thomas Kramer, LA
Thomas Nunez, LA
Thyria LeDoux, LA
Tiffany Smith Neal, TX
Timothy J. Dupont, LA
Tina Granger, LA
Tommy Bonsall, LA
Tommy Todd, LA
Toni Brown, TX
Townsend Patricia LaFosse, TX
Tracey Quinn, LA
Tracy Carter, LA
Triassic Investment Partners, LA
Troy Anthony Miller, LA
Truda D. James-Daughtry, MA
Trudy Sturlese Heflin, LA
Twilla Savoie, LA
Tyrella Montgomery Harmon, LA
Vanessa Kelley Mudd, LA
Velma LeBoeuf Hebert, LA
Vicki Elaine Koppie Laughlin, LA
Vicki Lynn Veronie Little, LA
Vickie Pichnic, TX
Vicky Mier, LA
Victoria Ann Savoie Manuel, LA
Victoria LeDano Conner, LA
Vida Marie Nunez Landry, LA
Viola Savoy Ball, LA
Virginia Carol Bourque, GA
Virginia Celeste Landry, LA
W. G. Williams, LA
Walter Turner, TX
Wanda Rae Sells Ray, LA
Warren Douglas Jones, III, TX
Warren Douglas Jones, Jr., TX
Warren E. Adams, MA
Warren Hanson Sells, TX
Wendell Joseph Broussard, LA
Wendy Wicke, LA
Wesley Paul LeBoeuf, LA
Willard J. Savoie, LA
Willard Joseph Little, LA
William Cody Wyers, III, TX
William Daniel Blake, TX
William David Drost, FL
William Earl Guthrie, Jr, LA
William Earl Guthrie, Jr., LA
William Edwin Van Atten, LA
William Elliott, LA
William H. Smith, III, TX
William Johnston, LA
William L. Welch, TX
William P. Welch, Jr., TX
William Pinch, Sr., LA
William Ray Little, Sr., LA
Willie B. Conner, LA
Willie Harmon, LA
Willie Patrick Nunez, LA
Wilson Adaway, Jr., TX
Wynita M. Nunez, Attn: Thomas Nunez, LA
Yancy William Welch, LA

Individuals (cont'd)

Yvette Winona Boddie, CA

Yvonne Carol Broussard, LA

Yvonne Nunez, LA

APPENDIX B-1

PROJECT OVERVIEW MAP

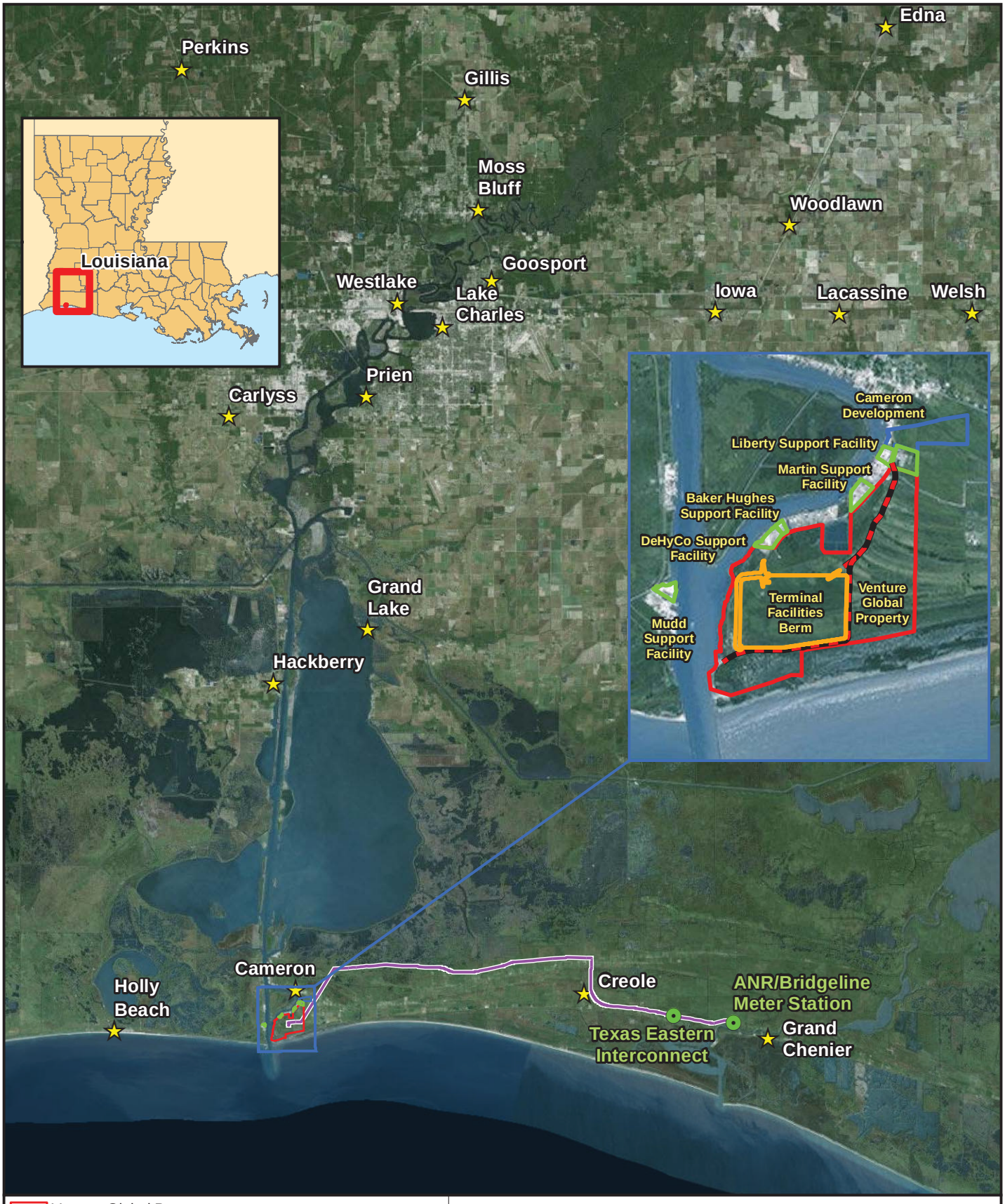

Figure 1.1-1

Proposed Project Facilities - Regional Location (Aerial Map)

Calcasieu Pass Terminal and TransCameron Pipeline Project

Cameron Parish, Louisiana

CALCASIEU PASS

TransCameron PIPELINE

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Figure 1.1-2
Proposed Project Facilities - Regional Location
(Topographic Map)
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana

CALCASIEU PASS
TransCameron PIPELINE

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APPENDIX B-2

PIPELINE MAPS

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2	1	2.5
3	2.5	4
4	3.9	5.5
5	5.4	6.8
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8	8.4	9.9
9	9.8	11.3
10	11.2	12.8
11	12.6	14.2
12	14.1	15.6
13	15.6	17.1
14	16.3	17.9
15	17	18.5
16	18.5	20.2
17	20	21
18	21	22
19	18.7	23.3
20	18.8	23.4

Figure 1.3-3
Proposed Pipeline System – Aerial Routing Overview
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana

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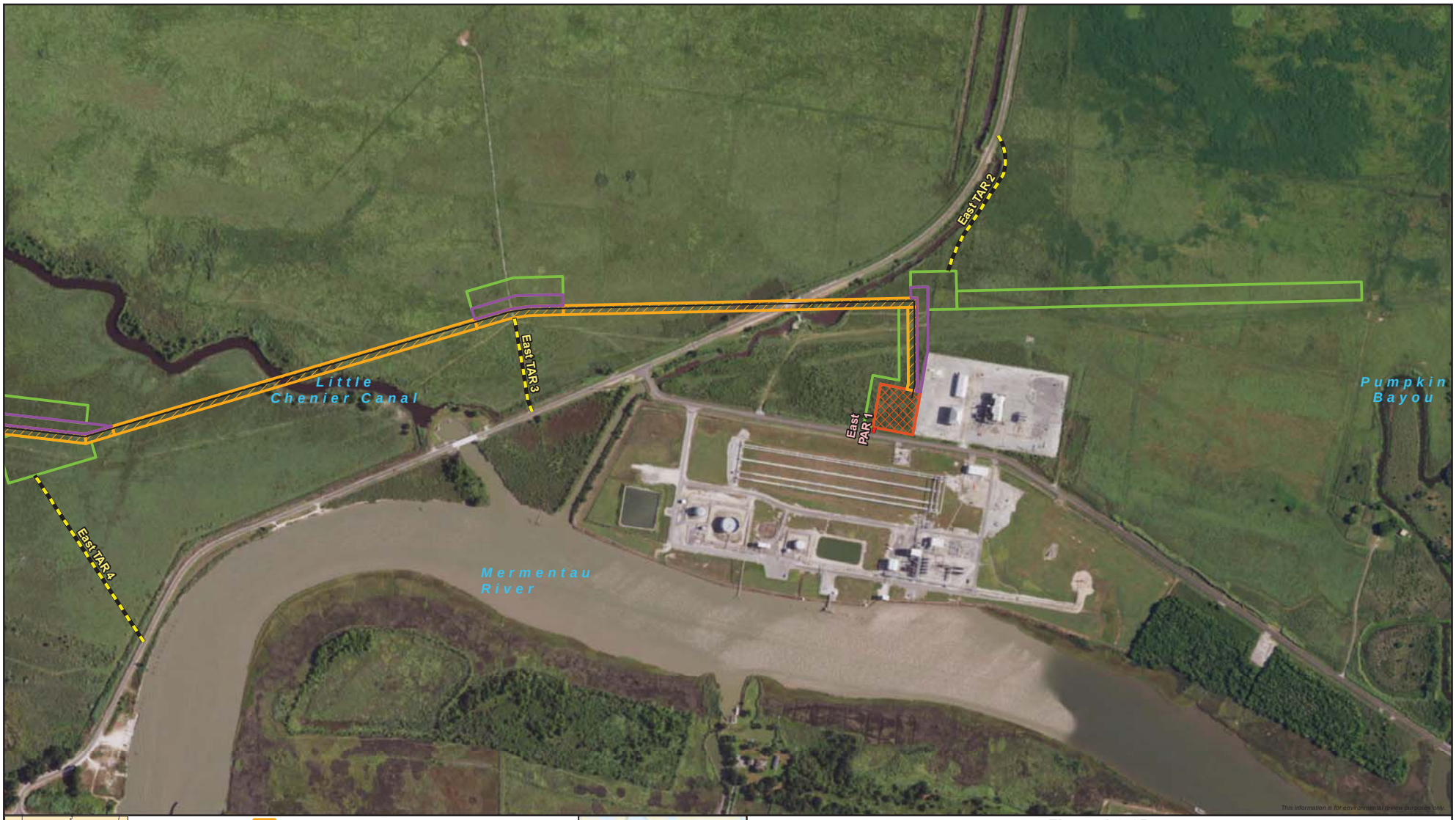

Figure 1.3-3D
Detailed Aerial Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 1 of 20

CALCASIEU PASS

TransCameron PIPELINE

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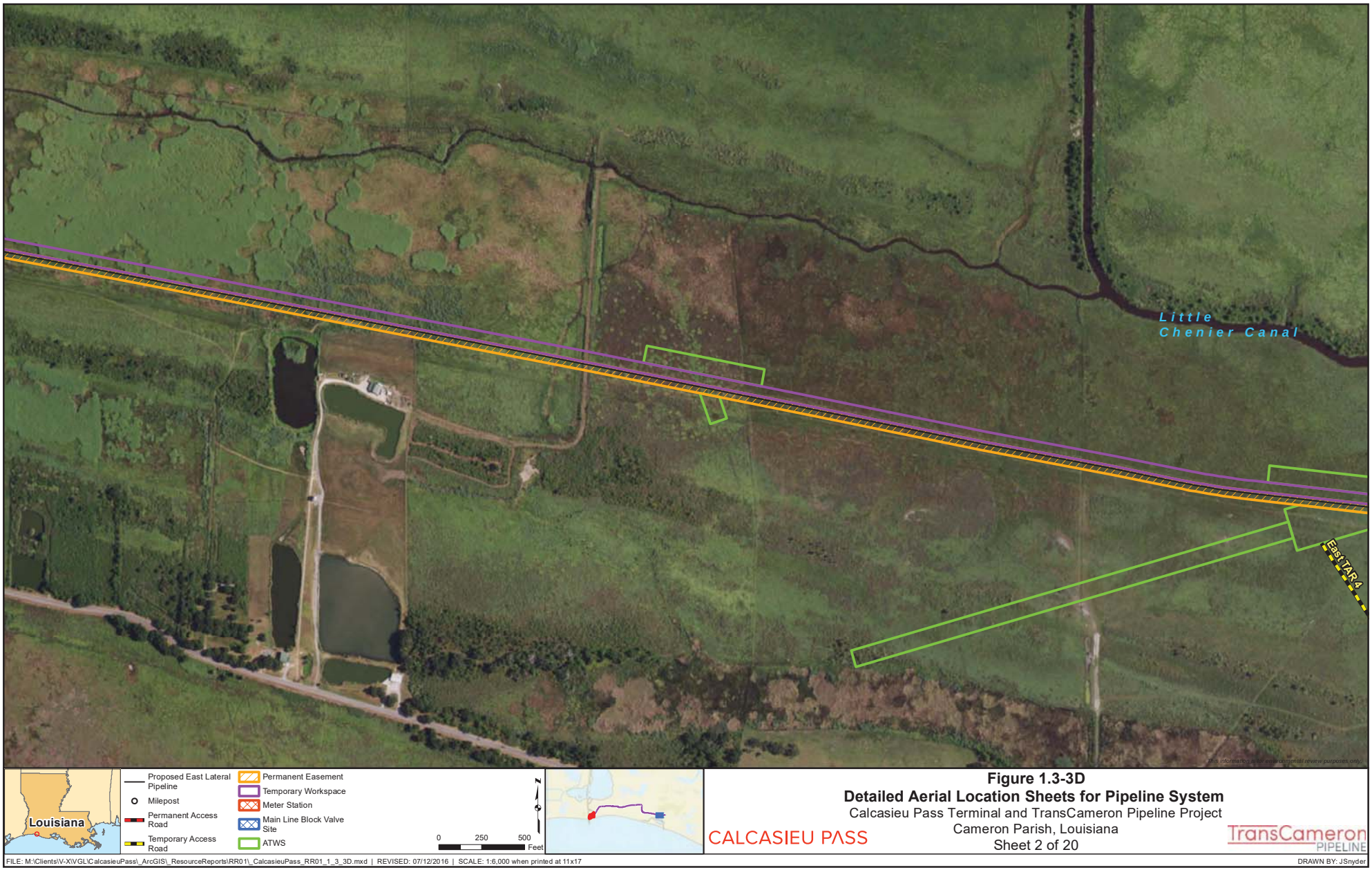

Figure 1.3-3D
Detailed Aerial Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 2 of 20

CALCASIEU PASS

TransCameron PIPELINE

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DRAWN BY: JSnyder

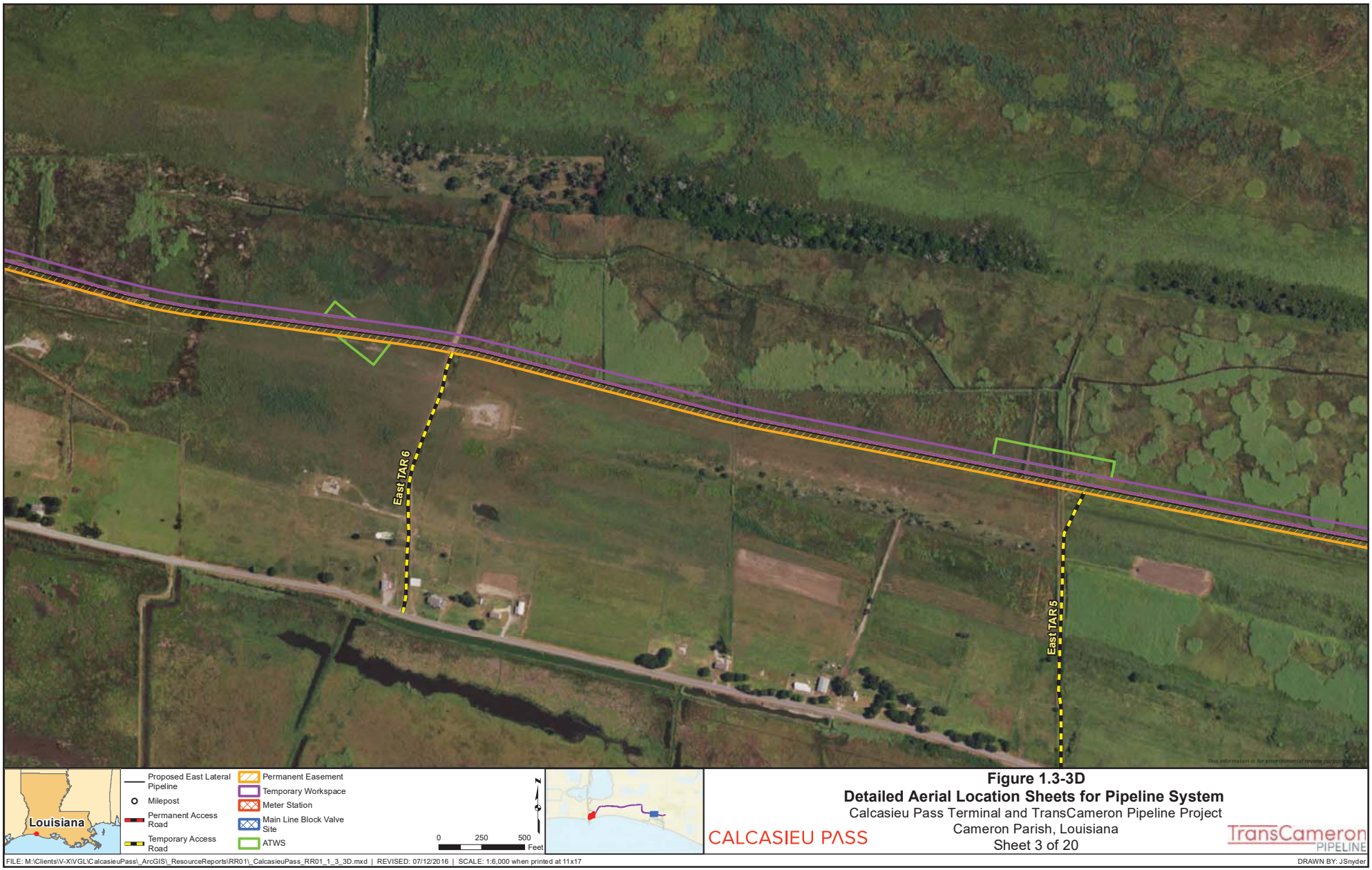

Figure 1.3-3D
Detailed Aerial Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 3 of 20

CALCASIEU PASS

TransCameron PIPELINE

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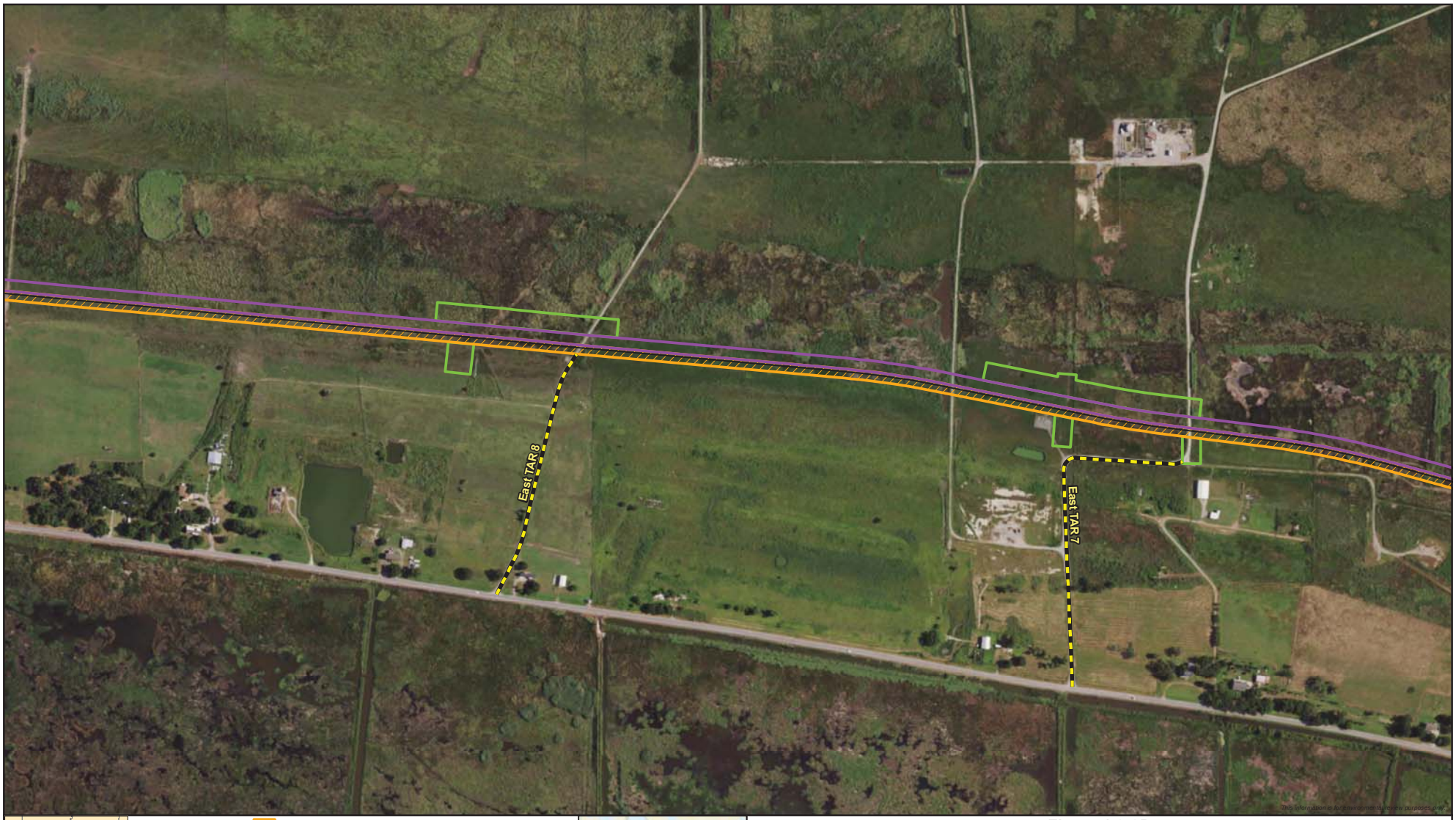

Figure 1.3-3D
Detailed Aerial Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 4 of 20

CALCASIEU PASS

TransCameron PIPELINE

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DRAWN BY: JSnyder


East TAR 9
Louisiana
Proposed East Lateral Pipeline
Milepost
Permanent Access Road
Temporary Access Road
Permanent Easement
Temporary Workspace
Meter Station
Main Line Block Valve Site
ATWS
0
250
500
Feet
N
Figure 1.3-3D
Detailed Aerial Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 5 of 20
CALCASIEU PASS
TransCameron PIPELINE
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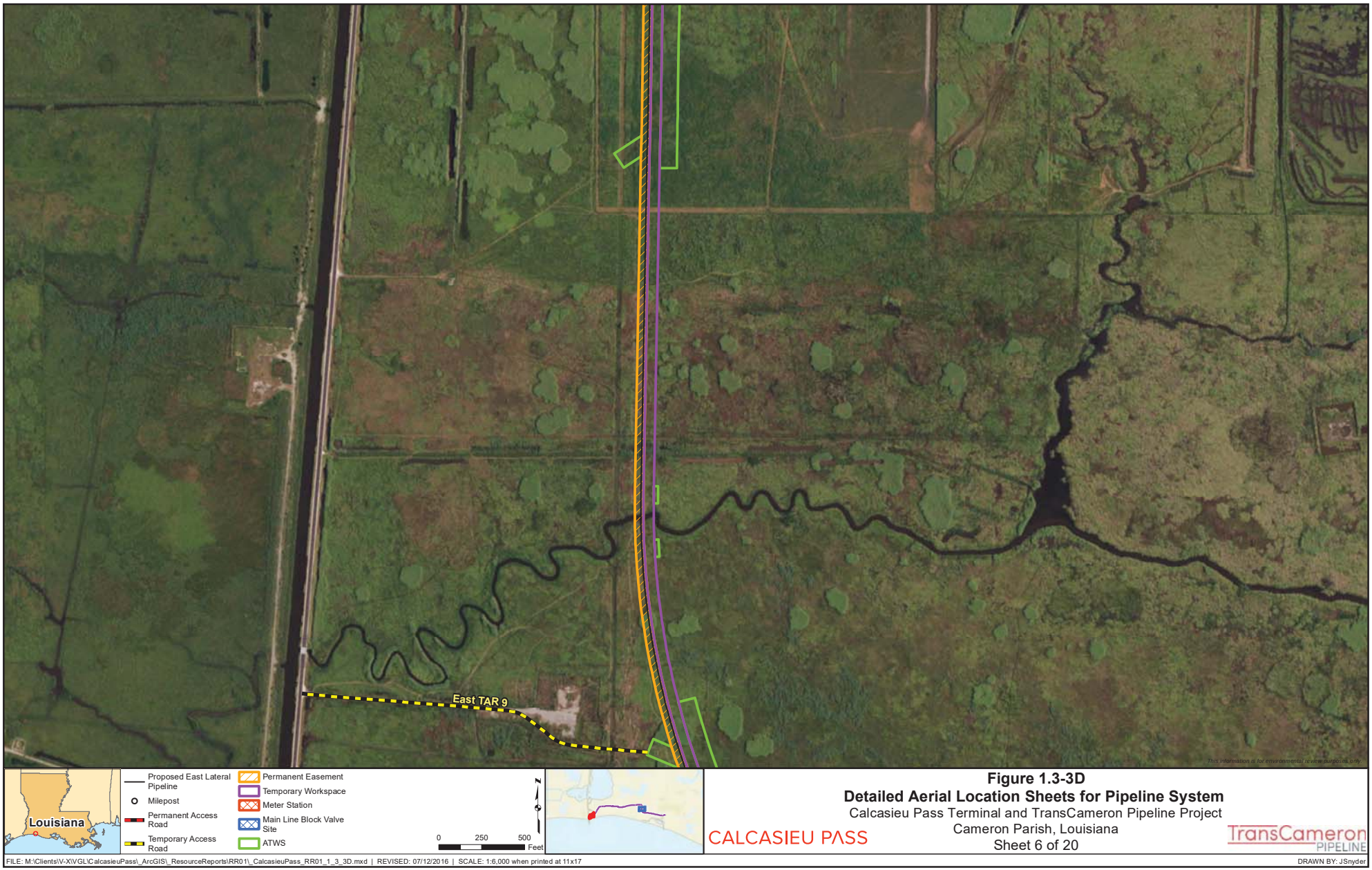

Figure 1.3-3D
Detailed Aerial Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 6 of 20

CALCASIEU PASS

TransCameron PIPELINE

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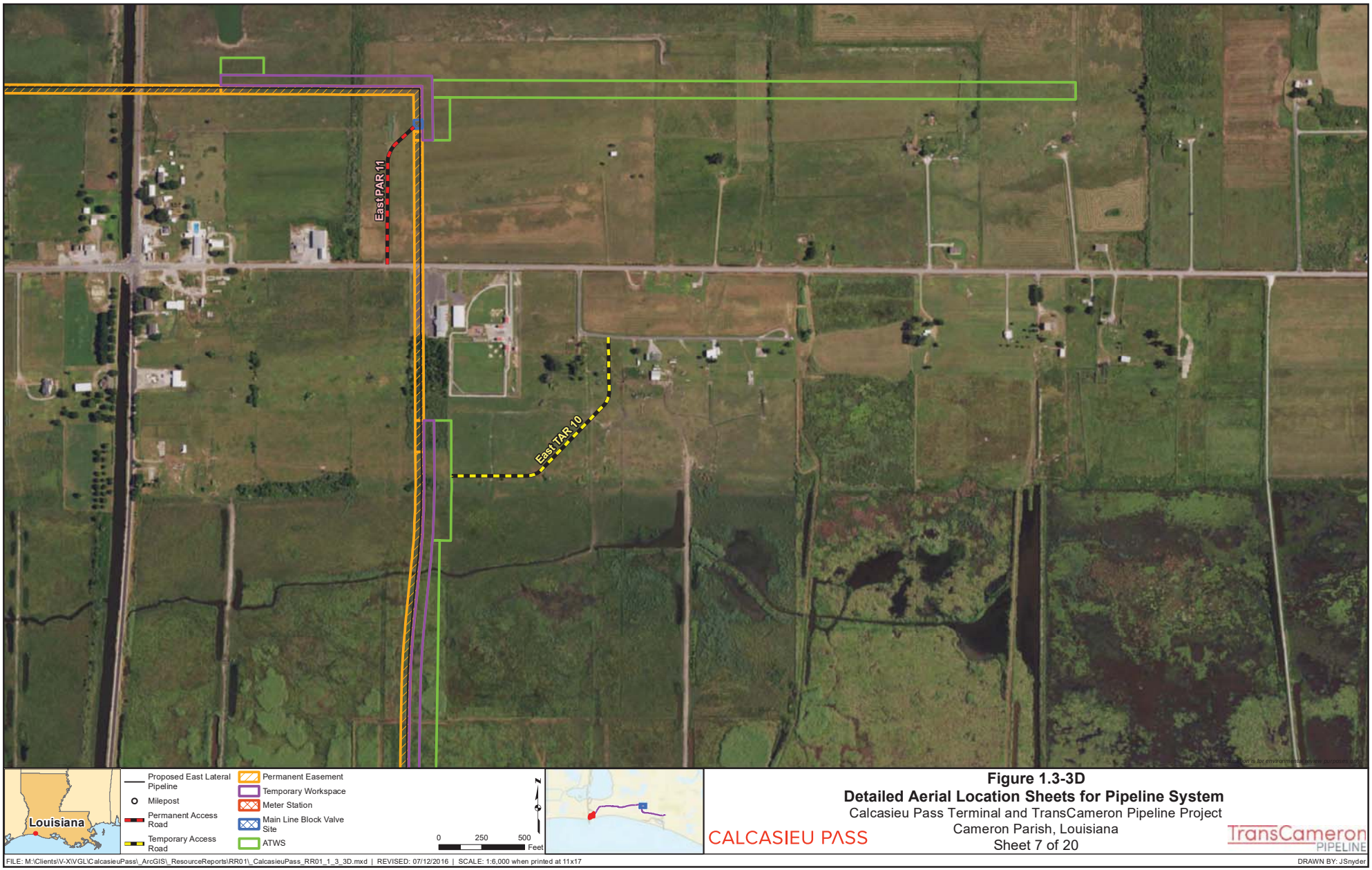

Figure 1.3-3D
Detailed Aerial Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 7 of 20

CALCASIEU PASS

TransCameron PIPELINE

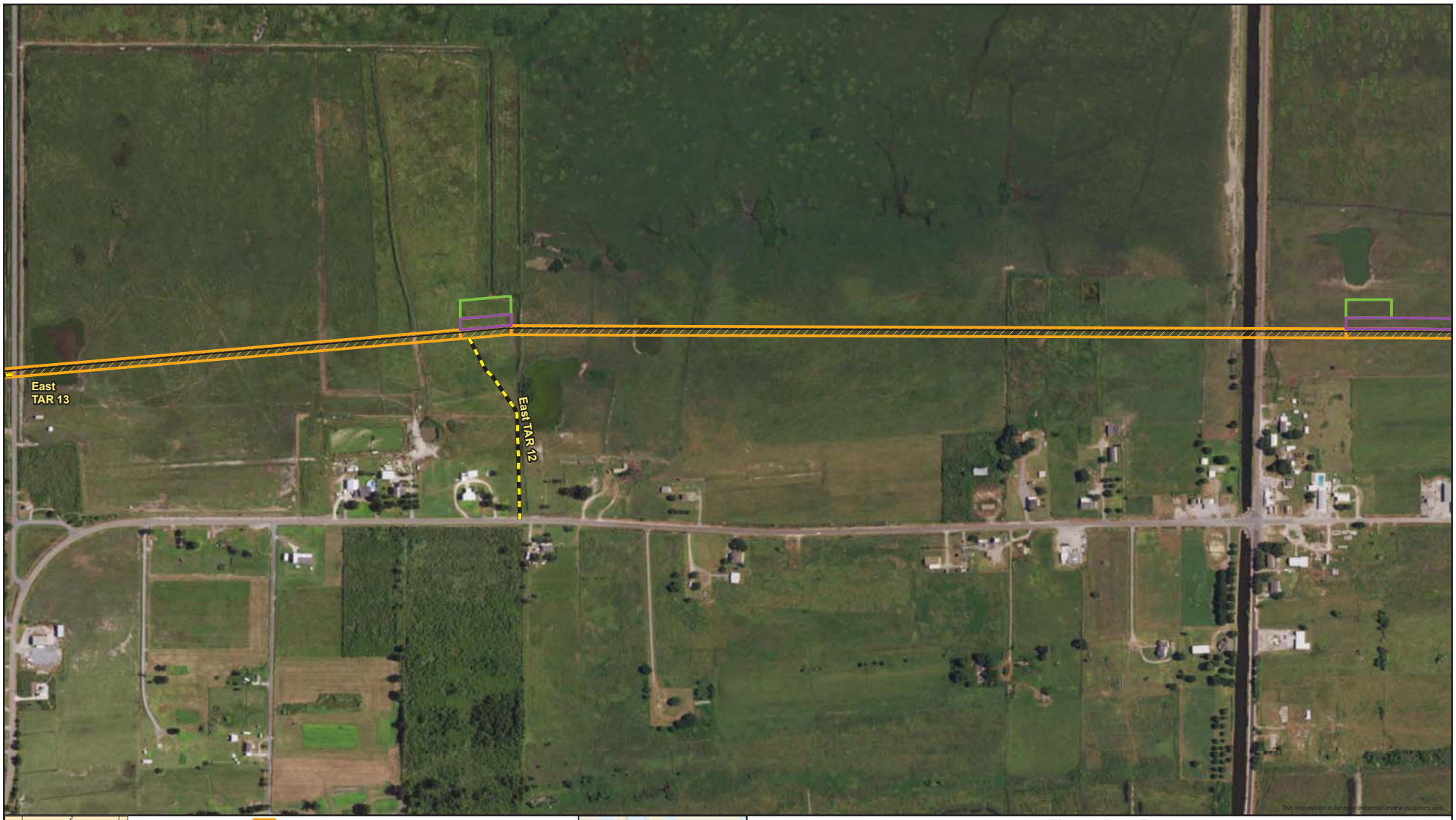

Figure 1.3-3D
Detailed Aerial Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 8 of 20

CALCASIEU PASS

TransCameron PIPELINE

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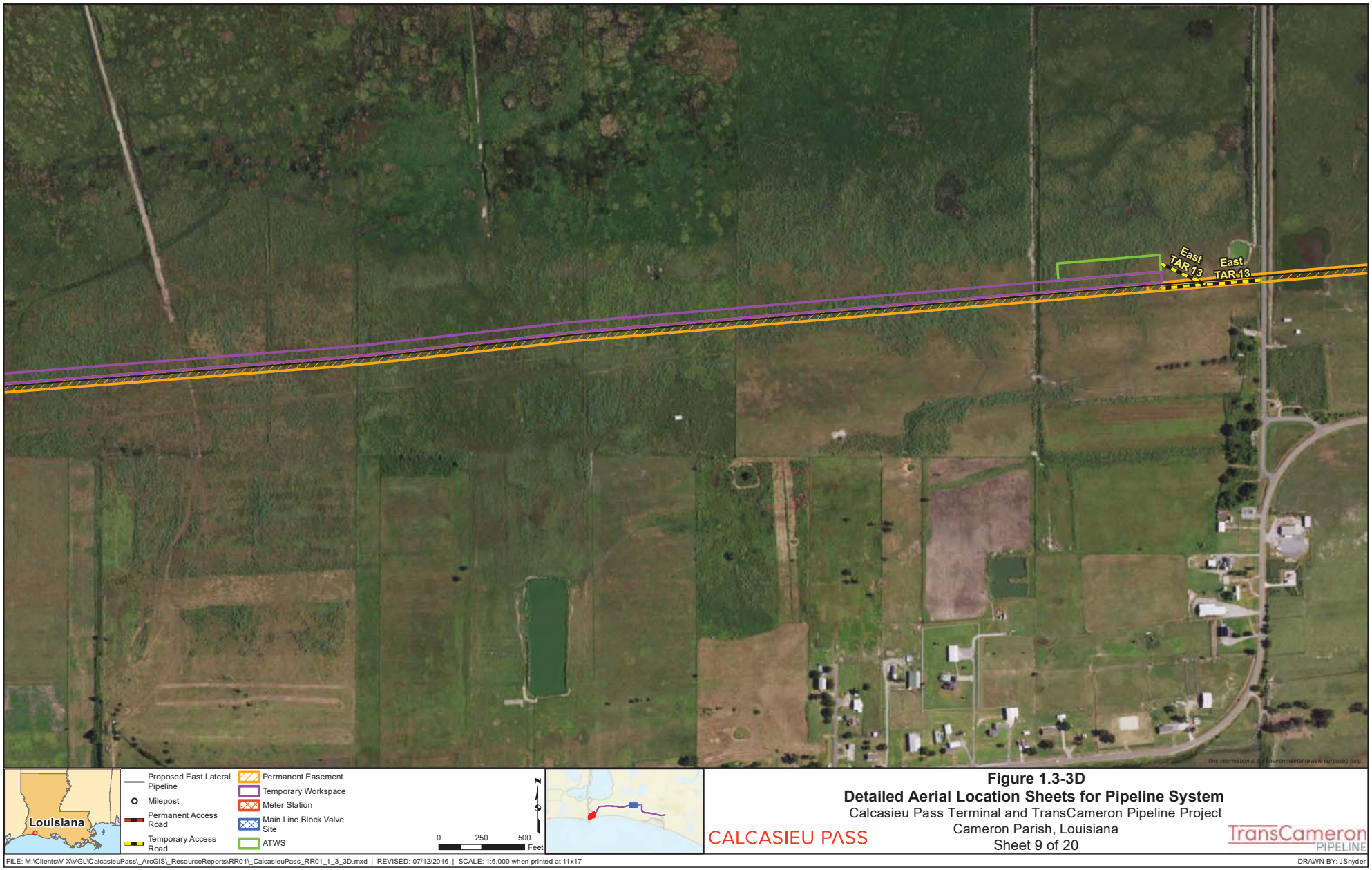

Figure 1.3-3D
Detailed Aerial Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 9 of 20

CALCASIEU PASS

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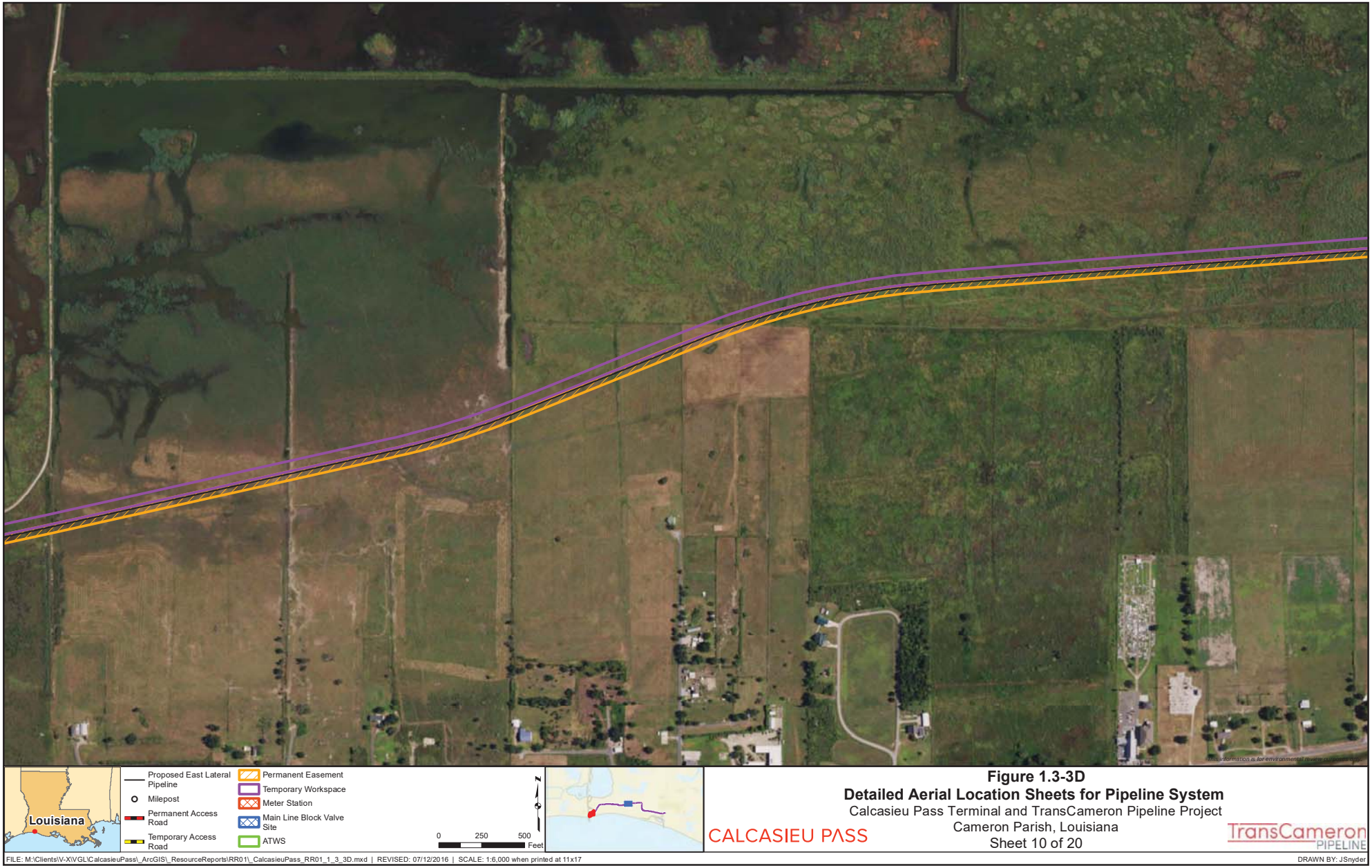

Figure 1.3-3D
Detailed Aerial Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 10 of 20

CALCASIEU PASS

TransCameron PIPELINE

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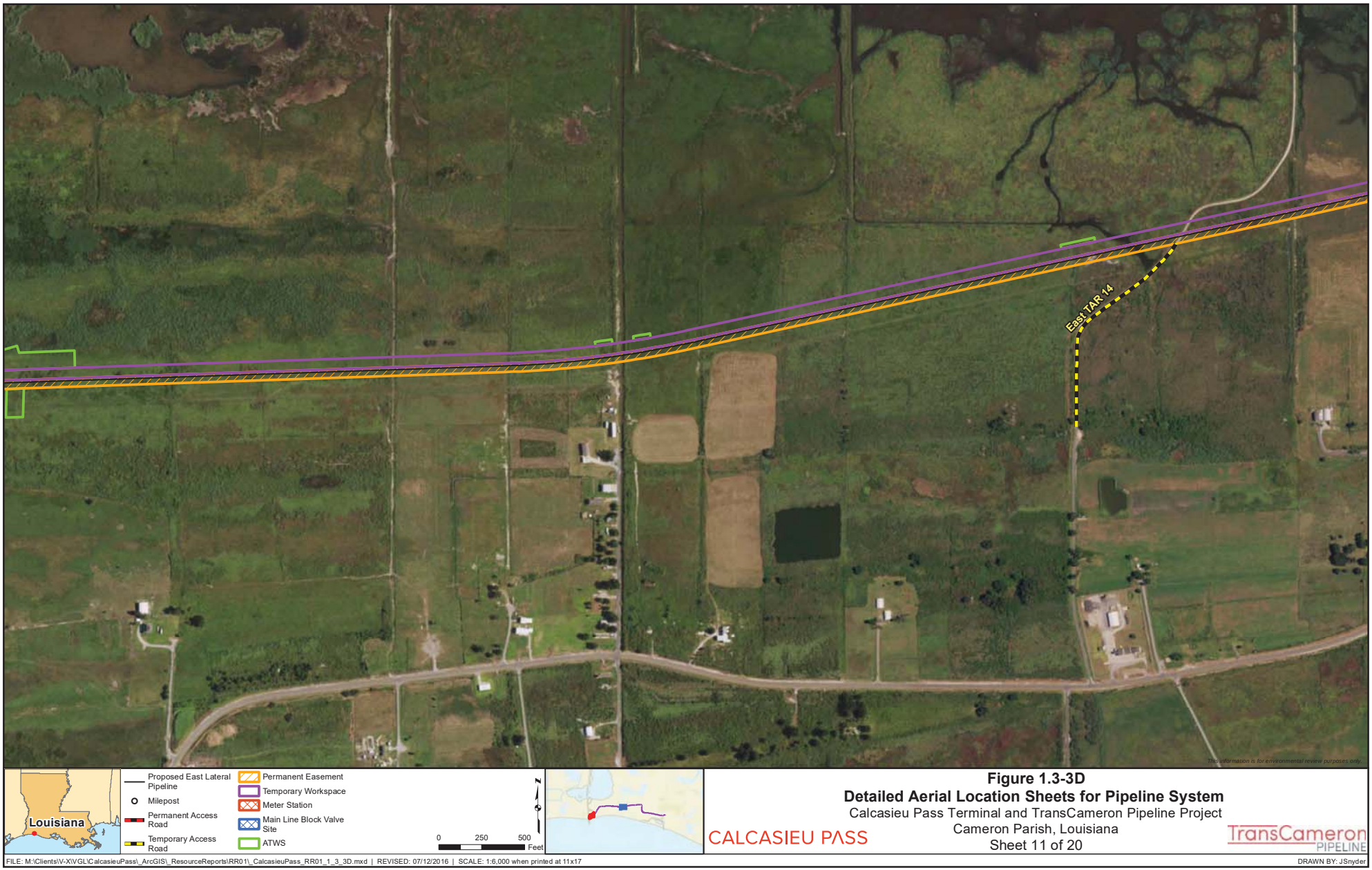

Figure 1.3-3D
Detailed Aerial Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 11 of 20

CALCASIEU PASS

TransCameron PIPELINE

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Figure 1.3-3D
Detailed Aerial Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 12 of 20

CALCASIEU PASS

TransCameron PIPELINE

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Figure 1.3-3D
Detailed Aerial Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 13 of 20

CALCASIEU PASS

TransCameron PIPELINE

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Figure 1.3-3D
Detailed Aerial Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 14 of 20

CALCASIEU PASS

TransCameron PIPELINE

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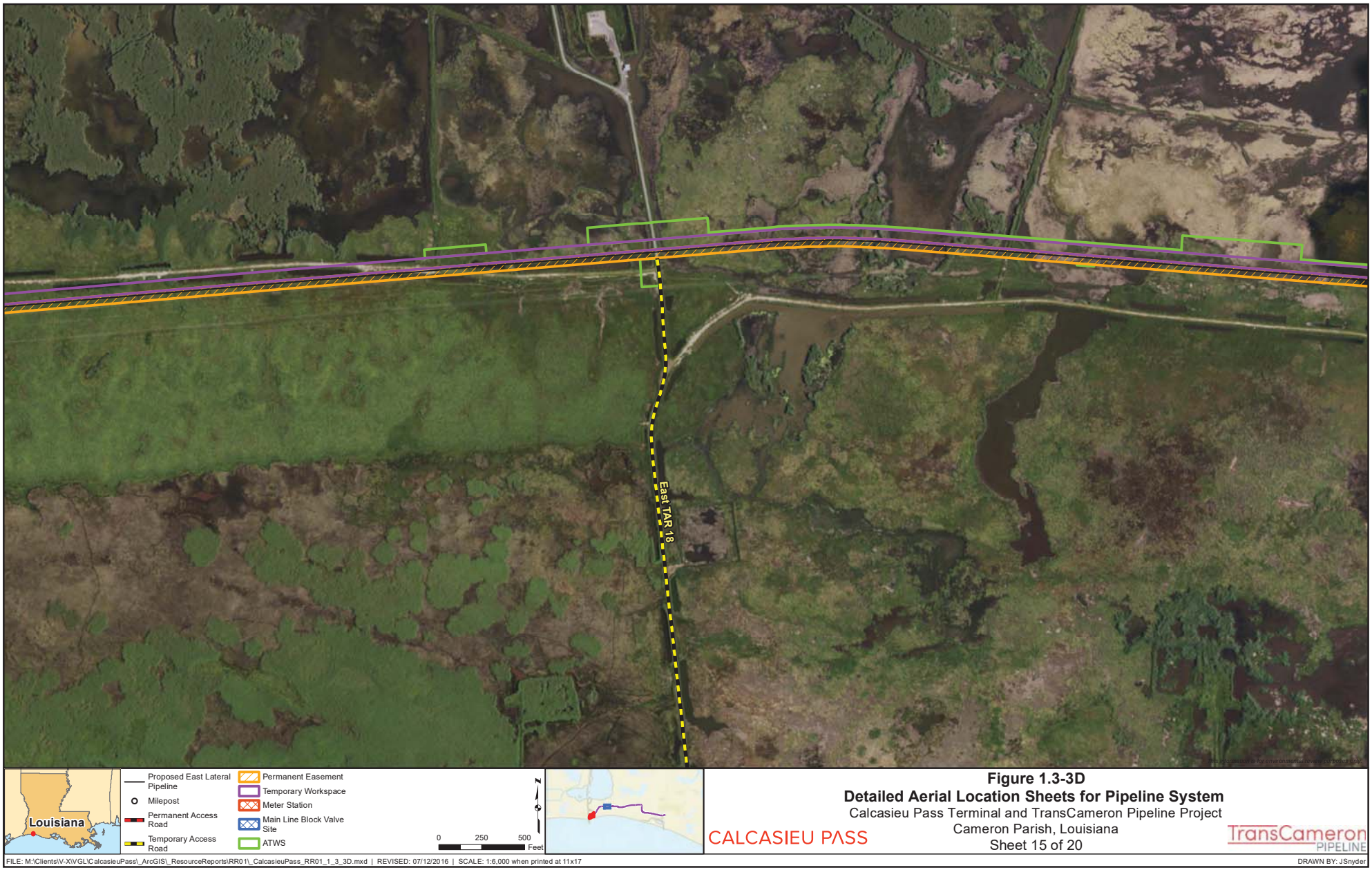

Figure 1.3-3D
Detailed Aerial Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 15 of 20

CALCASIEU PASS

TransCameron PIPELINE

Figure 1.3-3D
Detailed Aerial Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 16 of 20

CALCASIEU PASS

TransCameron PIPELINE

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Figure 1.3-3D
Detailed Aerial Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 17 of 20

CALCASIEU PASS

TransCameron PIPELINE

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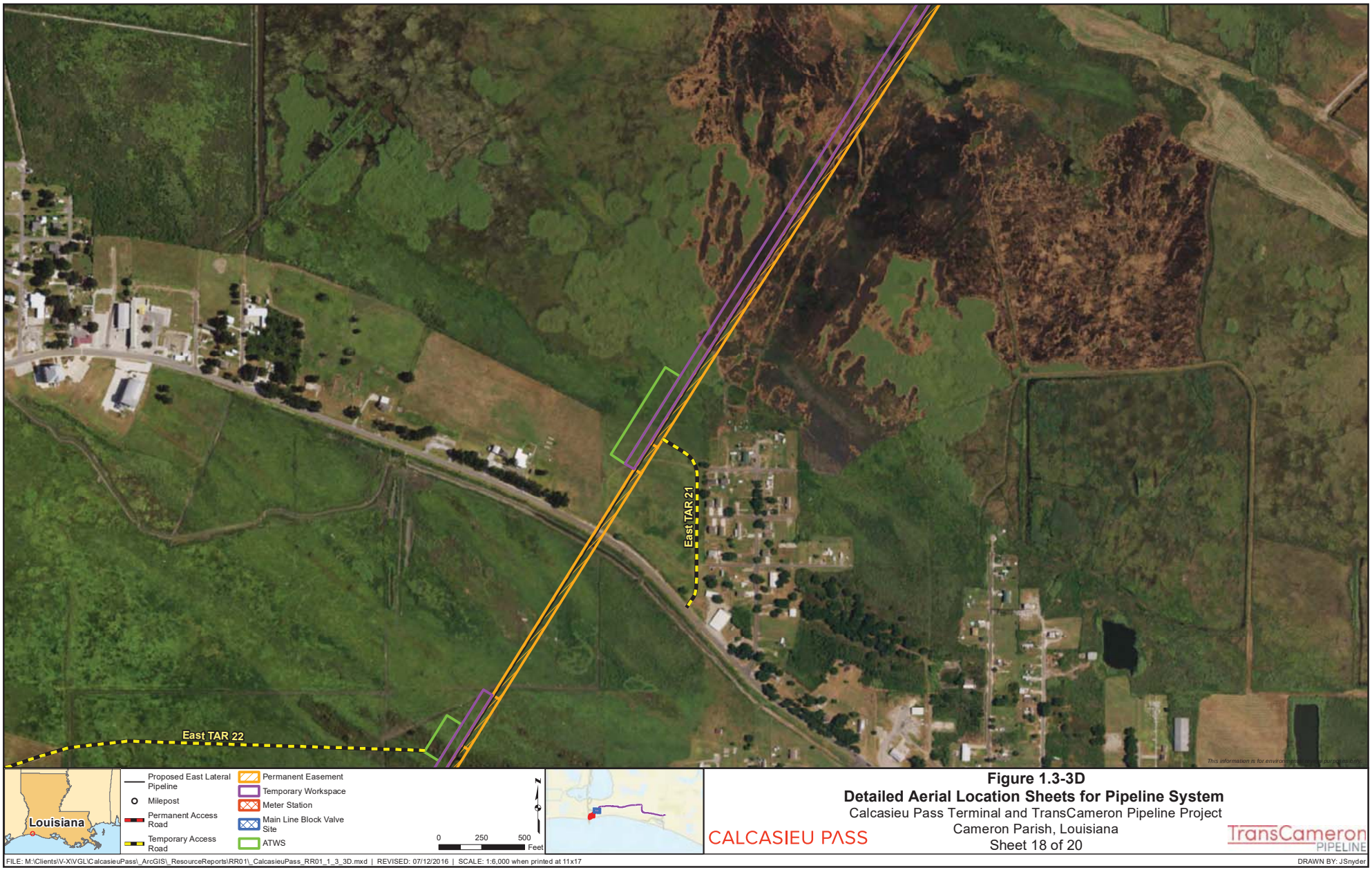

Figure 1.3-3D
Detailed Aerial Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 18 of 20

CALCASIEU PASS

TransCameron PIPELINE

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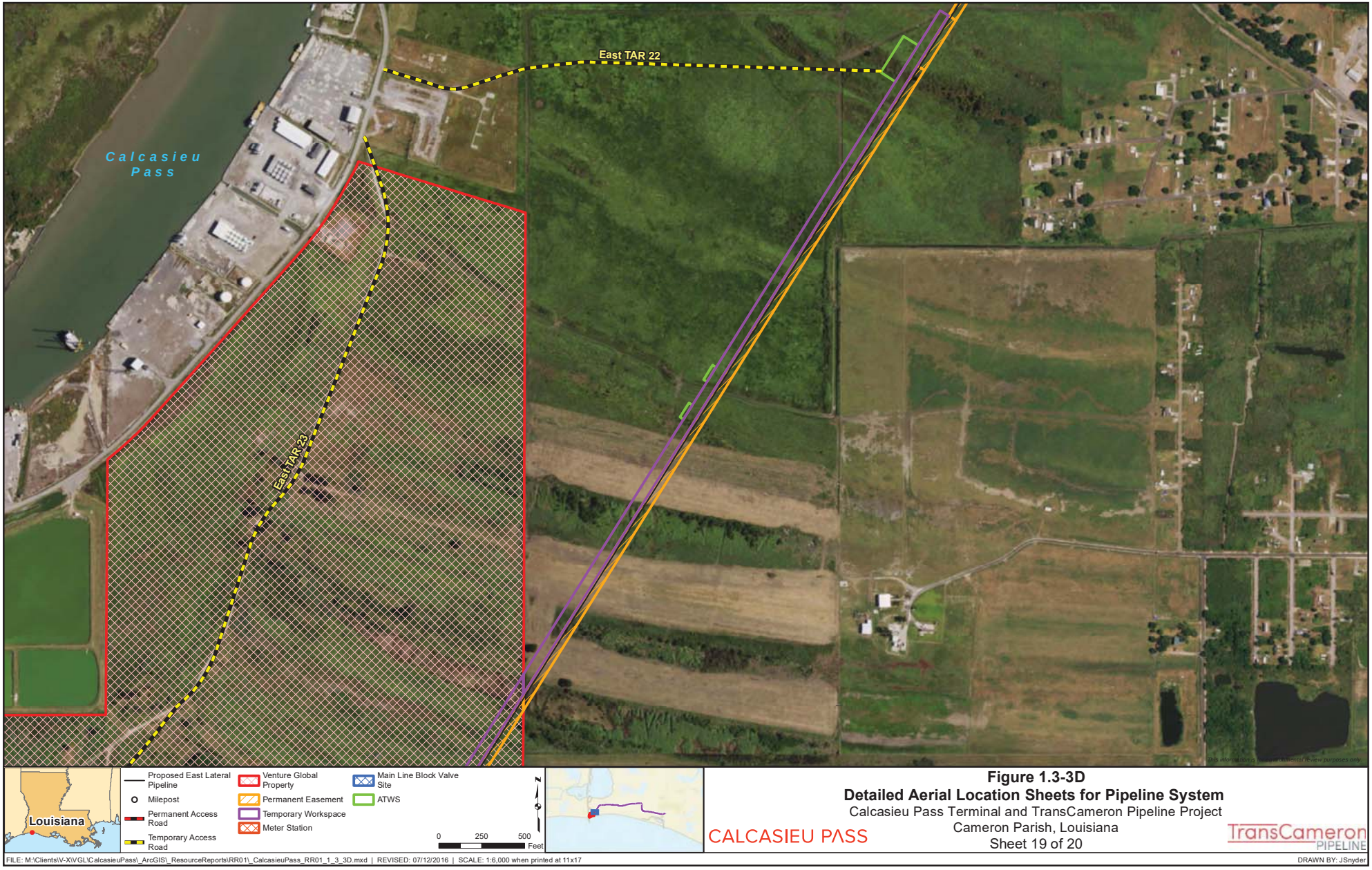

Figure 1.3-3D
Detailed Aerial Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 19 of 20

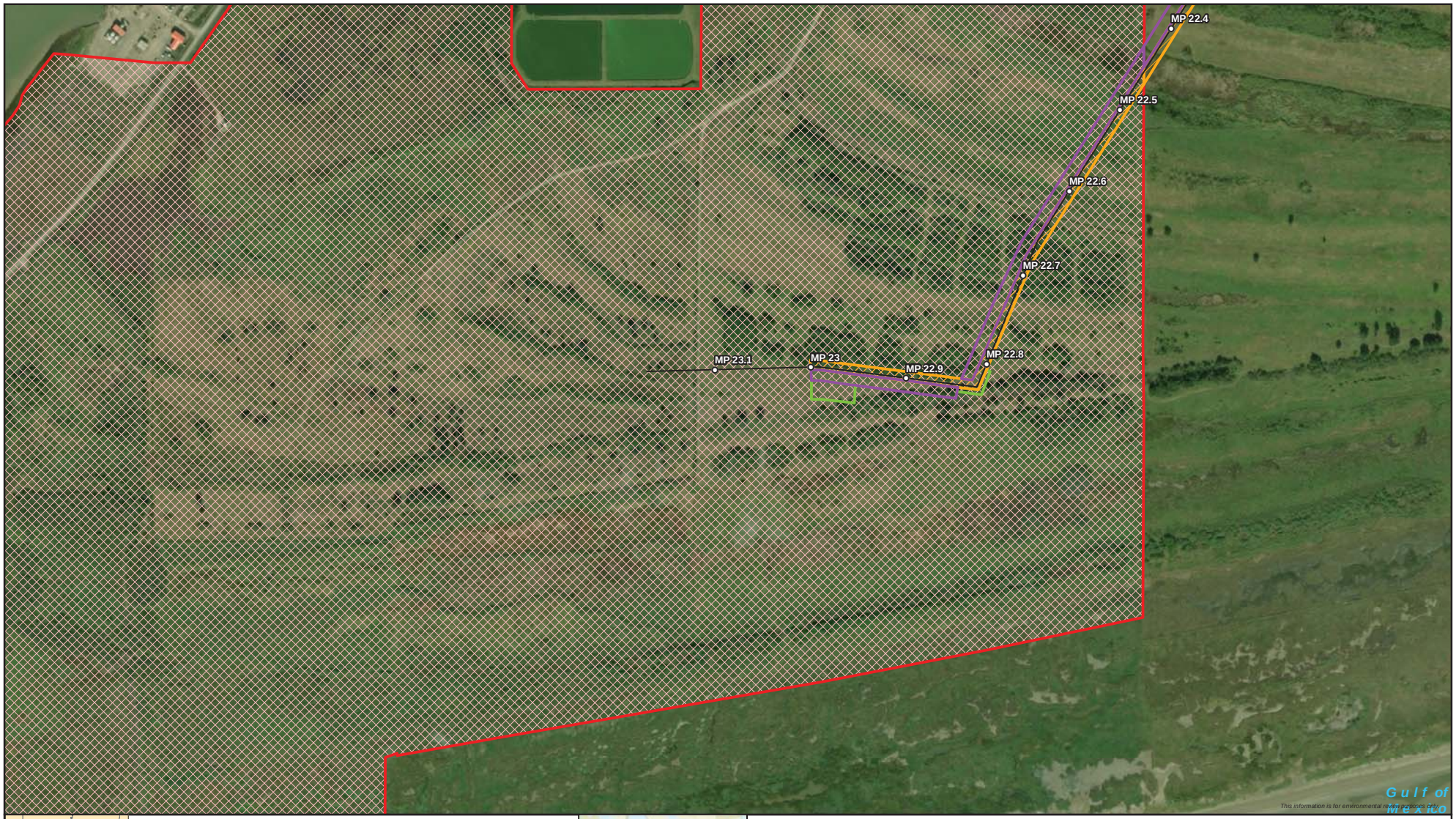

Figure 1.3-3D
Detailed Aerial Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 20 of 20

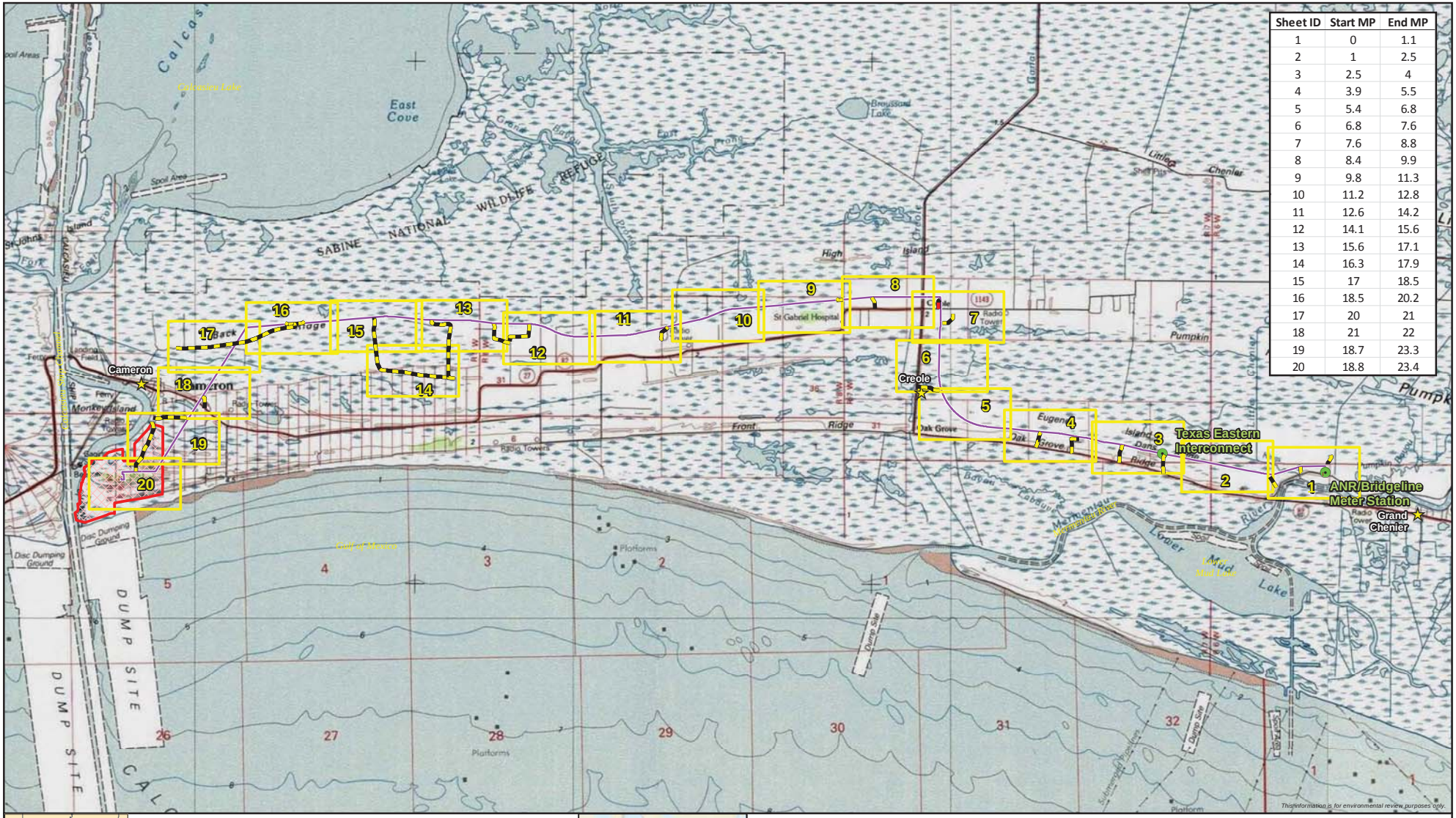

Figure 1.3-5
Proposed Pipeline System – Topographic Routing Overview
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana

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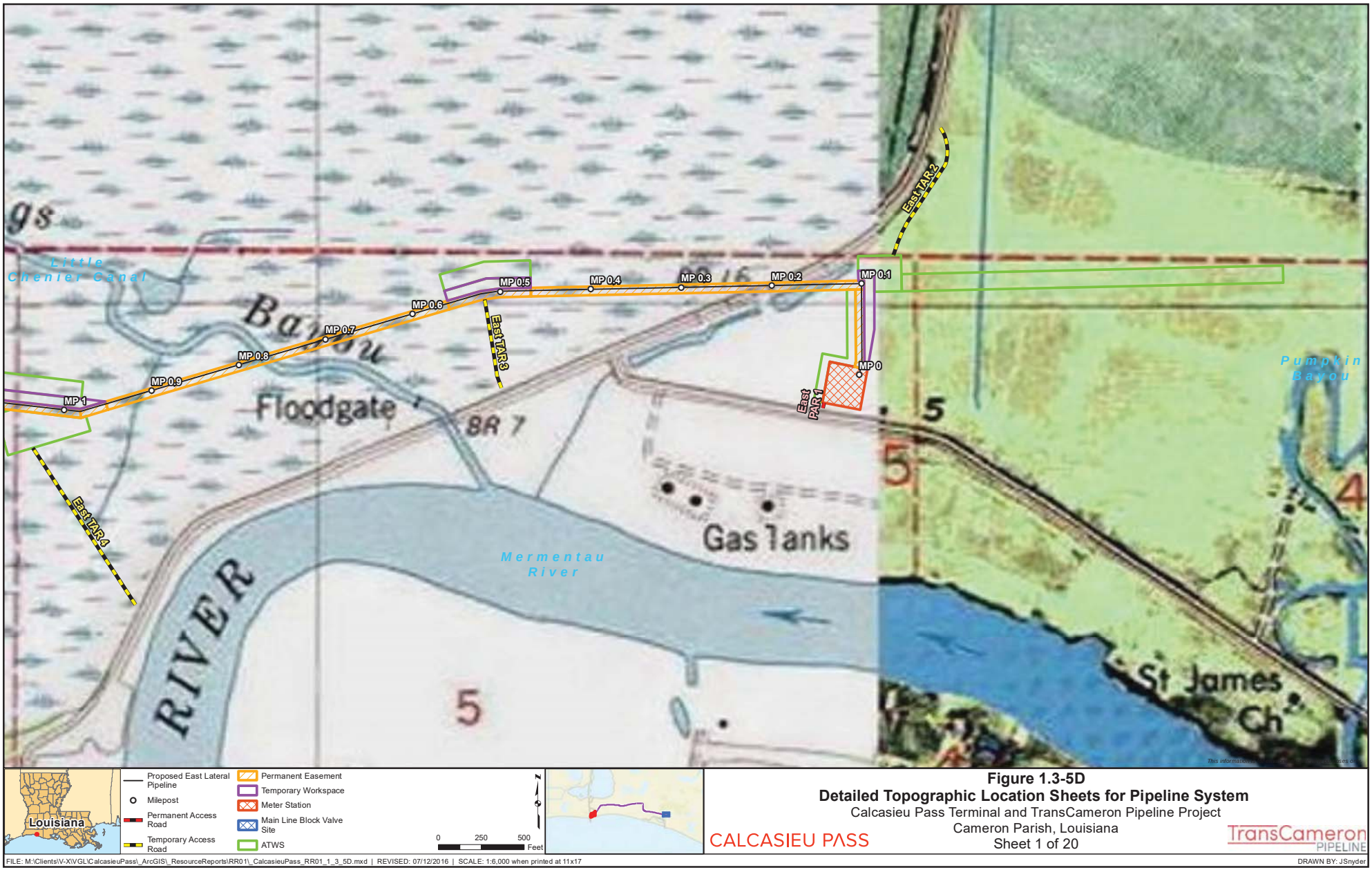

Figure 1.3-5D
Detailed Topographic Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 1 of 20

CALCASIEU PASS

TransCameron PIPELINE

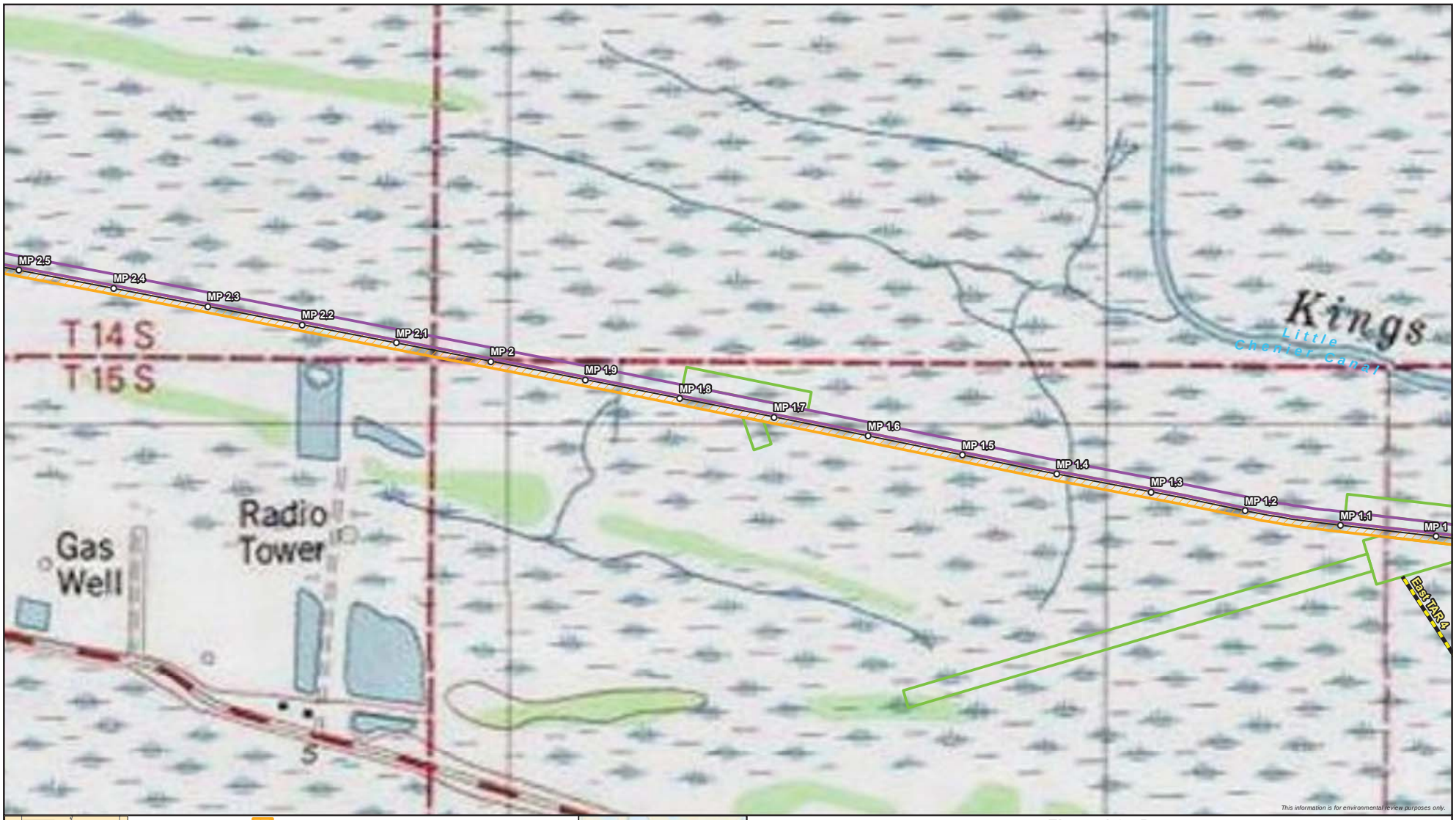

Figure 1.3-5D
Detailed Topographic Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 2 of 20

CALCASIEU PASS

TransCameron PIPELINE

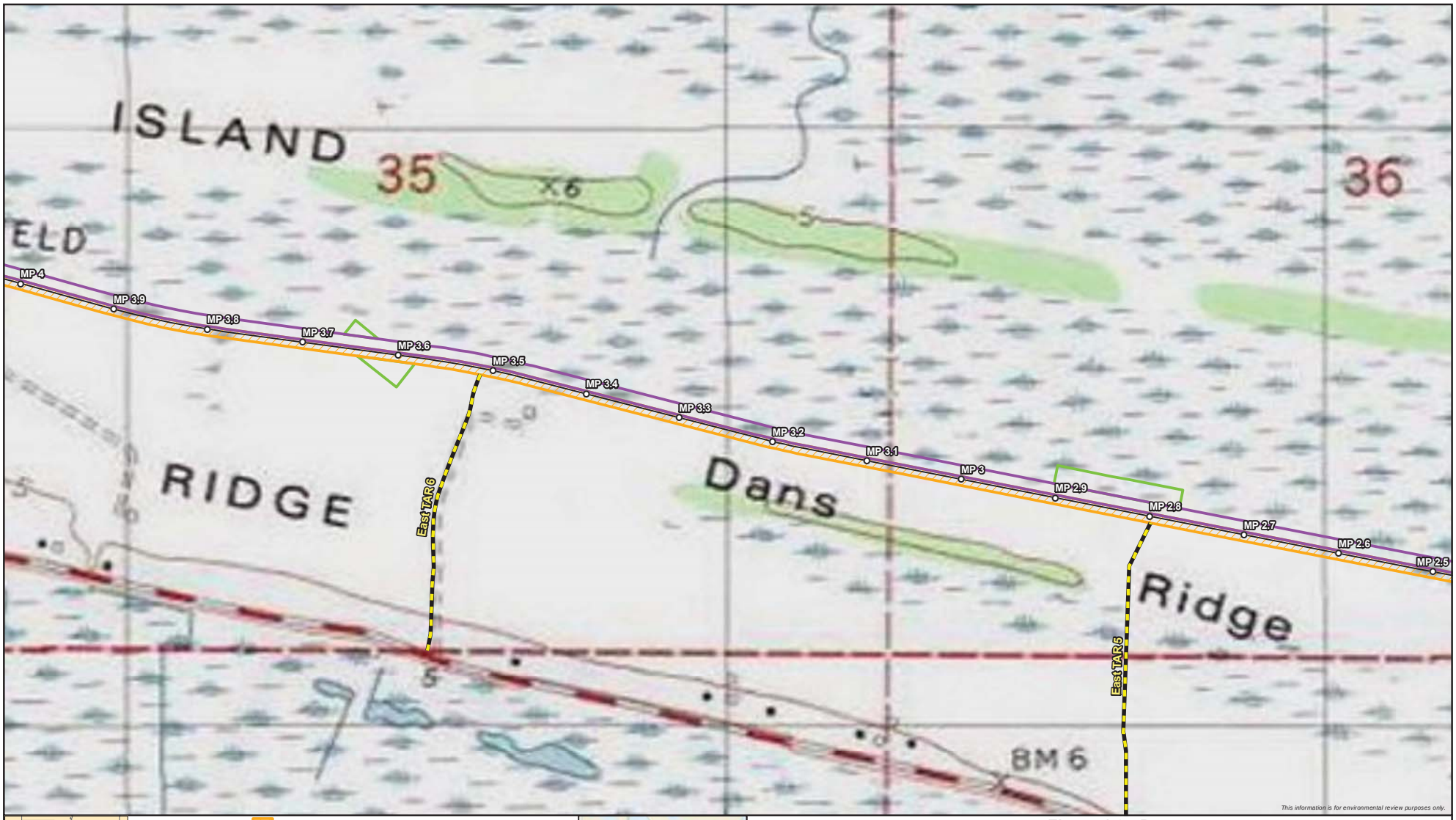

Figure 1.3-5D
Detailed Topographic Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 3 of 20

CALCASIEU PASS

TransCameron PIPELINE

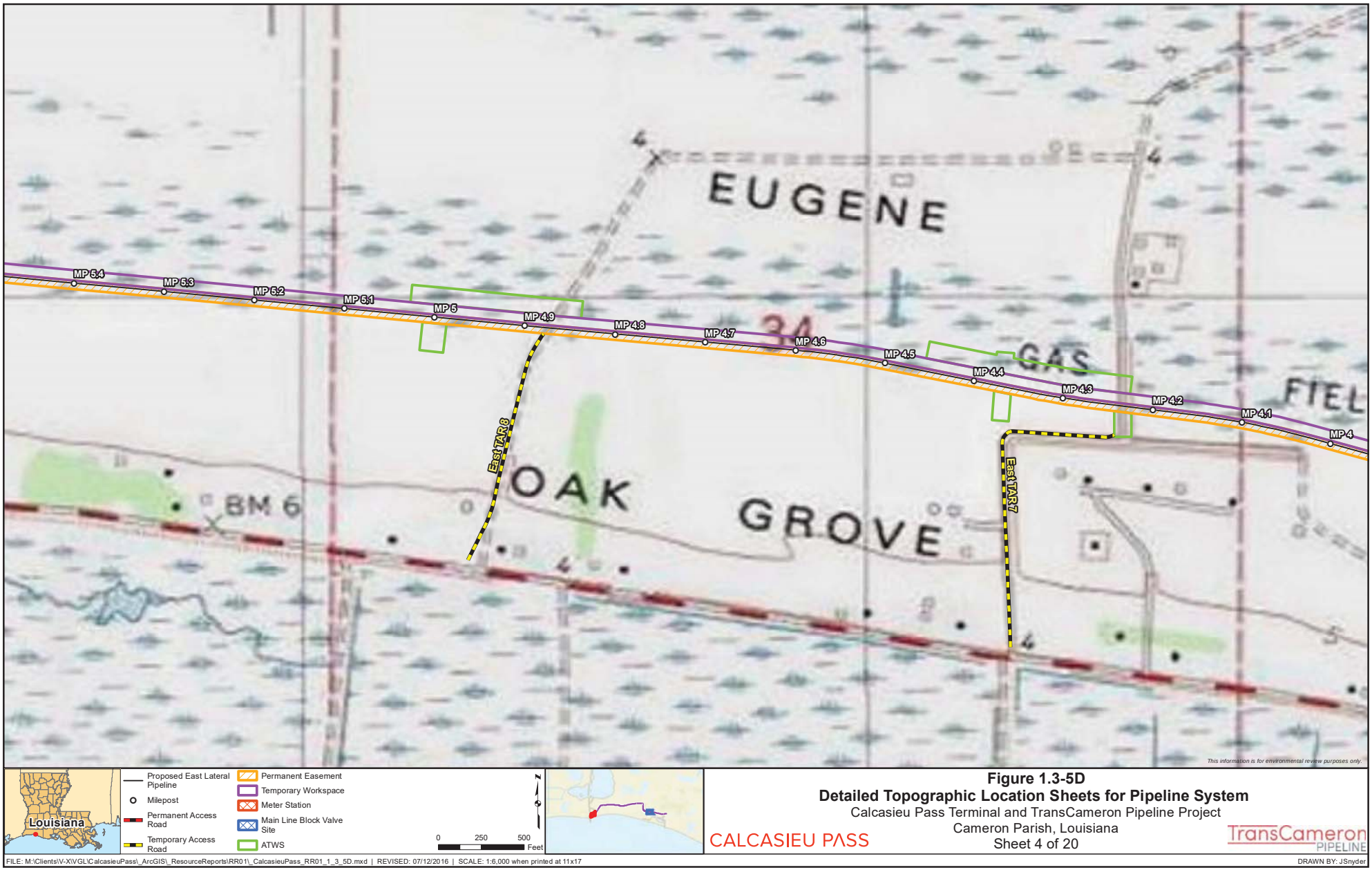

Figure 1.3-5D
Detailed Topographic Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 4 of 20

CALCASIEU PASS

TransCameron PIPELINE

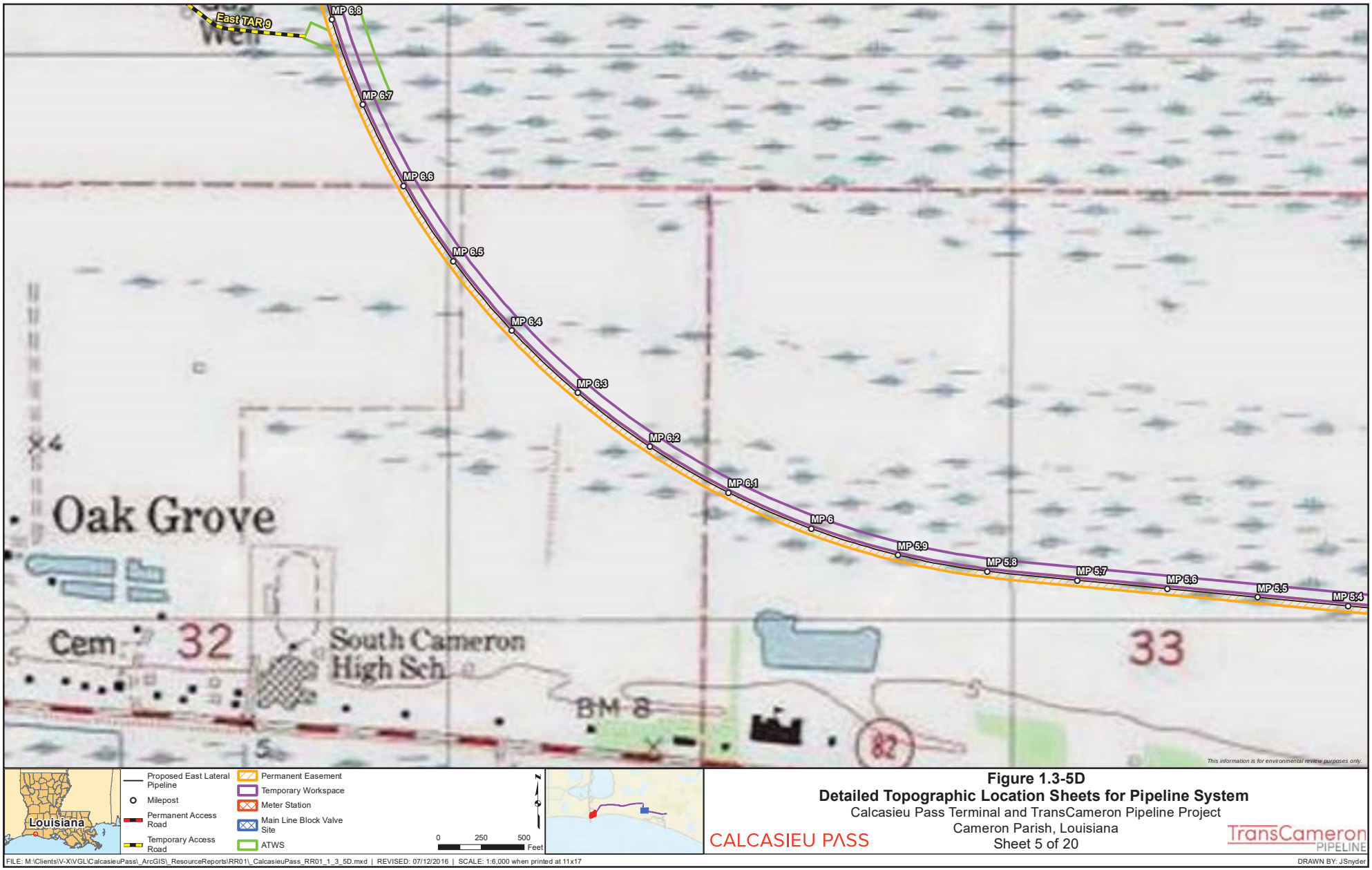

Figure 1.3-5D
Detailed Topographic Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 5 of 20

CALCASIEU PASS

TransCameron PIPELINE

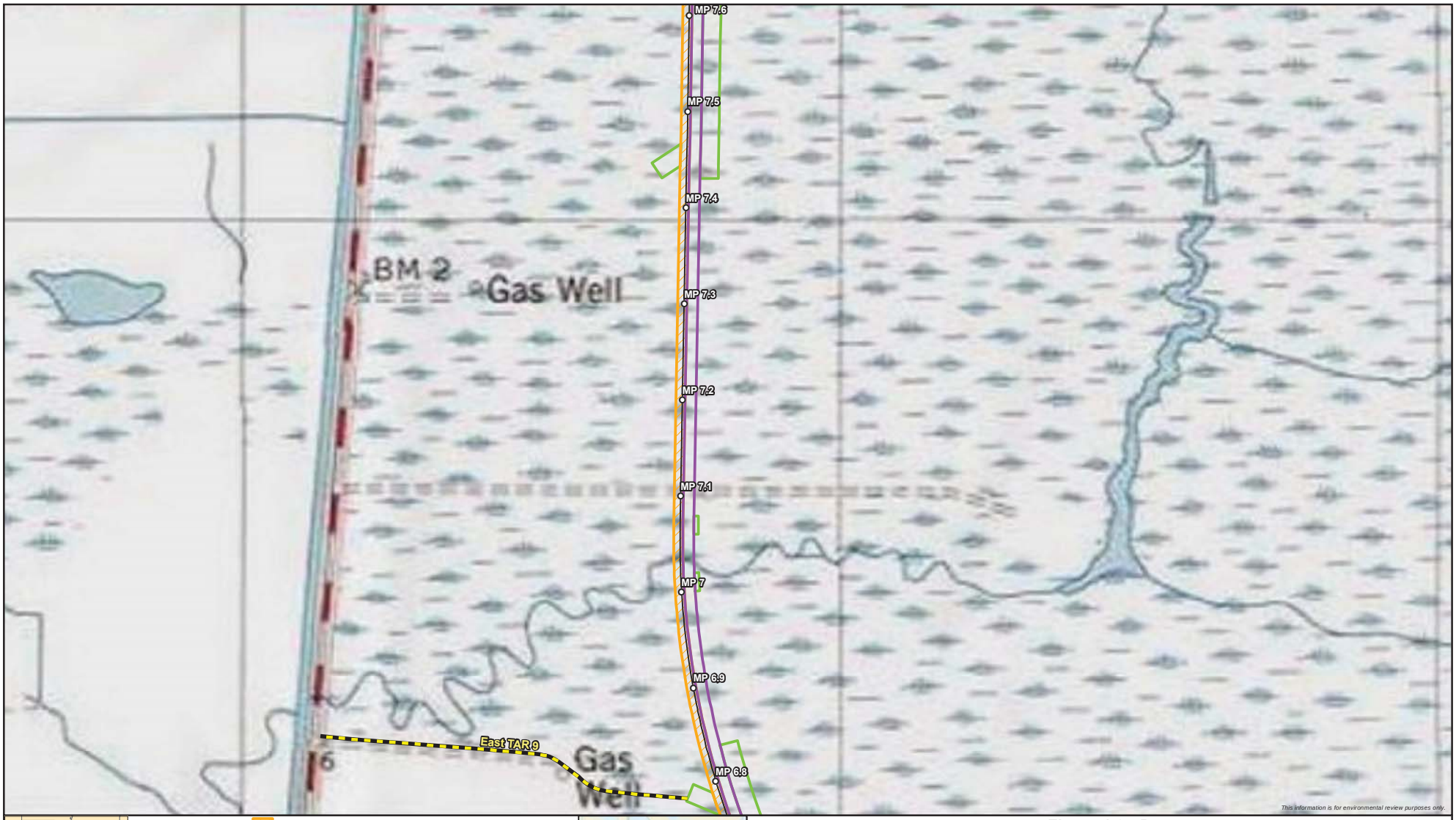

Figure 1.3-5D
Detailed Topographic Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 6 of 20

CALCASIEU PASS

TransCameron PIPELINE

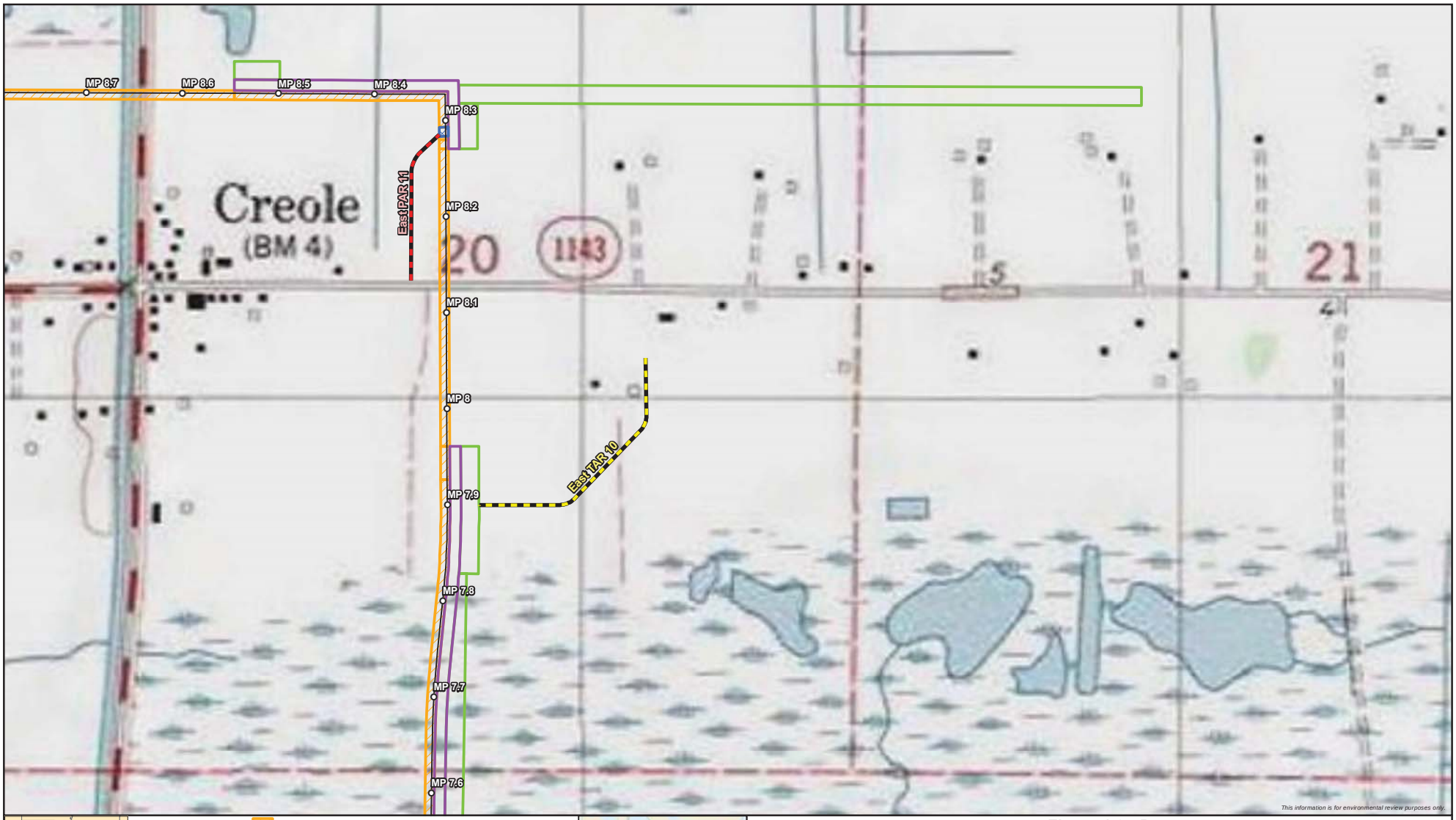

Figure 1.3-5D
Detailed Topographic Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 7 of 20

CALCASIEU PASS

TransCameron PIPELINE

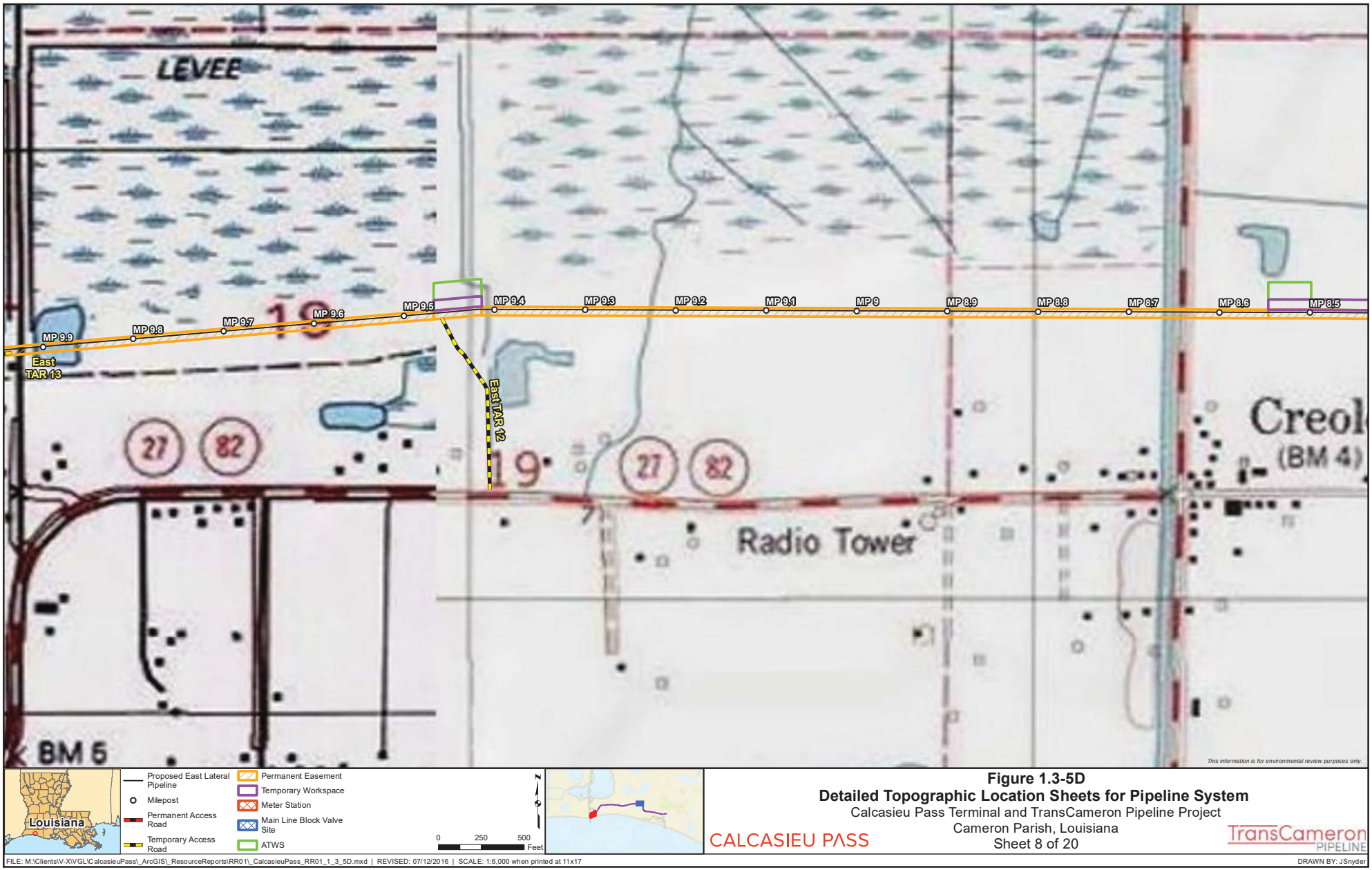

Figure 1.3-5D
Detailed Topographic Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 8 of 20

CALCASIEU PASS

TransCameron PIPELINE

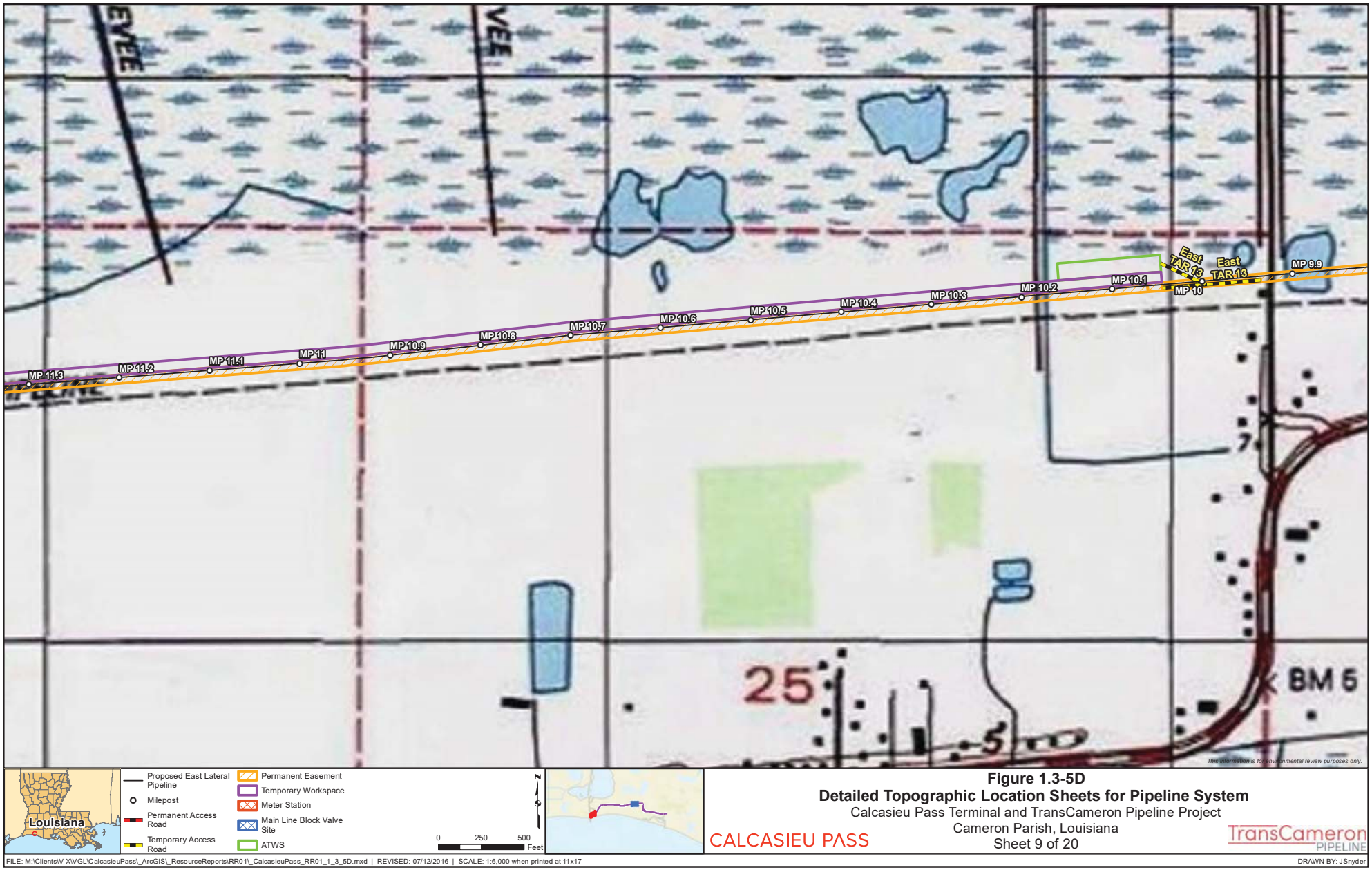

Figure 1.3-5D
Detailed Topographic Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 9 of 20

CALCASIEU PASS

TransCameron PIPELINE

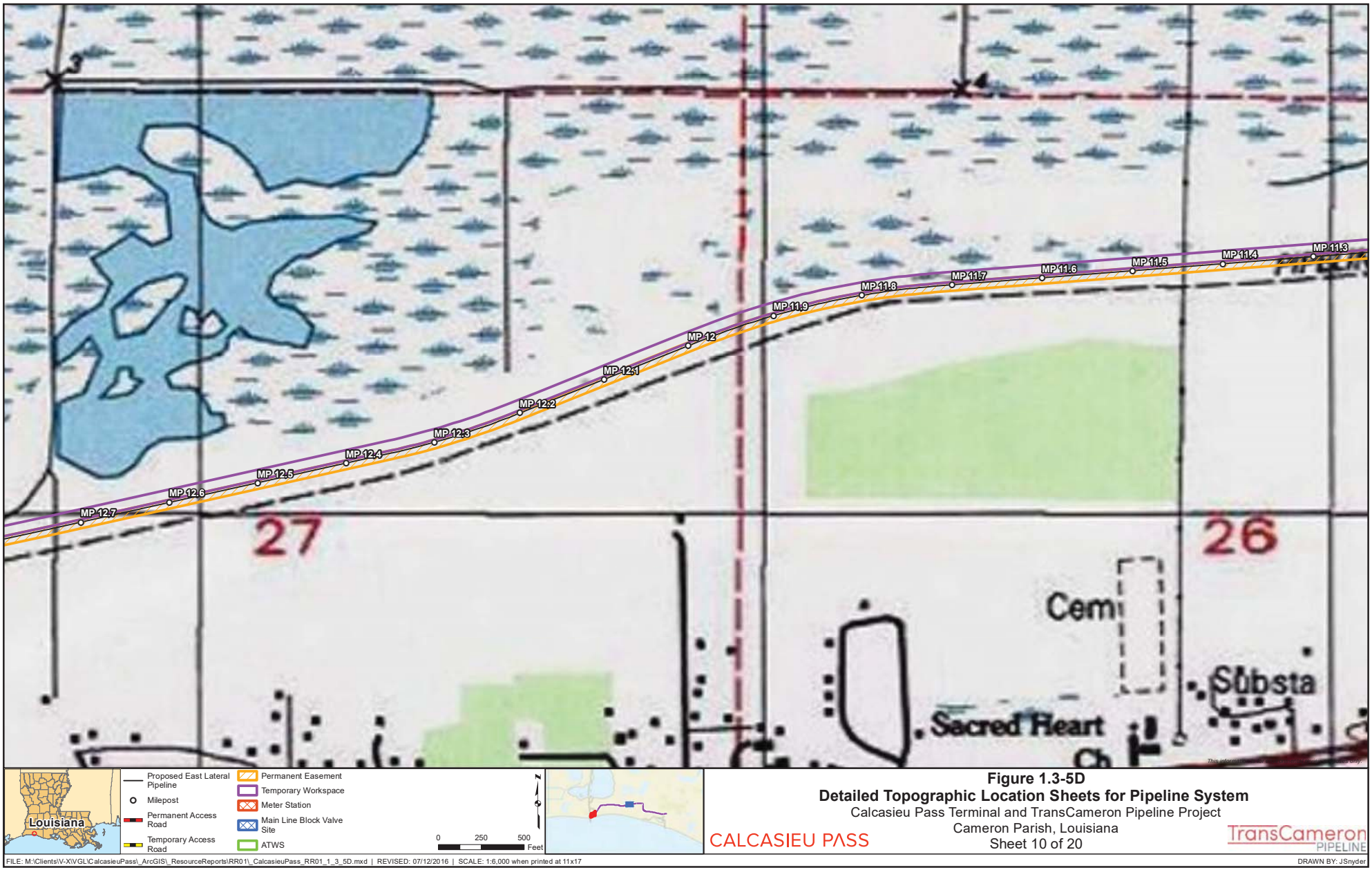

Figure 1.3-5D
Detailed Topographic Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 10 of 20

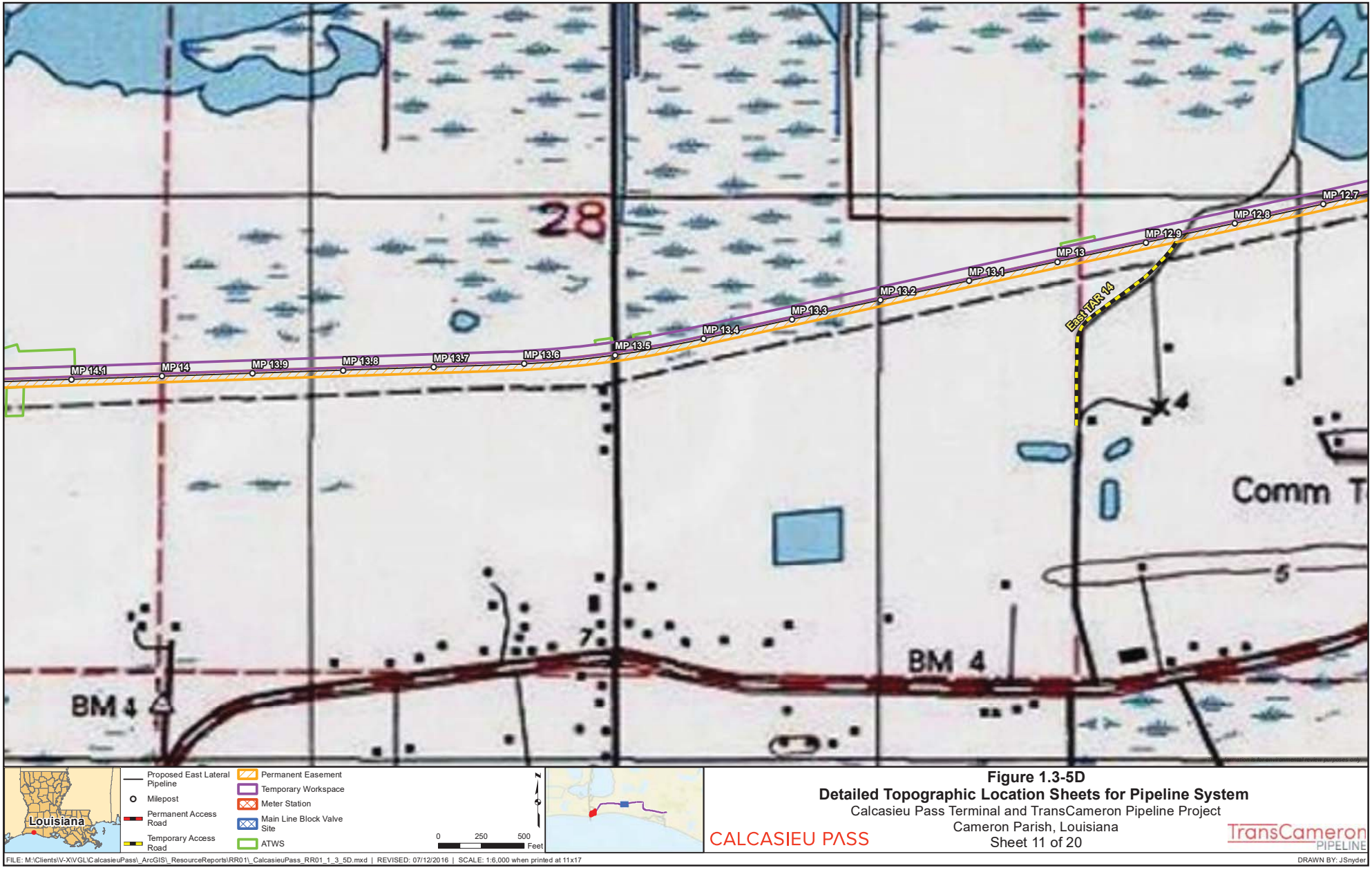

Figure 1.3-5D
Detailed Topographic Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 11 of 20

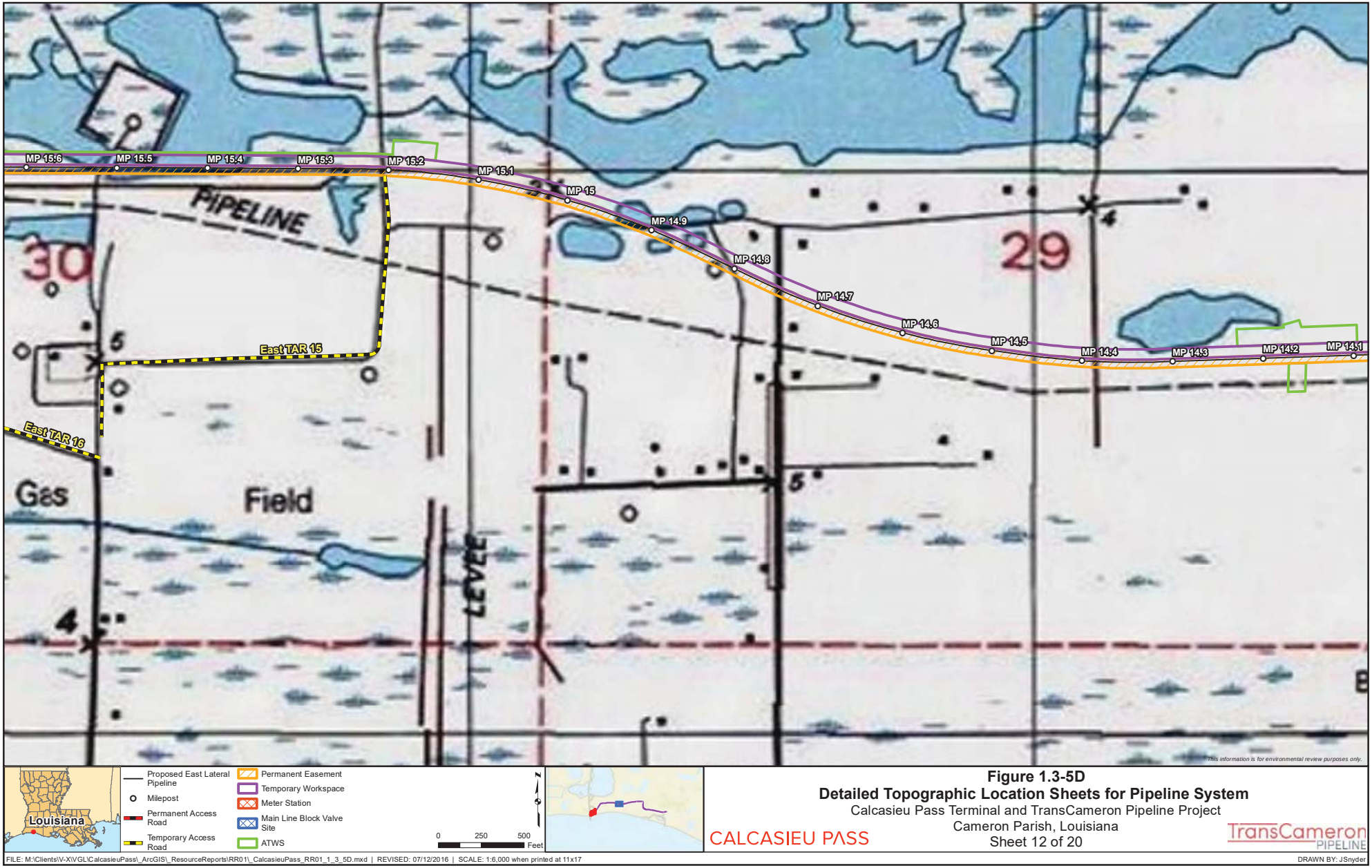

Figure 1.3-5D
Detailed Topographic Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
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Sheet 12 of 20

CALCASIEU PASS

TransCameron PIPELINE

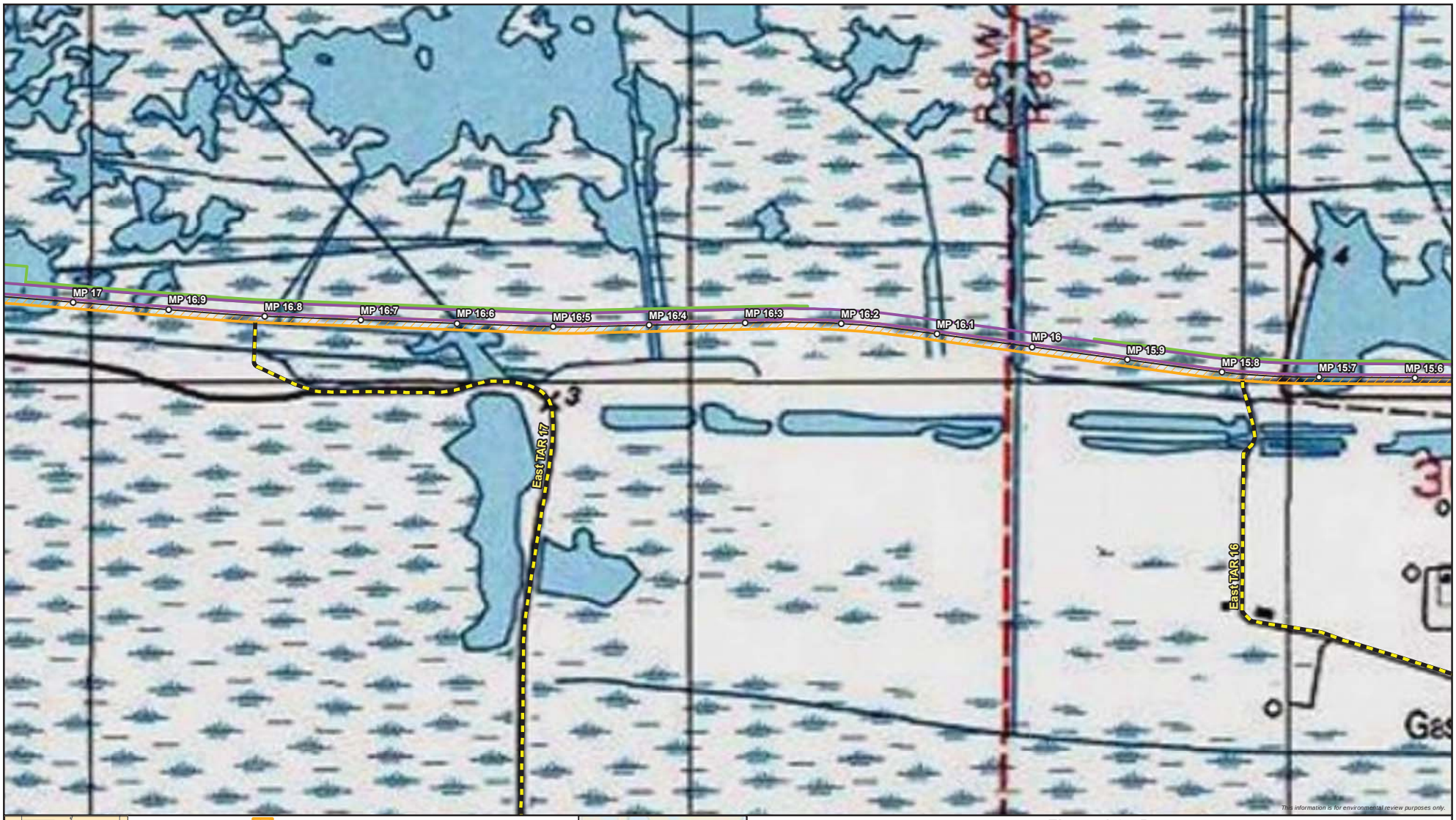

Figure 1.3-5D
Detailed Topographic Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
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Sheet 13 of 20

CALCASIEU PASS

TransCameron PIPELINE

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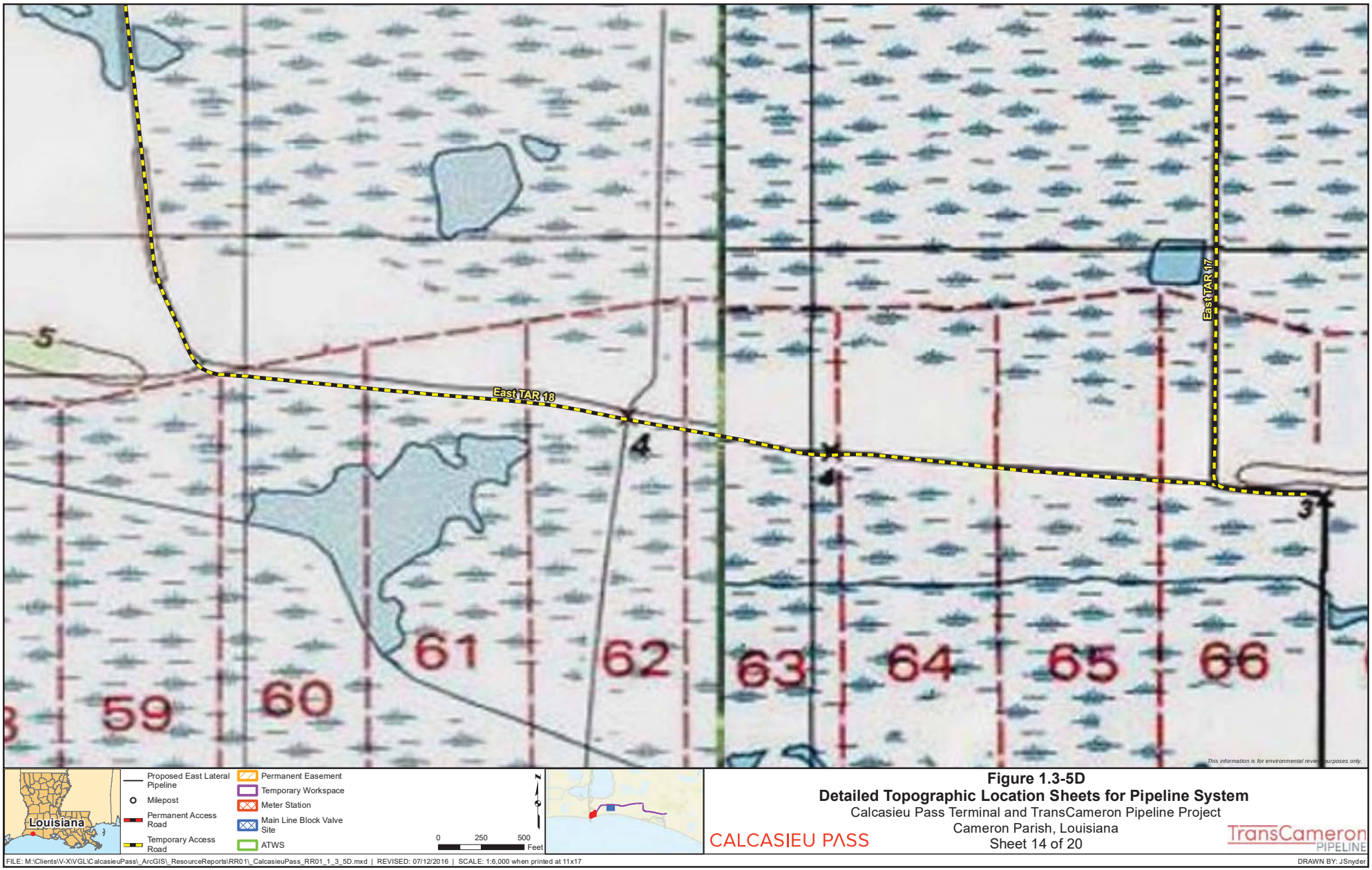

Figure 1.3-5D
Detailed Topographic Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 14 of 20

CALCASIEU PASS

TransCameron PIPELINE

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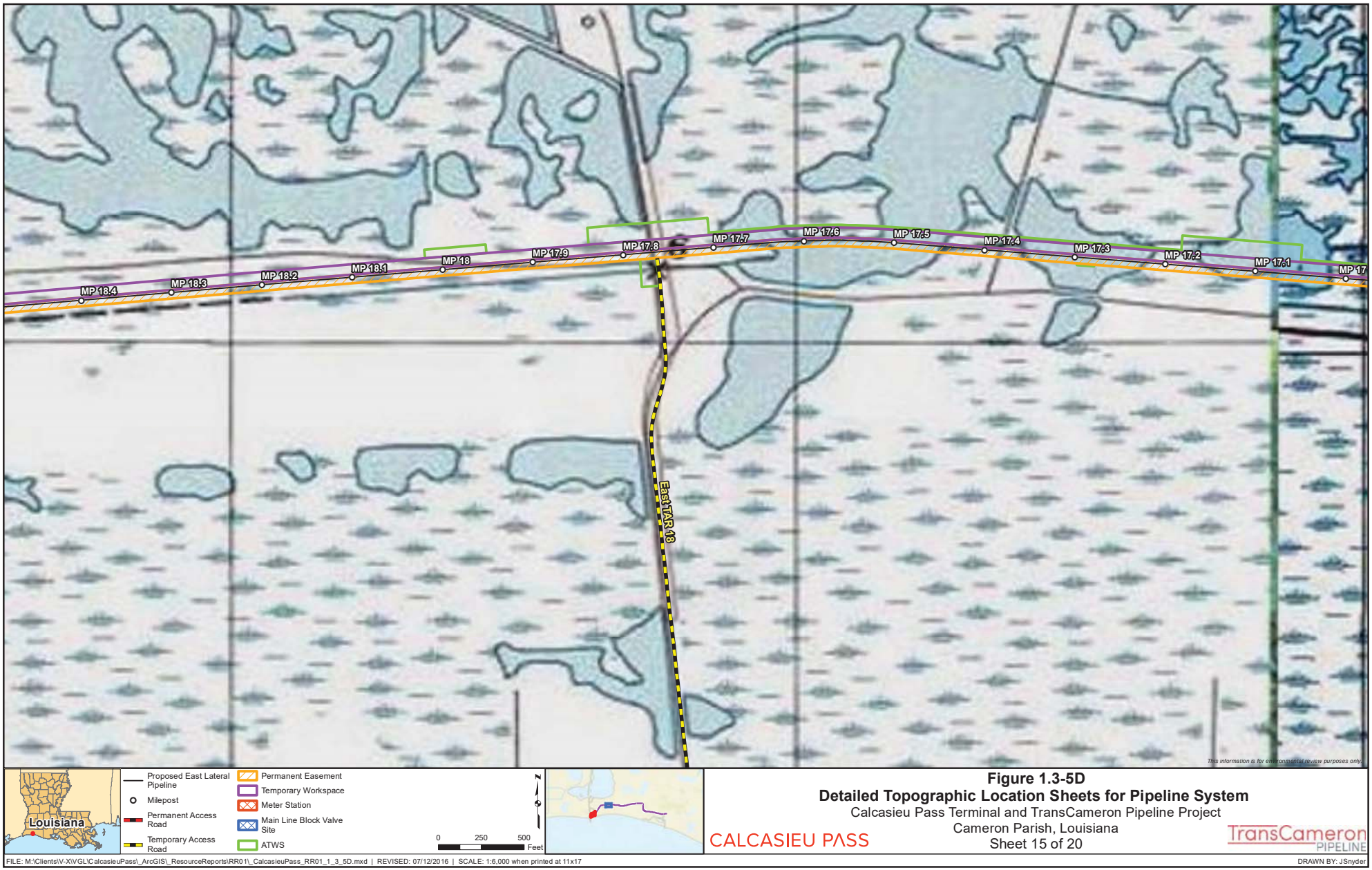

Figure 1.3-5D
Detailed Topographic Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 15 of 20

CALCASIEU PASS

TransCameron PIPELINE

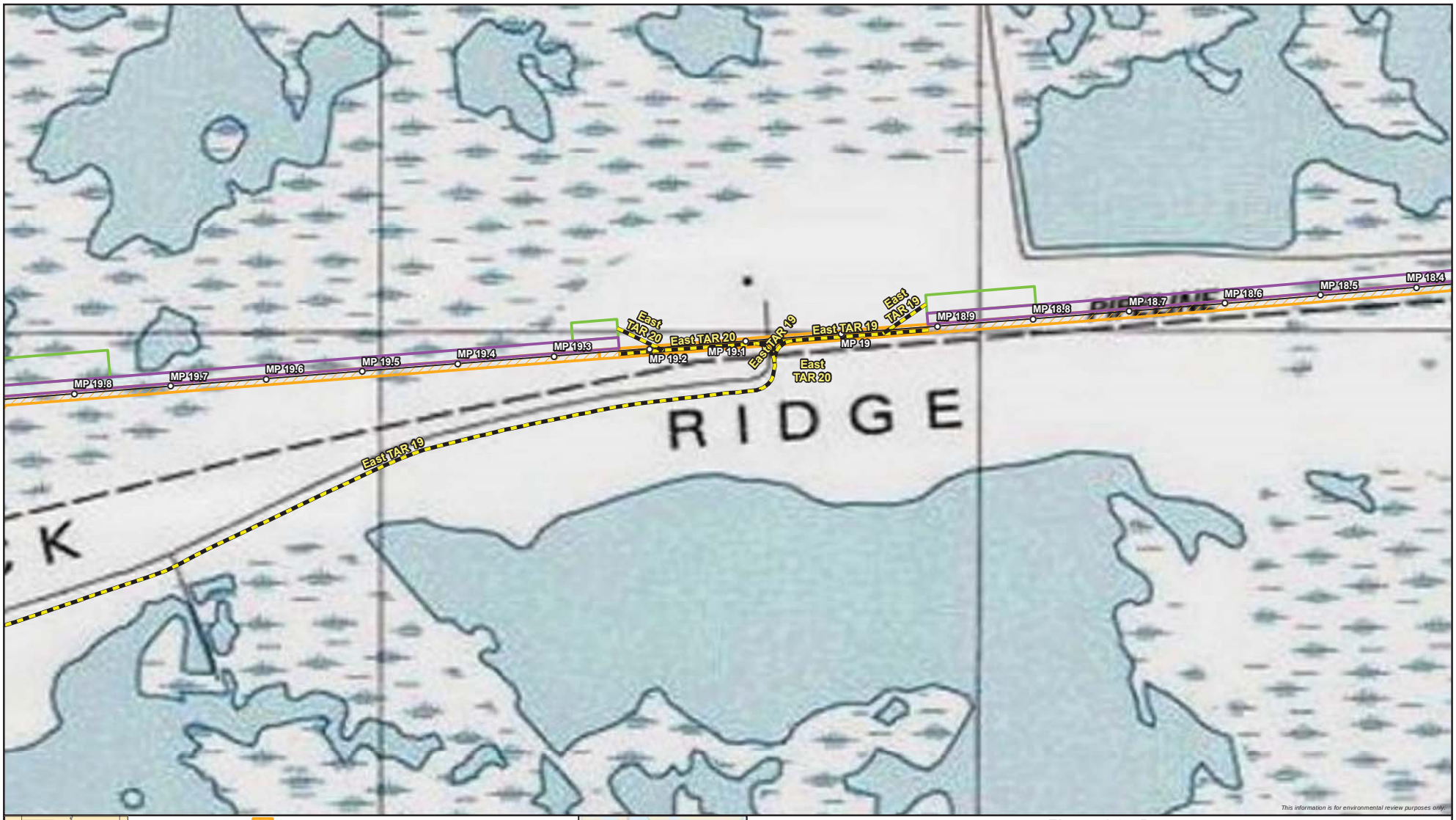

Figure 1.3-5D
Detailed Topographic Location Sheets for Pipeline System
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Cameron Parish, Louisiana
Sheet 16 of 20

CALCASIEU PASS

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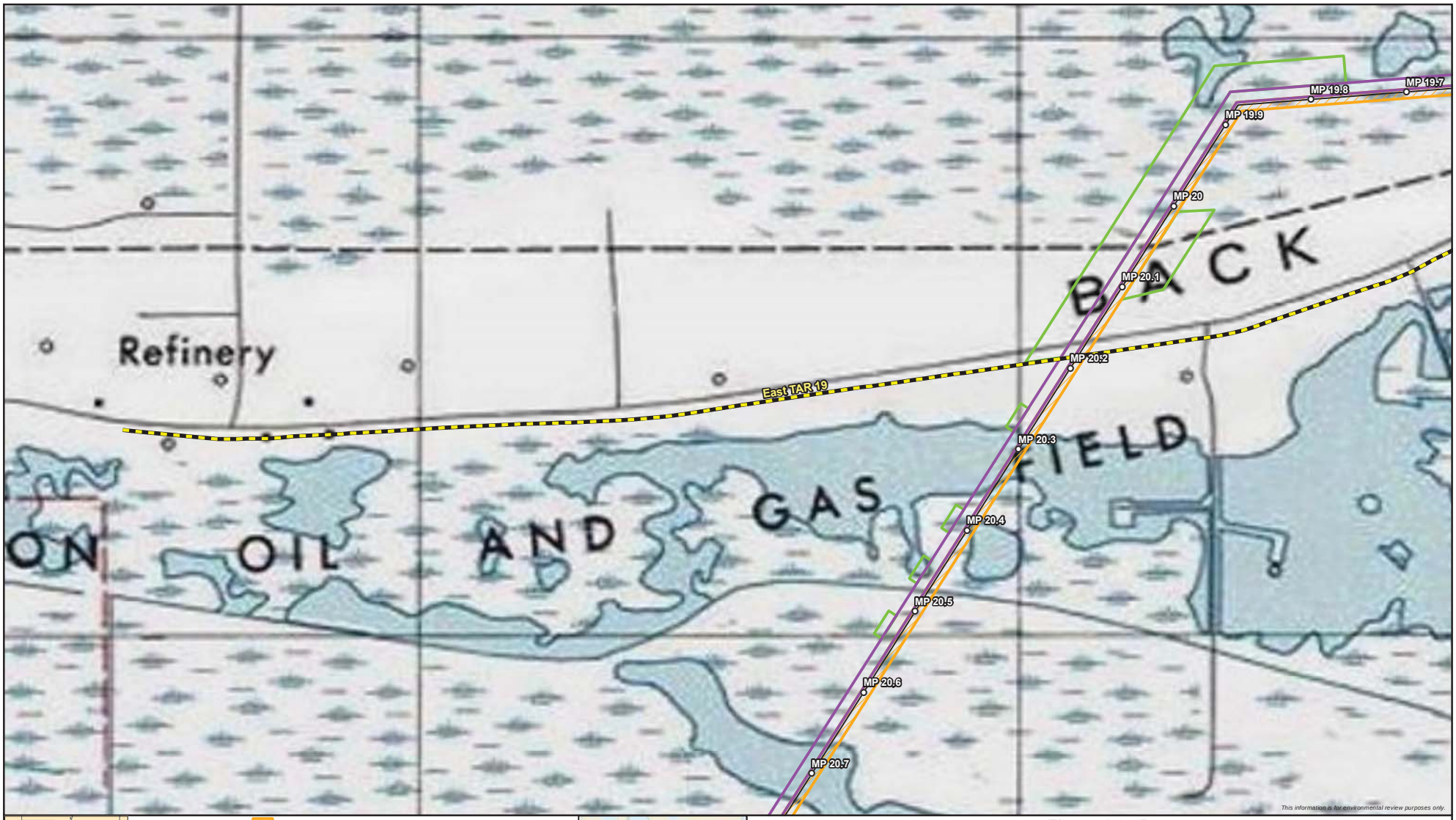

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Detailed Topographic Location Sheets for Pipeline System
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Cameron Parish, Louisiana
Sheet 17 of 20

CALCASIEU PASS

TransCameron PIPELINE

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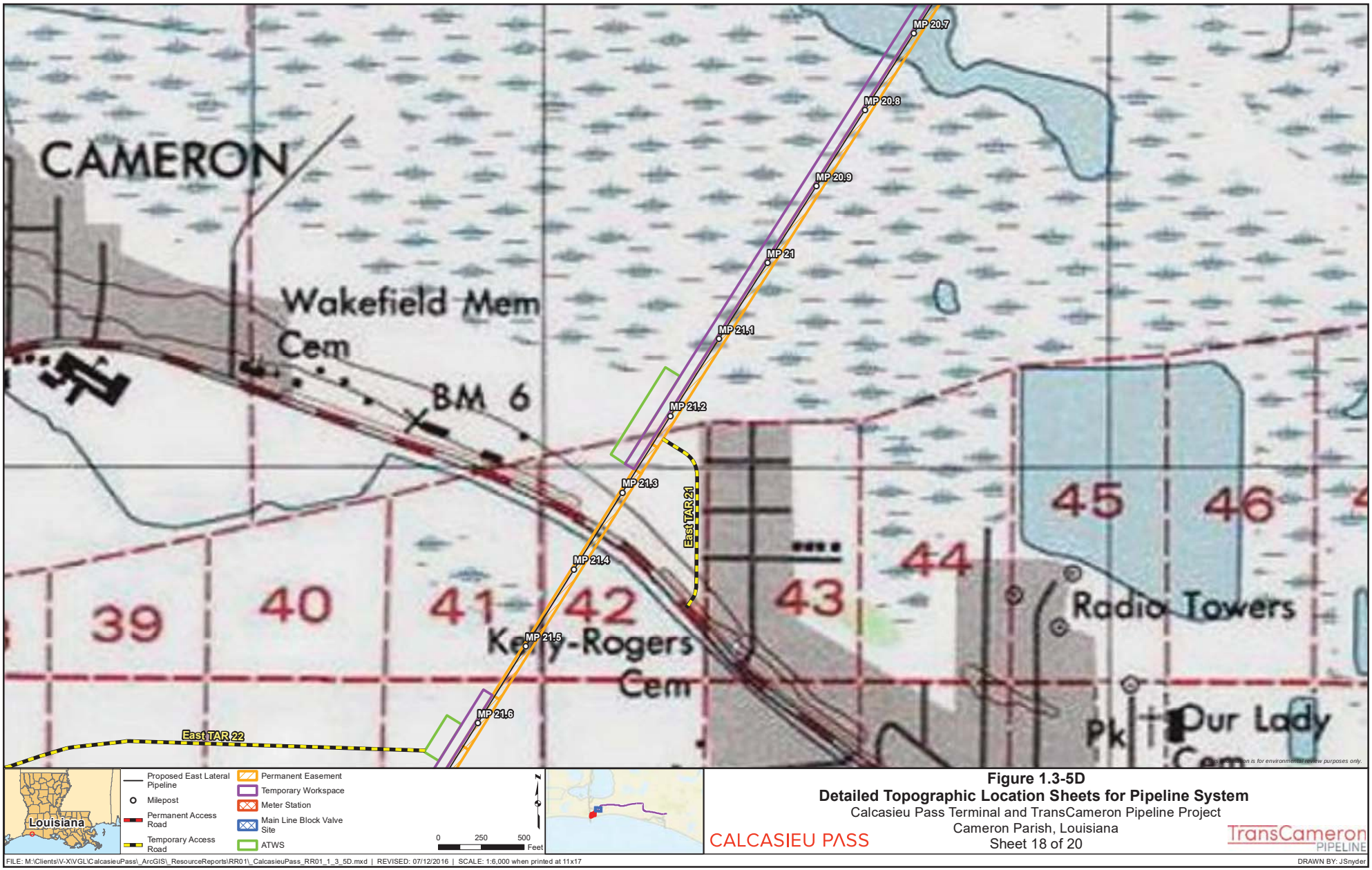

Figure 1.3-5D
Detailed Topographic Location Sheets for Pipeline System
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Sheet 18 of 20

CALCASIEU PASS

TransCameron PIPELINE

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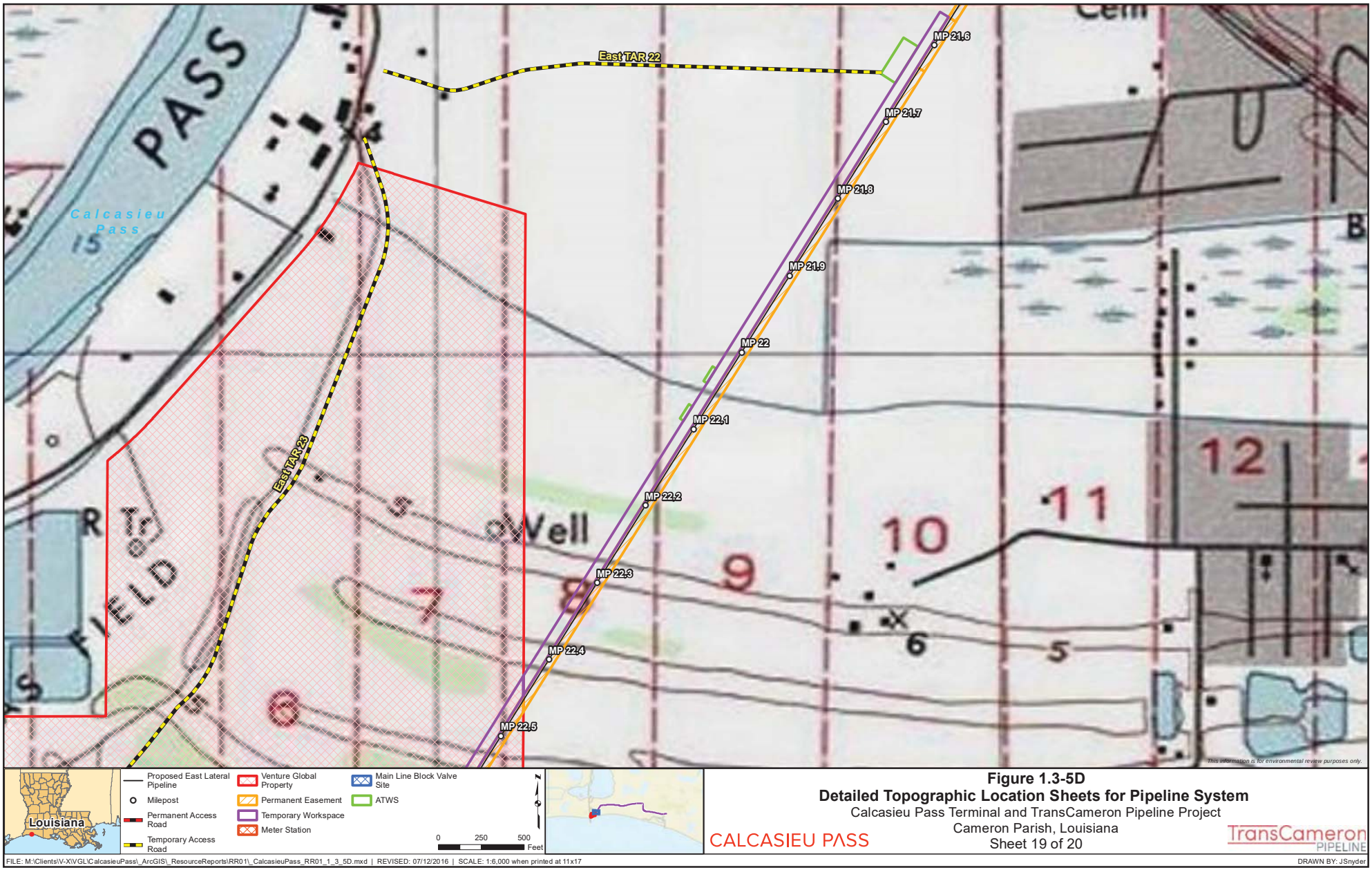

Figure 1.3-5D
Detailed Topographic Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 19 of 20

CALCASIEU PASS

TransCameron PIPELINE

FILE: M:\Clients\V-X\VGL\CalcasieuPass_ArcGIS_ResourceReports\RR01_CalcasieuPass_RR01_1_3_5D.mxd | REVISED: 07/12/2016 | SCALE: 1:6,000 when printed at 11x17

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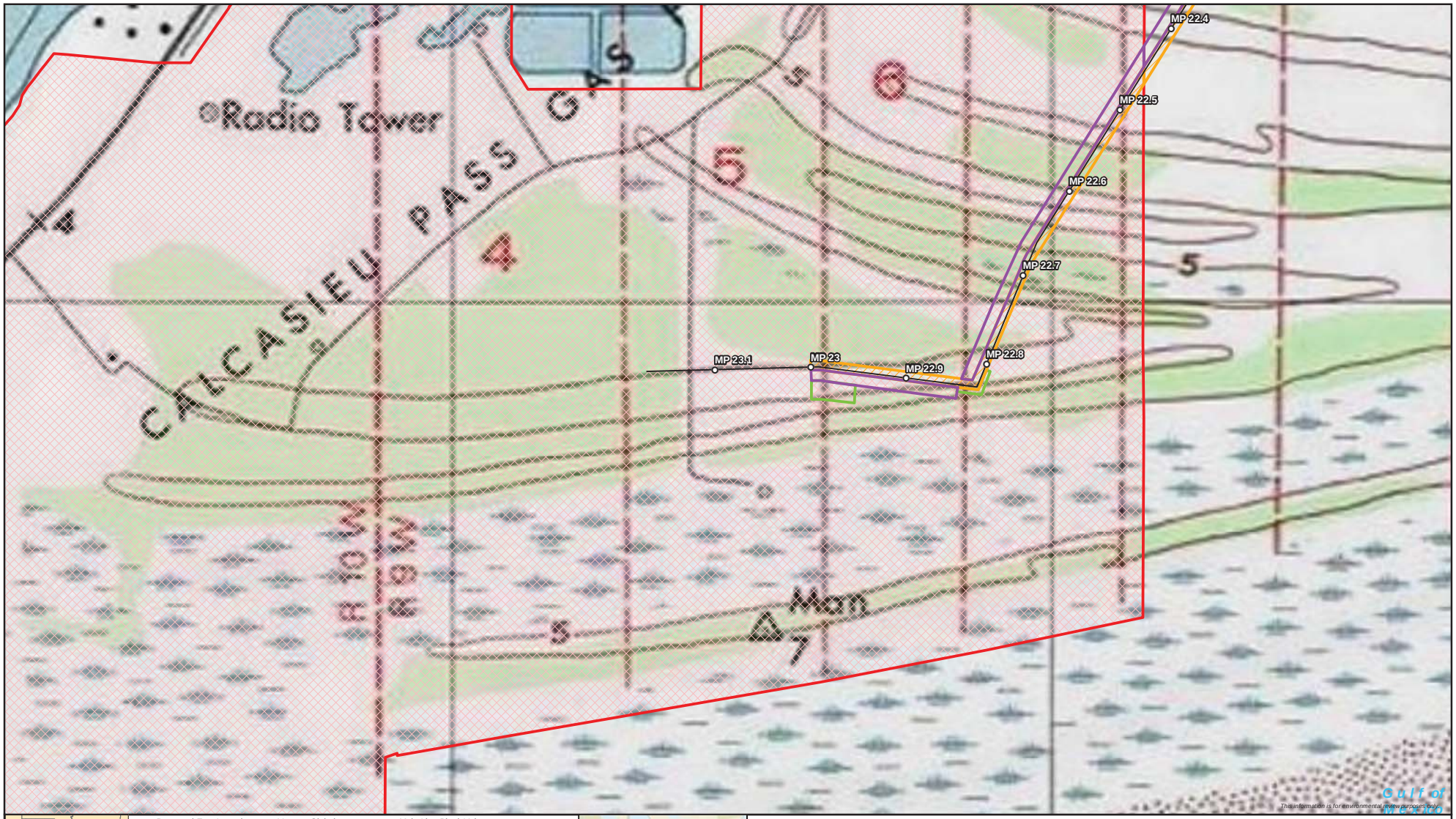

Figure 1.3-5D
Detailed Topographic Location Sheets for Pipeline System
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana
Sheet 20 of 20

CALCASIEU PASS

TransCameron PIPELINE

FILE: M:\Clients\V-X\VGL\CalcasieuPass_ArcGIS_ResourceReports\RR01_CalcasieuPass_RR01_1_3_5D.mxd | REVISED: 08/10/2018 | SCALE: 1:6,000 when printed at 11x17

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APPENDIX B-3

PIPELINE ACCESS ROADS AND TYPICAL ACCESS ROAD PROFILE DRAWINGS

TRANSCAMERON PIPELINE, LLC

CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT

EAST LATERAL ACCESS ROADS

CAMERON PARISH, LOUISANA

SHEET NO.	DRAWING NUMBER	REV.	TITLE
1	TCPPL-M-502	A	COVER SHEET
2	TCPPL-M-502.1	A	LOCATION MAP
3	TCPPL-M-502.2	A	EAST LATERAL ACCESS ROADS; PERMANENT ACCESS ROAD #1
4	TCPPL-M-502.3	A	EAST LATERAL ACCESS ROADS; TEMPORARY ACCESS ROAD #2
5	TCPPL-M-502.4	A	EAST LATERAL ACCESS ROADS; TEMPORARY ACCESS ROAD #3
6	TCPPL-M-502.5	A	EAST LATERAL ACCESS ROADS; TEMPORARY ACCESS ROAD #4
7	TCPPL-M-502.6	A	EAST LATERAL ACCESS ROADS; TEMPORARY ACCESS ROAD #5
8	TCPPL-M-502.7	A	EAST LATERAL ACCESS ROADS; TEMPORARY ACCESS ROAD #6
9	TCPPL-M-502.8	A	EAST LATERAL ACCESS ROADS; TEMPORARY ACCESS ROAD #7
10	TCPPL-M-502.9	A	EAST LATERAL ACCESS ROADS; TEMPORARY ACCESS ROAD #8
11	TCPPL-M-502.10	A	EAST LATERAL ACCESS ROADS; TEMPORARY ACCESS ROAD #9
12	TCPPL-M-502.11	A	EAST LATERAL ACCESS ROADS; TEMPORARY ACCESS ROAD #10
13	TCPPL-M-502.12A	A	EAST LATERAL ACCESS ROADS; PERMANENT ACCESS ROAD #11
14	TCPPL-M-502.12B	A	EAST LATERAL ACCESS ROADS; TEMPORARY ACCESS ROAD #11
15	TCPPL-M-502.13	A	EAST LATERAL ACCESS ROADS; TEMPORARY ACCESS ROAD #12
16	TCPPL-M-502.14	A	EAST LATERAL ACCESS ROADS; TEMPORARY ACCESS ROAD #13
17	TCPPL-M-502.15	A	EAST LATERAL ACCESS ROADS; TEMPORARY ACCESS ROAD #14
18	TCPPL-M-502.16	A	EAST LATERAL ACCESS ROADS; TEMPORARY ACCESS ROAD #15
19	TCPPL-M-502.17	A	EAST LATERAL ACCESS ROADS; TEMPORARY ACCESS ROAD #16
20	TCPPL-M-502.18A	A	EAST LATERAL ACCESS ROADS; TEMPORARY ACCESS ROAD #17
21	TCPPL-M-502.18B	A	EAST LATERAL ACCESS ROADS; TEMPORARY ACCESS ROAD #17
22	TCPPL-M-502.19A	A	EAST LATERAL ACCESS ROADS; TEMPORARY ACCESS ROAD #18
23	TCPPL-M-502.19B	A	EAST LATERAL ACCESS ROADS; TEMPORARY ACCESS ROAD #18
24	TCPPL-M-502.19C	A	EAST LATERAL ACCESS ROADS; TEMPORARY ACCESS ROAD #18
25	TCPPL-M-502.20A	A	EAST LATERAL ACCESS ROADS; TEMPORARY ACCESS ROAD #19
26	TCPPL-M-502.20B	A	EAST LATERAL ACCESS ROADS; TEMPORARY ACCESS ROAD #19
27	TCPPL-M-502.20C	A	EAST LATERAL ACCESS ROADS; TEMPORARY ACCESS ROAD #19
28	TCPPL-M-502.20D	A	EAST LATERAL ACCESS ROADS; TEMPORARY ACCESS ROAD #19
29	TCPPL-M-502.21	A	EAST LATERAL ACCESS ROADS; TEMPORARY ACCESS ROAD #20
30	TCPPL-M-502.22	A	EAST LATERAL ACCESS ROADS; TEMPORARY ACCESS ROAD #21
31	TCPPL-M-502.23	A	EAST LATERAL ACCESS ROADS; TEMPORARY ACCESS ROAD #22
32	TCPPL-M-502.24A	A	EAST LATERAL ACCESS ROADS; TEMPORARY ACCESS ROAD #23
33	TCPPL-M-502.25B	A	EAST LATERAL ACCESS ROADS; TEMPORARY ACCESS ROAD #23

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COVER SHEET
CALCASIEU PASS TERMINAL AND
TRANSCAMERON PIPELINE PROJECT
EAST LATERAL ACCESS ROADS

CAMERON PARISH LOUISIANA

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02/03/16	NTS	AS		TCPPL-M-502	1	A

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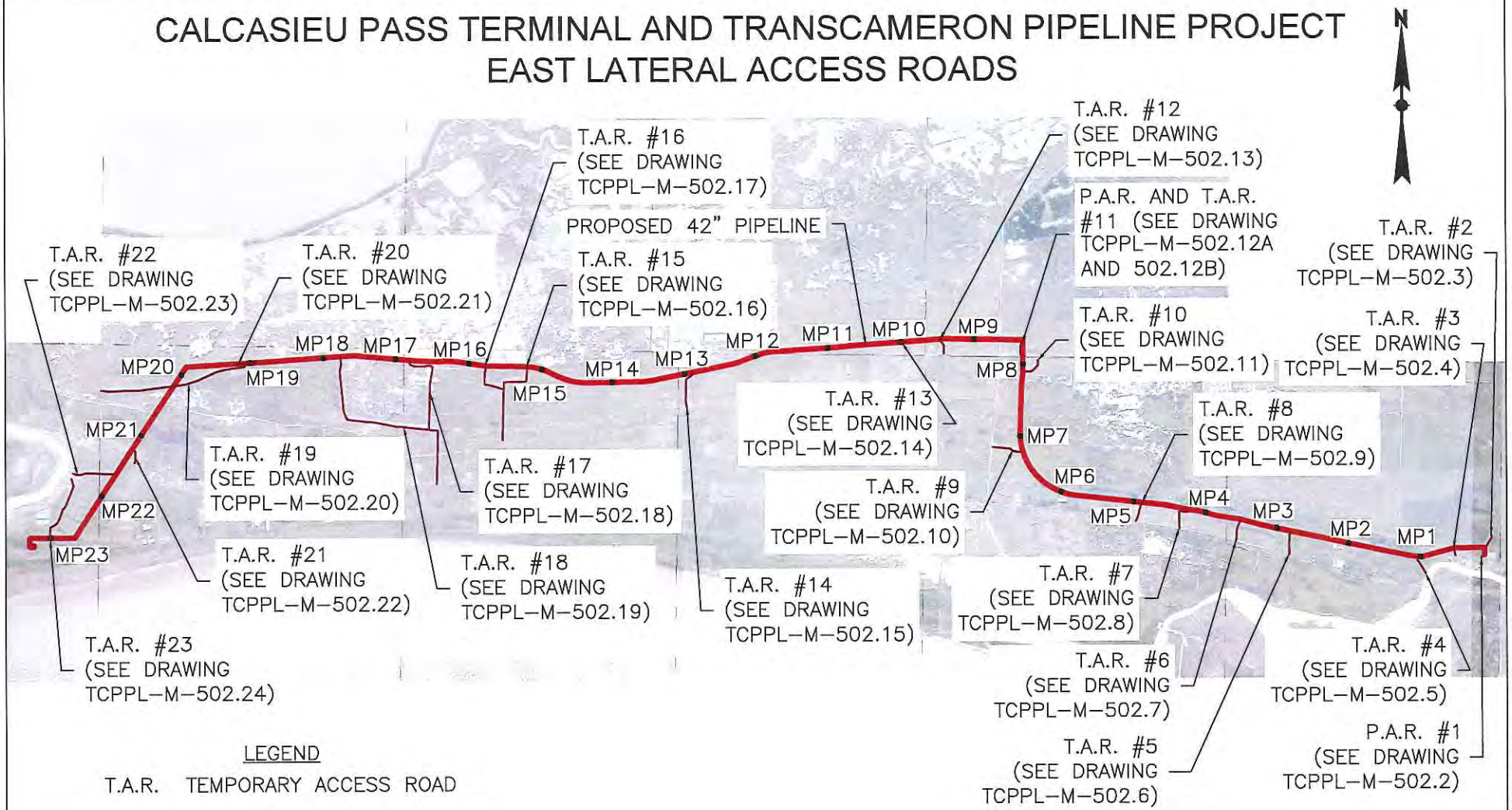
CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT
EAST LATERAL ACCESS ROADS



LEGEND

T.A.R. TEMPORARY ACCESS ROAD

P.A.R. PERMANENT ACCESS ROAD

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LOCATION MAP
CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT
EAST LATERAL ACCESS ROADS

CAMERON PARISH LOUISIANA

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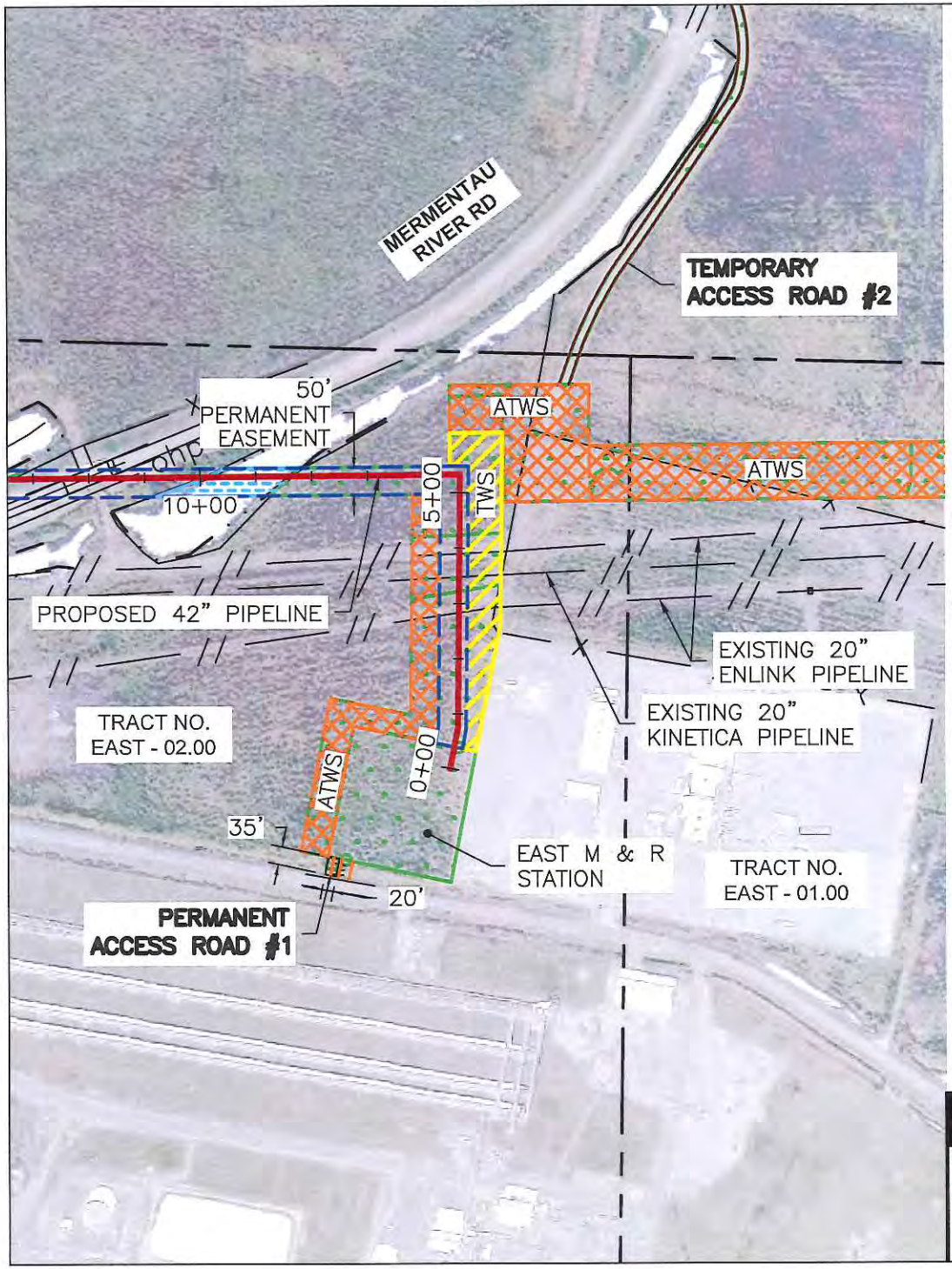

N

0 300 600

1" = 300'

ACCESS ROAD NAME	ACCESS ROAD #1
ACCESS ROAD CLASS	PERMANENT
ACCESS ROAD LENGTH (SQ)	35
ACCESS ROAD WIDTH (SQ)	20
ACCESS ROAD AREA (SQ FT)	655
ACCESS ROAD AREA (AC)	0.02
ACCESS ROAD AREA DISTURBED (SQ FT)	655
ACCESS ROAD AREA DISTURBED (AC)	0.02
ACCESS ROAD PERMANENT FILL (CU FT)	327.50
ACCESS ROAD TEMPORARY FILL (CU FT)	0.00
ACCESS ROAD IMPROVEMENTS	CURRENTLY UNDISTURBED. REQUIRES 20 FOOT WIDE OF 6 INCH AGGREGATE FOR ENTIRE LENGTH.

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EAST LATERAL ACCESS ROADS

CAMERON PARISH LOUISIANA

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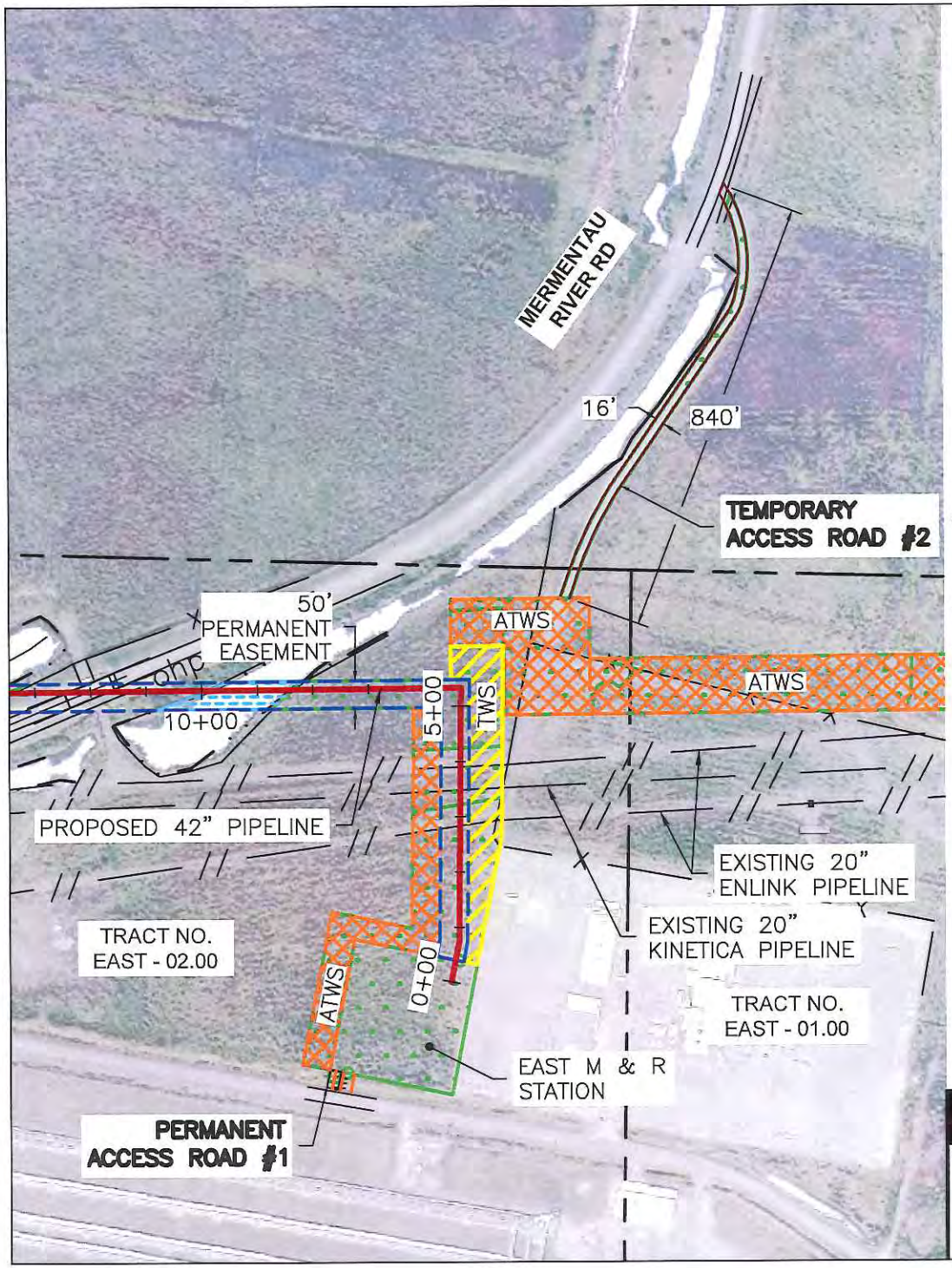

N

0 300 600

1" = 300'

ACCESS ROAD NAME	ACCESS ROAD #2
ACCESS ROAD CLASS	TEMPORARY
ACCESS ROAD LENGTH (SQ)	840
ACCESS ROAD WIDTH (SQ)	16
ACCESS ROAD AREA (SQ FT)	13,375
ACCESS ROAD AREA (AC)	0.31
ACCESS ROAD AREA DISTURBED (SQ FT)	13,375
ACCESS ROAD AREA DISTURBED (AC)	0.31
ACCESS ROAD PERMANENT FILL (CU FT)	0.00
ACCESS ROAD TEMPORARY FILL (CU FT)	11,145.83
ACCESS ROAD IMPROVEMENTS	CURRENTLY 12 FOOT WIDE. REQUIRES MATS 16 FOOT WIDE FOR ENTIRE LENGTH.

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EAST LATERAL ACCESS ROADS

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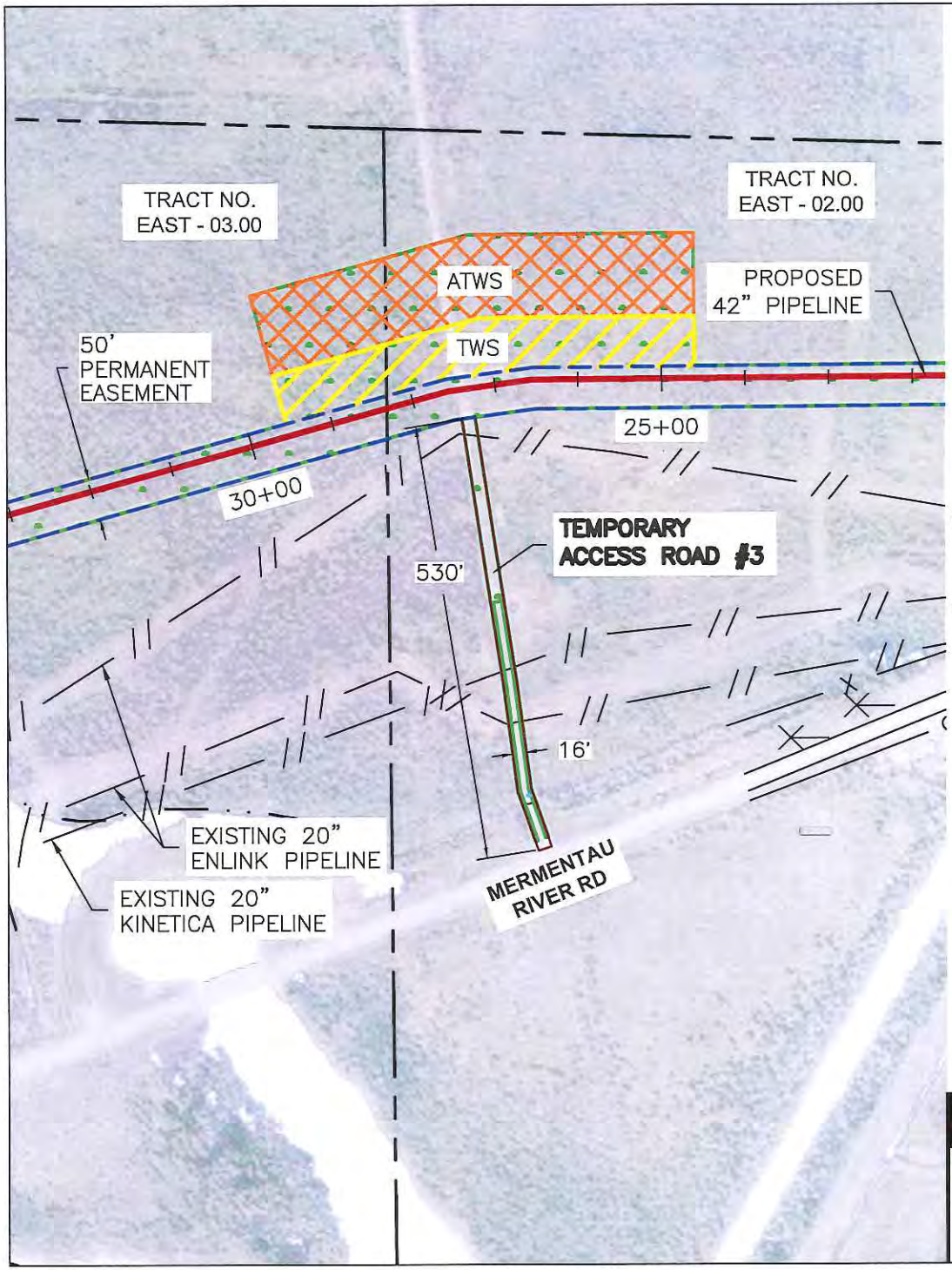

N

0 200 400

1" = 200'

ACCESS ROAD NAME	ACCESS ROAD #3
ACCESS ROAD CLASS	TEMPORARY
ACCESS ROAD LENGTH (FT)	530
ACCESS ROAD WIDTH (FT)	16
ACCESS ROAD AREA (SQ FT)	8,440
ACCESS ROAD AREA (AC)	0.19
ACCESS ROAD AREA DISTURBED (SQ FT)	8,440
ACCESS ROAD AREA DISTURBED (AC)	0.19
ACCESS ROAD PERMANENT FILL (CU FT)	0.00
ACCESS ROAD TEMPORARY FILL (CU FT)	7,033.33
ACCESS ROAD IMPROVEMENTS	CURRENTLY 12 FOOT WIDE. REQUIRES MATS 16 FOOT WIDE FOR ENTIRE LENGTH.

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TEMPORARY ACCESS ROAD #3
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EAST LATERAL ACCESS ROADS

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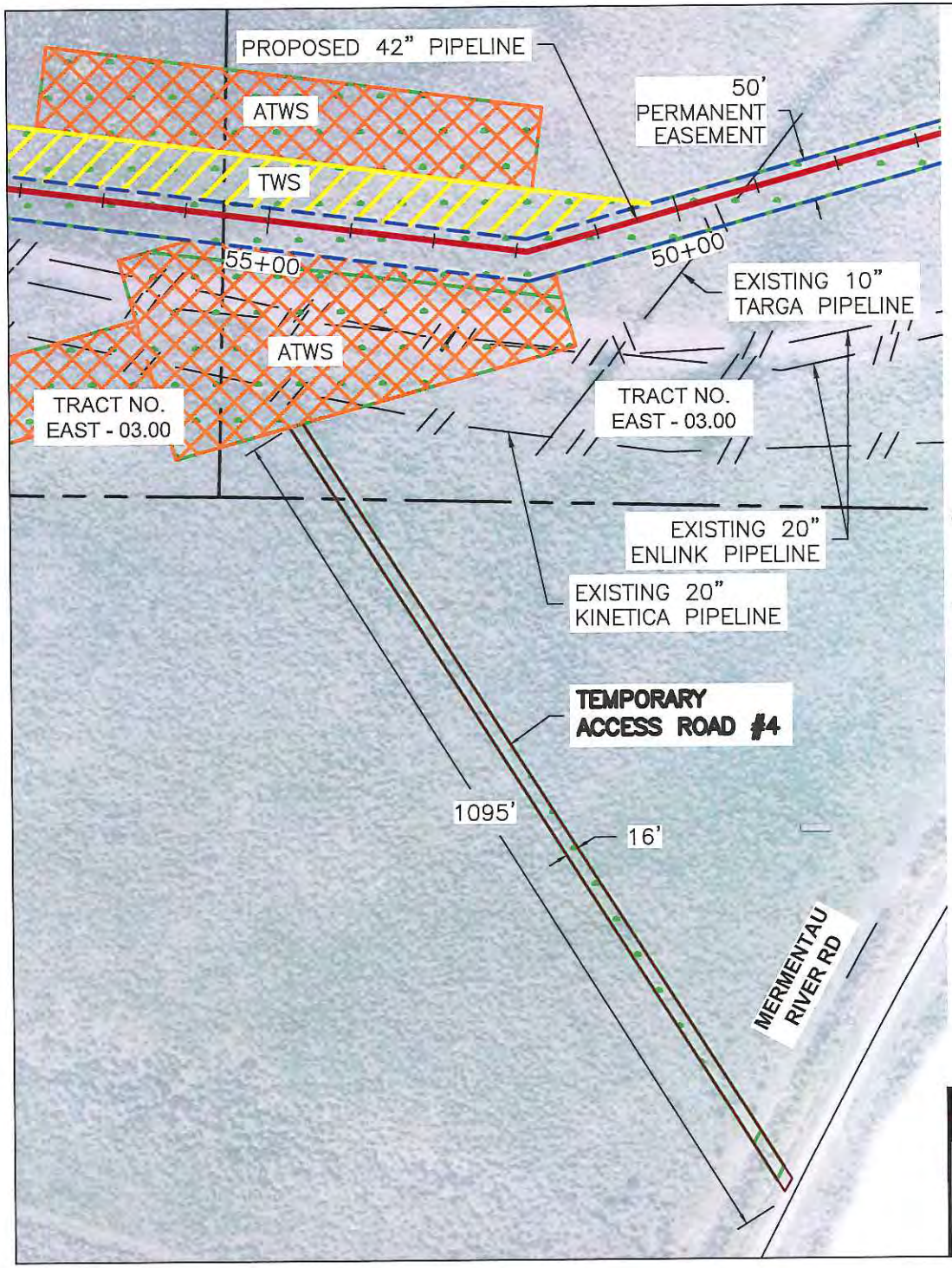

N

0 200 400

1" = 200'

ACCESS ROAD NAME	ACCESS ROAD #4
ACCESS ROAD CLASS	TEMPORARY
ACCESS ROAD LENGTH (FT)	1,095
ACCESS ROAD WIDTH (FT)	16
ACCESS ROAD AREA (SQ FT)	17,460
ACCESS ROAD AREA (AC)	0.40
ACCESS ROAD AREA DISTURBED (SQ FT)	17,460
ACCESS ROAD AREA DISTURBED (AC)	0.40
ACCESS ROAD PERMANENT FILL (CU FT)	0.00
ACCESS ROAD TEMPORARY FILL (CU FT)	14,550
ACCESS ROAD IMPROVEMENTS	CURRENTLY UNDISTURBED. REQUIRES MATS 16 FOOT WIDE FOR ENTIRE LENGTH.

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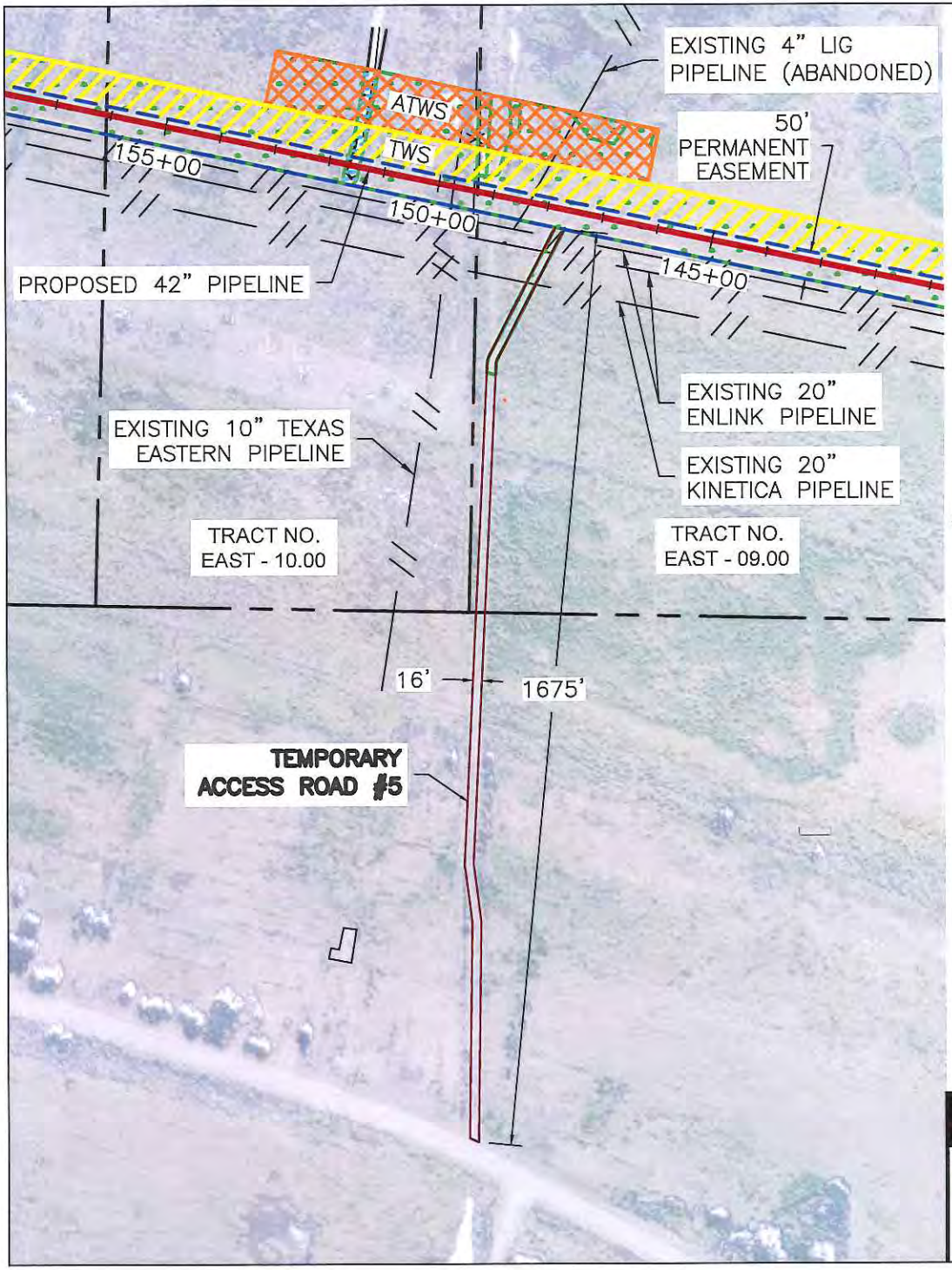

N

0 300 600

1" = 300'

ACCESS ROAD NAME	ACCESS ROAD #5
ACCESS ROAD CLASS	TEMPORARY
ACCESS ROAD LENGTH (FT)	1,675
ACCESS ROAD WIDTH (FT)	16
ACCESS ROAD AREA (SQ FT)	26,805
ACCESS ROAD AREA (AC)	0.62
ACCESS ROAD AREA DISTURBED (SQ FT)	26,805
ACCESS ROAD AREA DISTURBED (AC)	0.62
ACCESS ROAD PERMANENT FILL (CU FT)	0.00
ACCESS ROAD TEMPORARY FILL (CU FT)	22,337.50
ACCESS ROAD IMPROVEMENTS	CURRENTLY UNDISTURBED. REQUIRES MATS 16 FOOT WIDE FOR ENTIRE LENGTH.

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EAST LATERAL ACCESS ROADS

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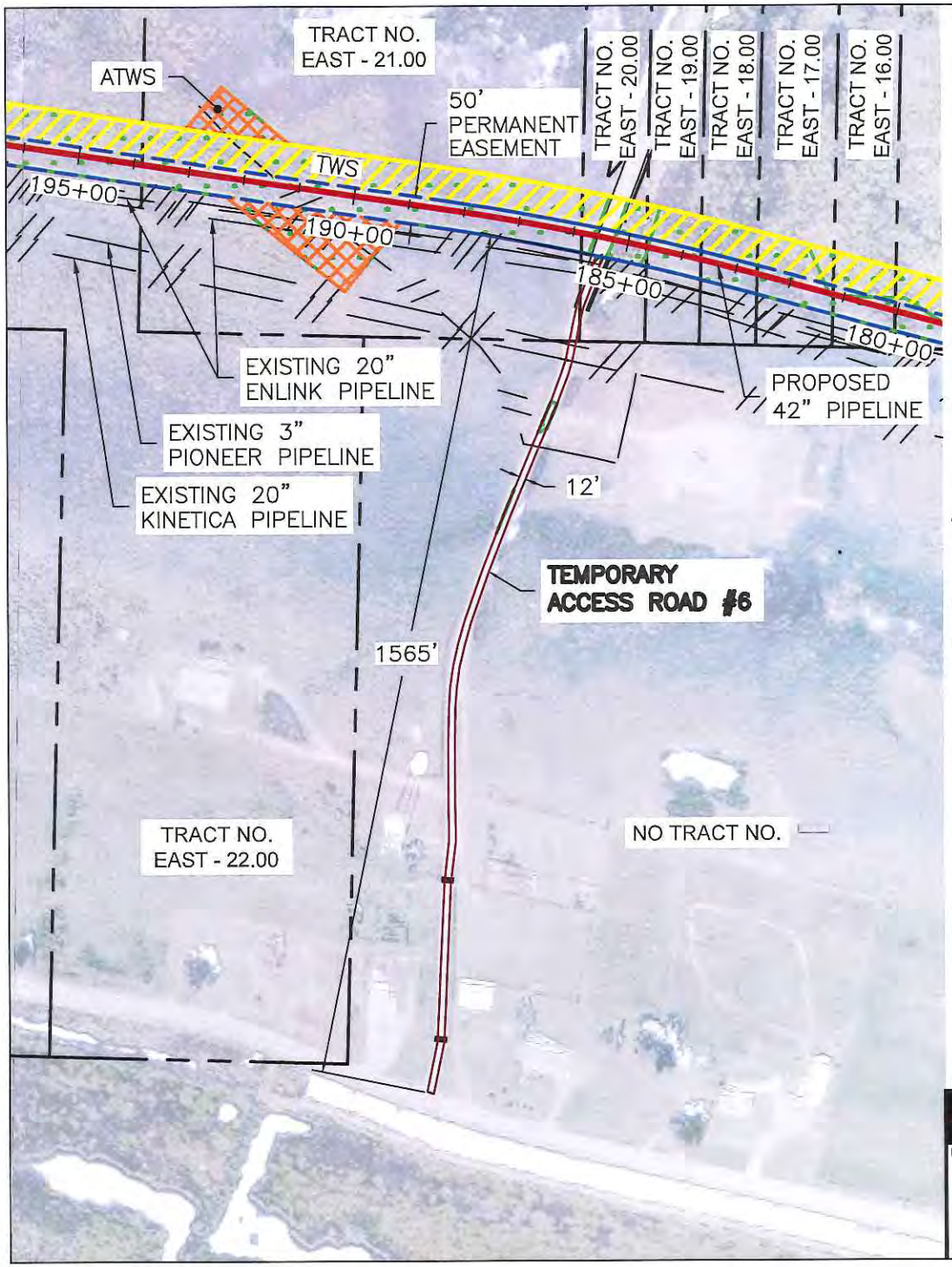

N

0 300 600

1" = 300'

ACCESS ROAD NAME	ACCESS ROAD #6
ACCESS ROAD CLASS	TEMPORARY
ACCESS ROAD LENGTH (FT)	1,565
ACCESS ROAD WIDTH (FT)	12
ACCESS ROAD AREA (SQ FT)	18,735
ACCESS ROAD AREA (AC)	0.43
ACCESS ROAD AREA DISTURBED (SQ FT)	0.00
ACCESS ROAD AREA DISTURBED (AC)	0.00
ACCESS ROAD PERMANENT FILL (CU FT)	0.00
ACCESS ROAD TEMPORARY FILL (CU FT)	0.00
ACCESS ROAD IMPROVEMENTS	EXISTING CONDITIONS ARE SUITABLE, NO IMPROVEMENTS NECESSARY.

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EAST LATERAL ACCESS ROADS

CAMERON PARISH LOUISIANA

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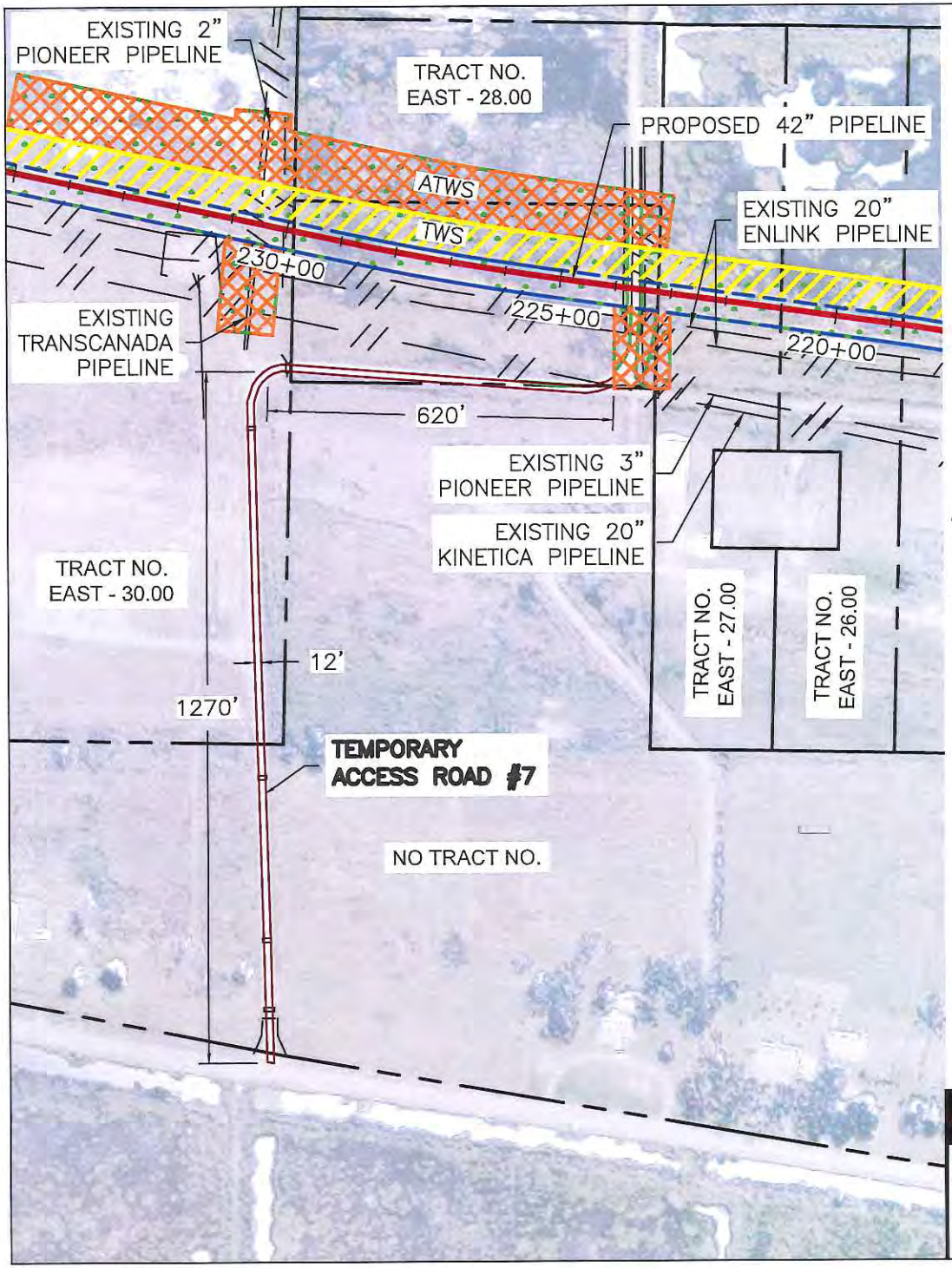

N

0 300 600

1" = 300'

ACCESS ROAD NAME	ACCESS ROAD #7
ACCESS ROAD CLASS	TEMPORARY
ACCESS ROAD LENGTH (FT)	1,890
ACCESS ROAD WIDTH (FT)	12
ACCESS ROAD AREA (SQ FT)	22,655
ACCESS ROAD AREA (AC)	0.52
ACCESS ROAD AREA DISTURBED (SQ FT)	0.00
ACCESS ROAD AREA DISTURBED (AC)	0.00
ACCESS ROAD PERMANENT FILL (CU FT)	0.00
ACCESS ROAD TEMPORARY FILL (CU FT)	0.00
ACCESS ROAD IMPROVEMENTS	EXISTING CONDITIONS ARE SUITABLE, NO IMPROVEMENTS NECESSARY.

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EAST LATERAL ACCESS ROADS

CAMERON PARISH LOUISIANA

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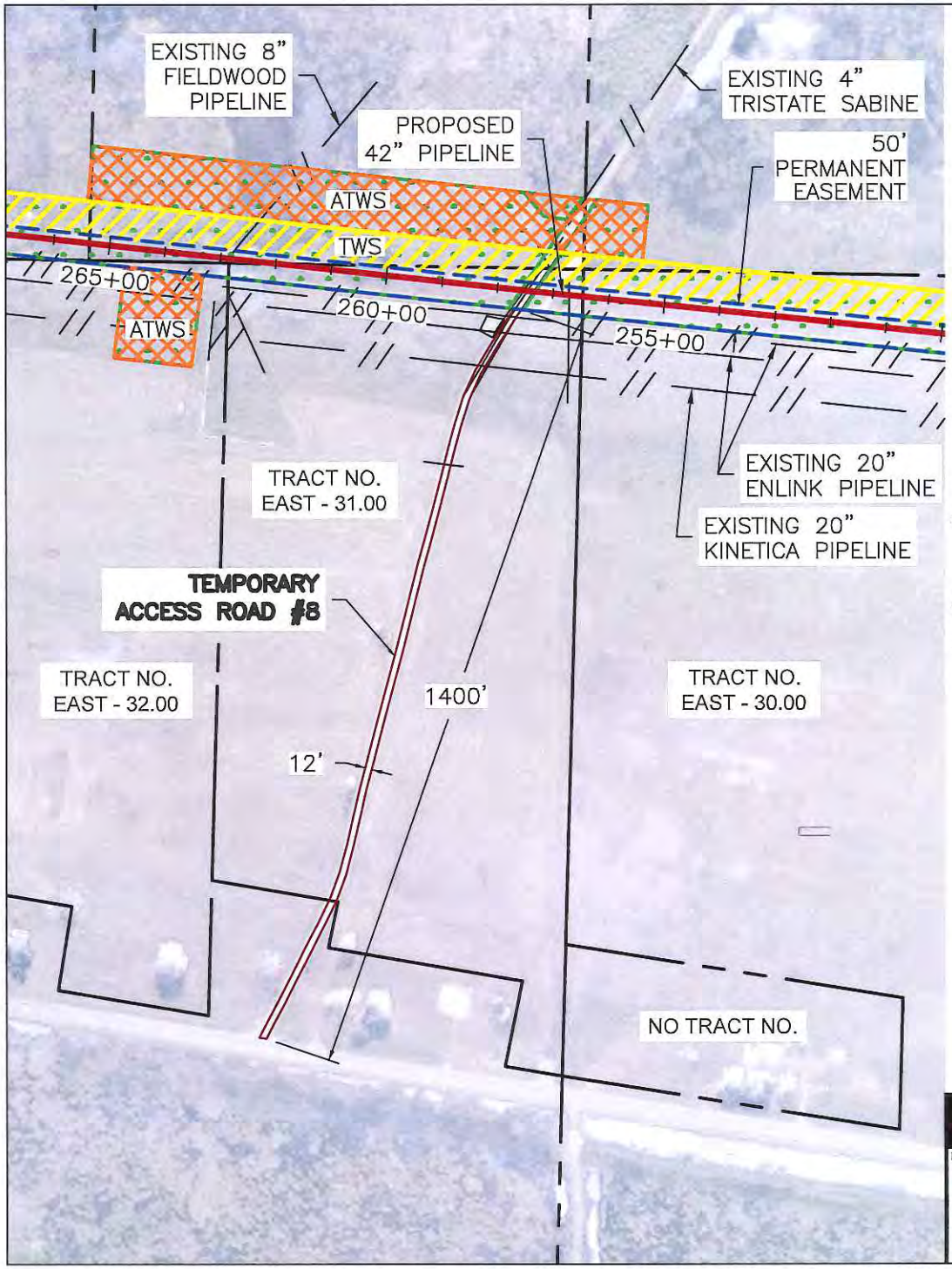

N

0 300 600

1" = 300'

ACCESS ROAD NAME	ACCESS ROAD #8
ACCESS ROAD CLASS	TEMPORARY
ACCESS ROAD LENGTH (FT)	1,400
ACCESS ROAD WIDTH (FT)	12
ACCESS ROAD AREA (SQ FT)	16,810
ACCESS ROAD AREA (AC)	0.39
ACCESS ROAD AREA DISTURBED (SQ FT)	0.00
ACCESS ROAD AREA DISTURBED (AC)	0.00
ACCESS ROAD PERMANENT FILL (CU FT)	0.00
ACCESS ROAD TEMPORARY FILL (CU FT)	0.00
ACCESS ROAD IMPROVEMENTS	EXISTING CONDITIONS ARE SUITABLE, NO IMPROVEMENTS NECESSARY.

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EAST LATERAL ACCESS ROADS

CAMERON PARISH LOUISIANA

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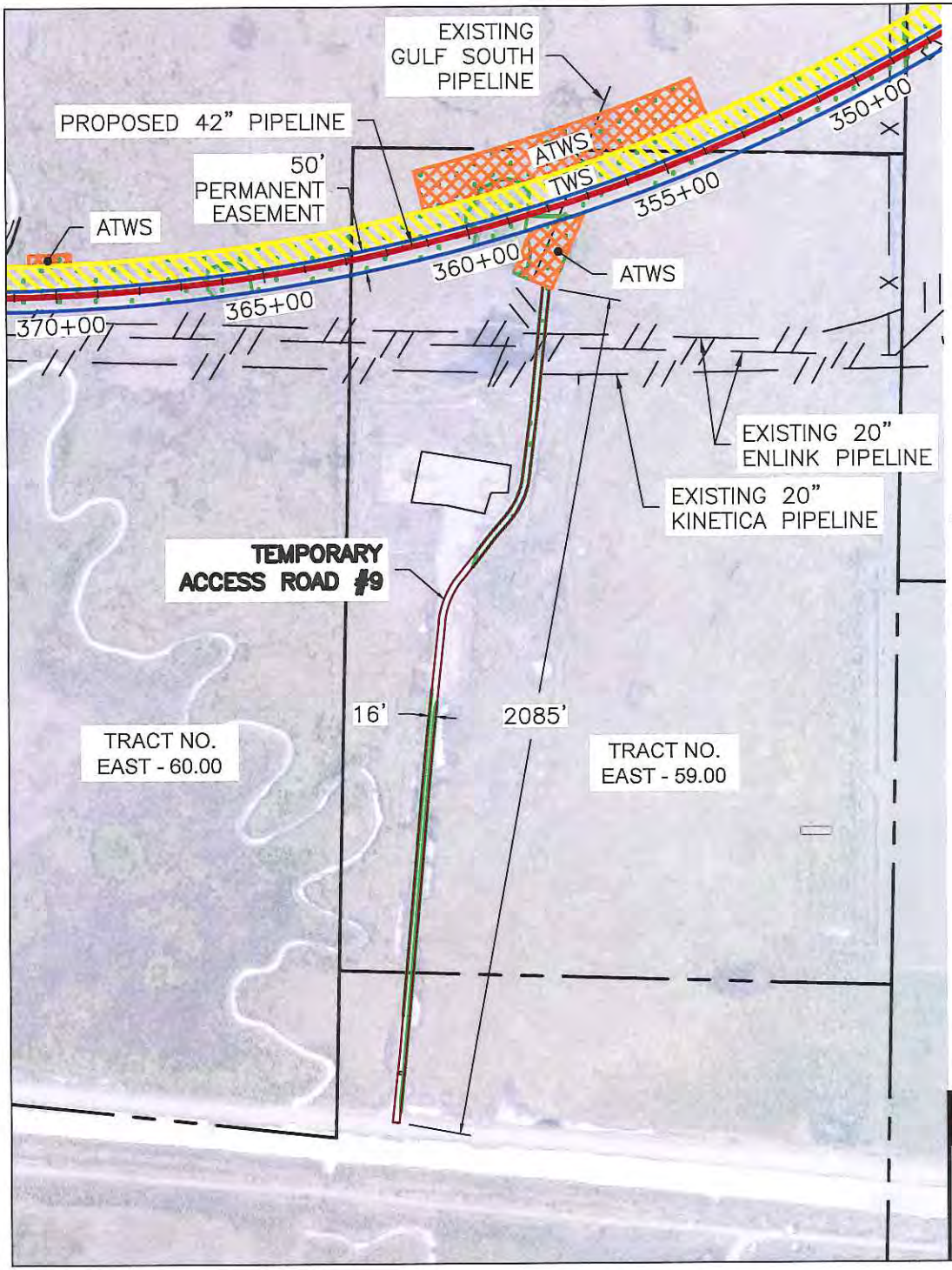

N

0 400 800

1" = 400'

ACCESS ROAD NAME	ACCESS ROAD #9
ACCESS ROAD CLASS	TEMPORARY
ACCESS ROAD LENGTH (FT)	2,085
ACCESS ROAD WIDTH (FT)	16
ACCESS ROAD AREA (SQ FT)	33,300
ACCESS ROAD AREA (AC)	0.76
ACCESS ROAD AREA DISTURBED (SQ FT)	33,300
ACCESS ROAD AREA DISTURBED (AC)	0.76
ACCESS ROAD PERMANENT FILL (CU FT)	0.00
ACCESS ROAD TEMPORARY FILL (CU FT)	27,750
ACCESS ROAD IMPROVEMENTS	CURRENTLY 12 FOOT WIDE PARTIAL LENGTH. MAT 16 FOOT WIDE FOR ENTIRE LENGTH.

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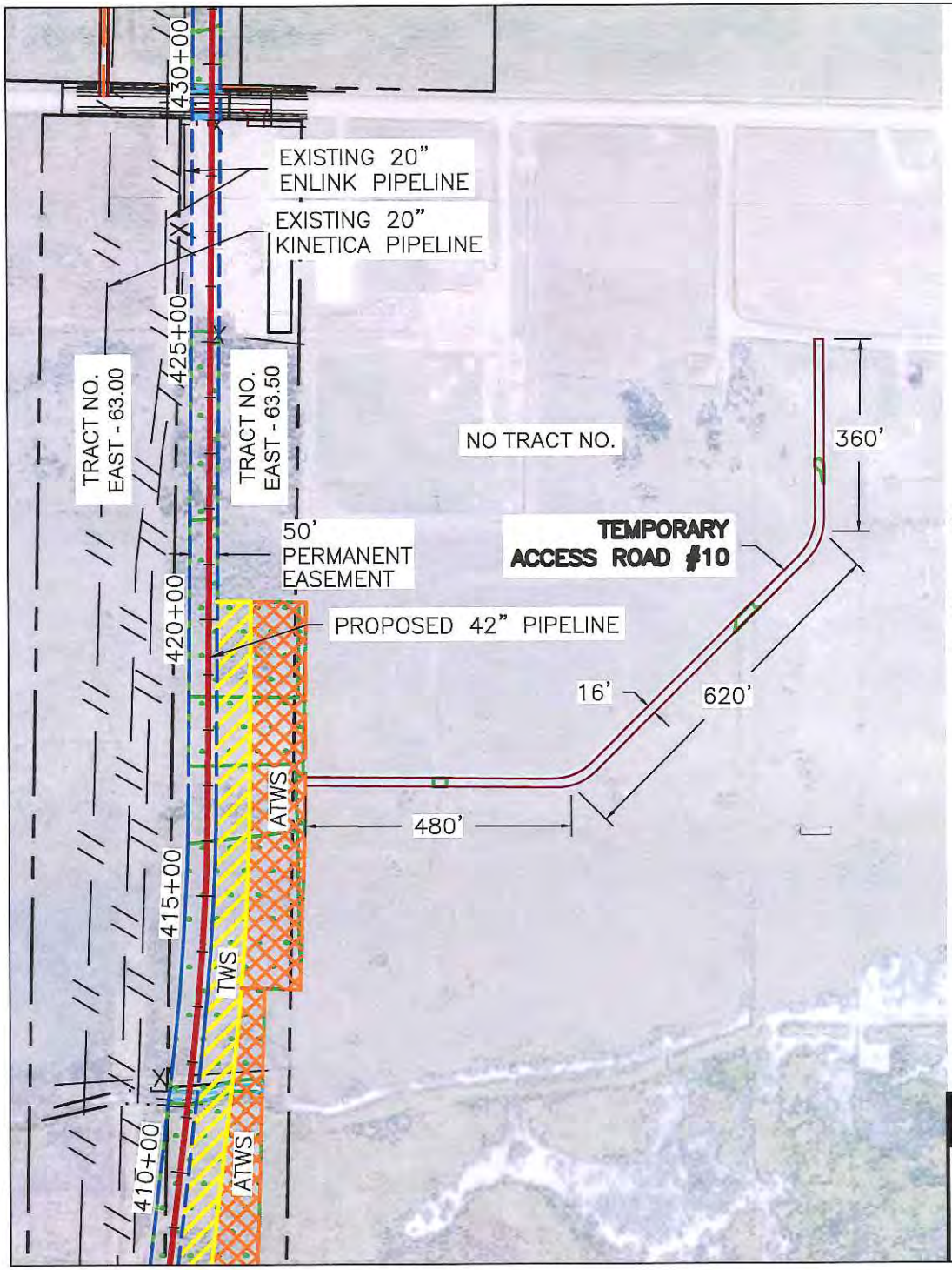
EAST LATERAL ACCESS ROADS

CAMERON PARISH LOUISIANA

DATE:	SCALE:	DRAWN BY	LOC. NO	DRAWING NUMBER:	SHEET NO:	REV:
02/09/16	1"=400'	AS		TCPPL-M-502.10	11	A



N

0 300 600

1" = 300'

ACCESS ROAD NAME	ACCESS ROAD #10
ACCESS ROAD CLASS	TEMPORARY
ACCESS ROAD LENGTH (FT)	1,460
ACCESS ROAD WIDTH (FT)	16
ACCESS ROAD AREA (SQ FT)	23,510
ACCESS ROAD AREA (AC)	0.54
ACCESS ROAD AREA DISTURBED (SQ FT)	23,510
ACCESS ROAD AREA DISTURBED (AC)	0.54
ACCESS ROAD PERMANENT FILL (CU FT)	0.00
ACCESS ROAD TEMPORARY FILL (CU FT)	19,591.67
ACCESS ROAD IMPROVEMENTS	CURRENTLY UNDISTURBED. REQUIRES MATS 16 FOOT WIDE FOR ENTIRE LENGTH.

REV. LEVEL	DATE	BY	DESCRIPTION	CK.	APP.
A	02/23/16	AS	ISSUED FOR PERMIT	TCB	DK

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ACCESS ROAD EXHIBIT
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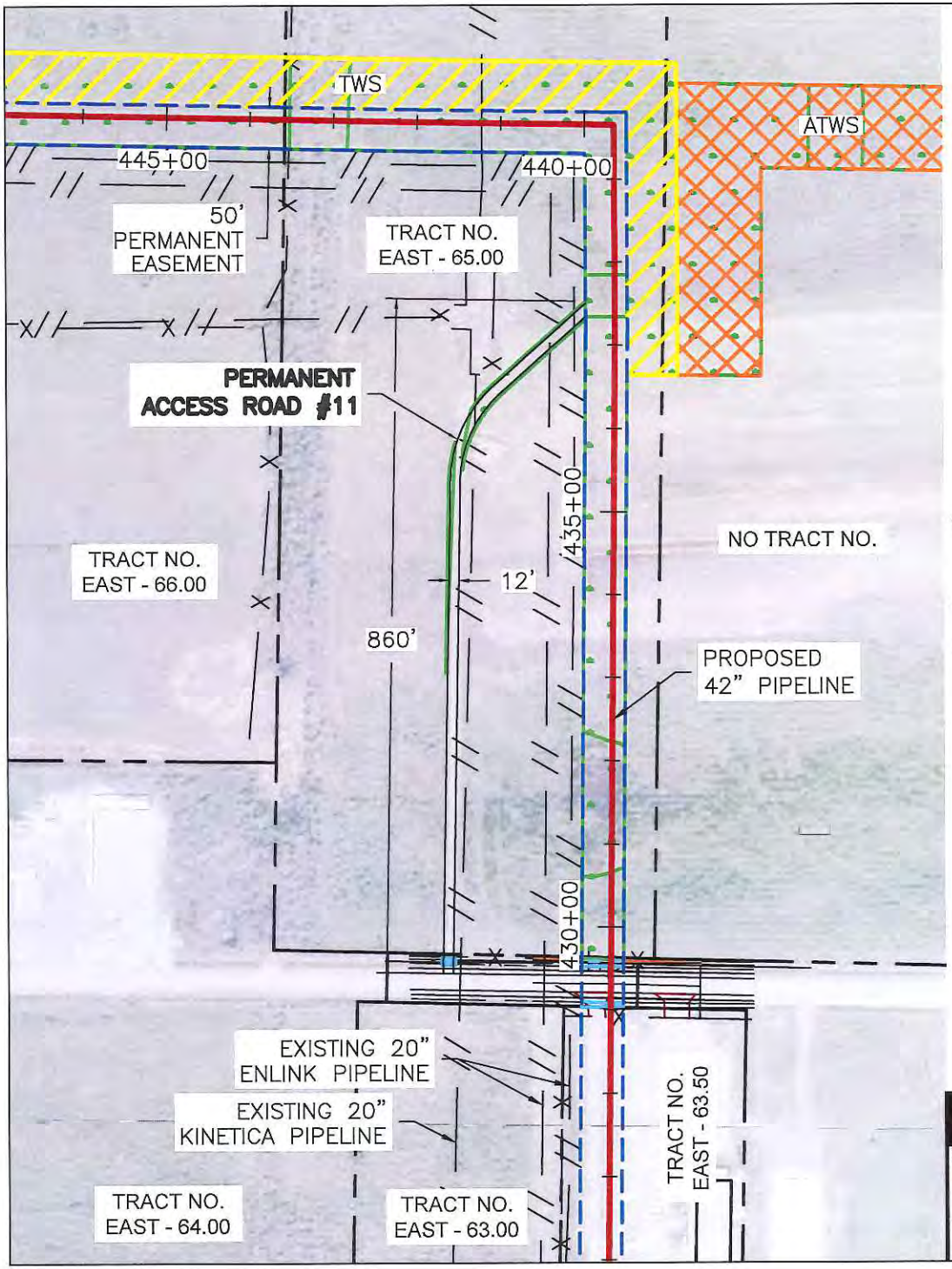
EAST LATERAL ACCESS ROADS

CAMERON PARISH LOUISIANA

DATE:	SCALE:	DRAWN BY:	LOC. NO:	DRAWING NUMBER:	SHEET NO:	REV:
02/09/16	1"=300'	AS		TCPPL-M-502.11	12	A



N

0 200 400

1" = 200'

ACCESS ROAD NAME	ACCESS ROAD #11
ACCESS ROAD CLASS	PERMANENT
ACCESS ROAD LENGTH (FT)	860
ACCESS ROAD WIDTH (FT)	12
ACCESS ROAD AREA (SQ FT)	10,315
ACCESS ROAD AREA (AC)	0.24
ACCESS ROAD AREA DISTURBED (SQ FT)	10,315
ACCESS ROAD AREA DISTURBED (AC)	0.24
ACCESS ROAD PERMANENT FILL (CU FT)	5,157.50
ACCESS ROAD TEMPORARY FILL (CU FT)	0.00
ACCESS ROAD IMPROVEMENTS	POST CONSTRUCTION REQUIRES 12 FOOT WIDE OF 6 INCH AGGREGATE FOR ENTIRE LENGTH.

REV. LEVEL	DATE	BY	DESCRIPTION	CK.	APP.
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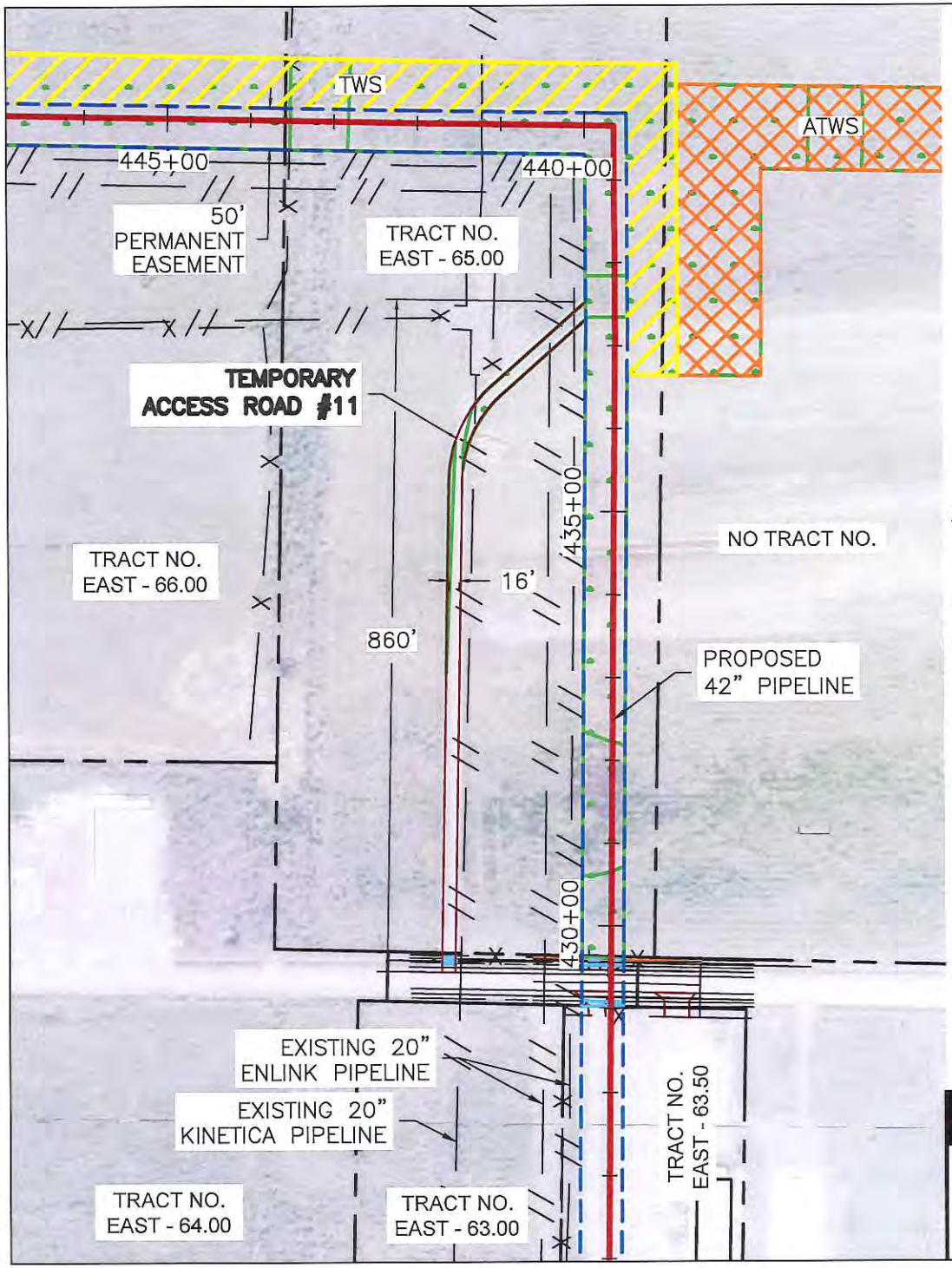
EAST LATERAL ACCESS ROADS

CAMERON PARISH LOUISIANA

DATE:	SCALE:	DRAWN BY:	LOC. NO:	DRAWING NUMBER:	SHEET NO:	REV:
02/09/16	1"=200'	AS		TCPPL-M-502.12A	13	A



N

0 200 400

1" = 200'

ACCESS ROAD NAME	ACCESS ROAD #11
ACCESS ROAD CLASS	TEMPORARY
ACCESS ROAD LENGTH (FT)	860
ACCESS ROAD WIDTH (FT)	16
ACCESS ROAD AREA (SQ FT)	13,755
ACCESS ROAD AREA (AC)	0.32
ACCESS ROAD AREA DISTURBED (SQ FT)	13,755*
ACCESS ROAD AREA DISTURBED (AC)	0.32*
ACCESS ROAD PERMANENT FILL (CU FT)	0.00
ACCESS ROAD TEMPORARY FILL (CU FT)	12,358.33
ACCESS ROAD IMPROVEMENTS	REQUIRES 16 FOOT WIDE MATS FOR ENTIRE LENGTH.

* AREA DISTURBED INCLUDES BOTH TEMPORARY AND PERMANENT IMPACTS WITHIN TEMPORARY ACCESS ROAD #11 LIMITS.

REV. LEVEL	DATE	BY	DESCRIPTION	CK.	APP.
A	02/23/16	AS	ISSUED FOR PERMIT	TCB	DK

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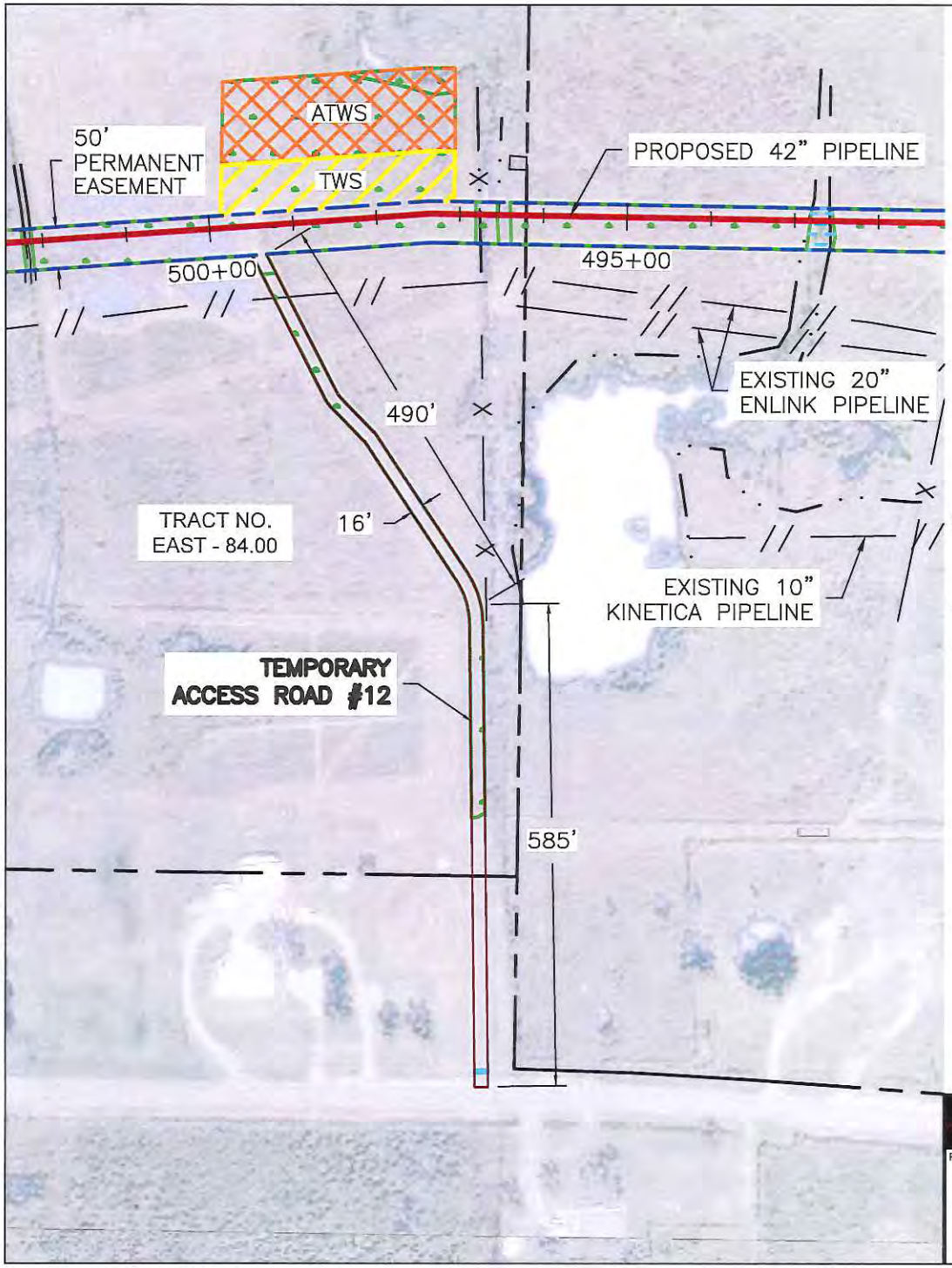
02/09/16	1"=200'	AS		TCPPL-M-502.12B	14	A

L:\TR\Projects\157404 Venture Global LNG - Calcasieu Pass FEED\5.0 CADD\5.05 Working Drawings\Pipeline\Access Roads\East_Lateral_Access Roads-JPA.dwg Plotted on: Feb 24, 2016 - 4:12pm by dbegal.akerma



N

0 200 400

1" = 200'

ACCESS ROAD NAME	ACCESS ROAD #12
ACCESS ROAD CLASS	TEMPORARY
ACCESS ROAD LENGTH (FT)	1,075
ACCESS ROAD WIDTH (FT)	16
ACCESS ROAD AREA (SQ FT)	17,210
ACCESS ROAD AREA (AC)	0.40
ACCESS ROAD AREA DISTURBED (SQ FT)	17,210
ACCESS ROAD AREA DISTURBED (AC)	0.40
ACCESS ROAD PERMANENT FILL (CU FT)	0.00
ACCESS ROAD TEMPORARY FILL (CU FT)	14,341.67
ACCESS ROAD IMPROVEMENTS	CURRENTLY UNDISTURBED. REQUIRES MATS 16 FOOT WIDE FOR ENTIRE LENGTH.

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A	02/23/16	AS	ISSUED FOR PERMIT	TCB	DK

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CAMERON PARISH LOUISIANA

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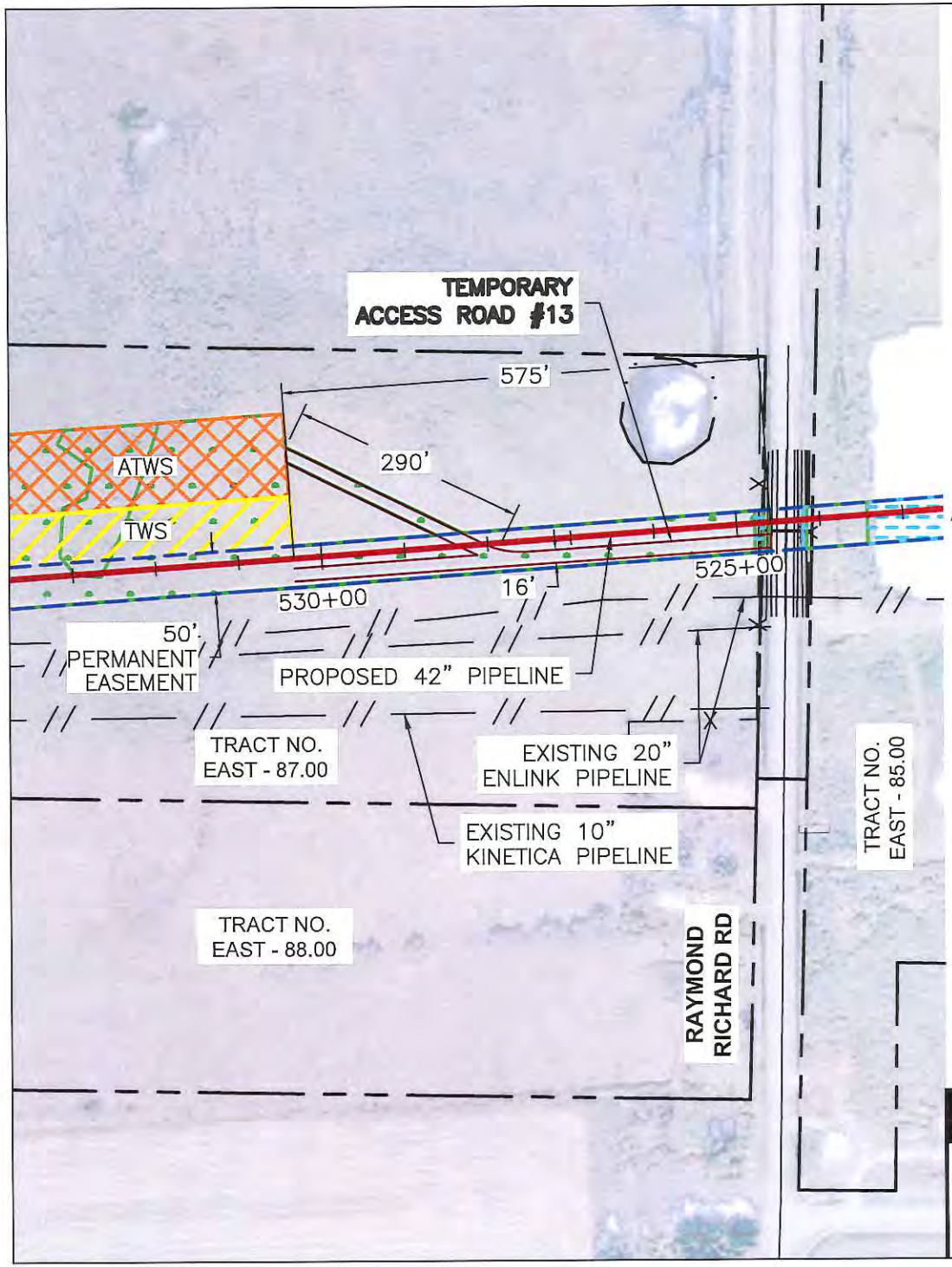

N

0 200 400

1" = 200'

ACCESS ROAD NAME	ACCESS ROAD #13
ACCESS ROAD CLASS	TEMPORARY
ACCESS ROAD LENGTH (FT)	865
ACCESS ROAD WIDTH (FT)	16
ACCESS ROAD AREA (SQ FT)	13,620
ACCESS ROAD AREA (AC)	0.31
ACCESS ROAD AREA DISTURBED (SQ FT)	13,620*
ACCESS ROAD AREA DISTURBED (AC)	0.31*
ACCESS ROAD PERMANENT FILL (CU FT)	0.00
ACCESS ROAD TEMPORARY FILL (CU FT)	11,350
ACCESS ROAD IMPROVEMENTS	CURRENTLY UNDISTURBED. REQUIRES MATS 16 FOOT WIDE FOR ENTIRE LENGTH.

* AREA DISTURBED BY ACCESS ROAD INCLUDES AREA WITHIN PERMANENT EASEMENT.

REV. LEVEL	DATE	BY	DESCRIPTION	CK.	APP.
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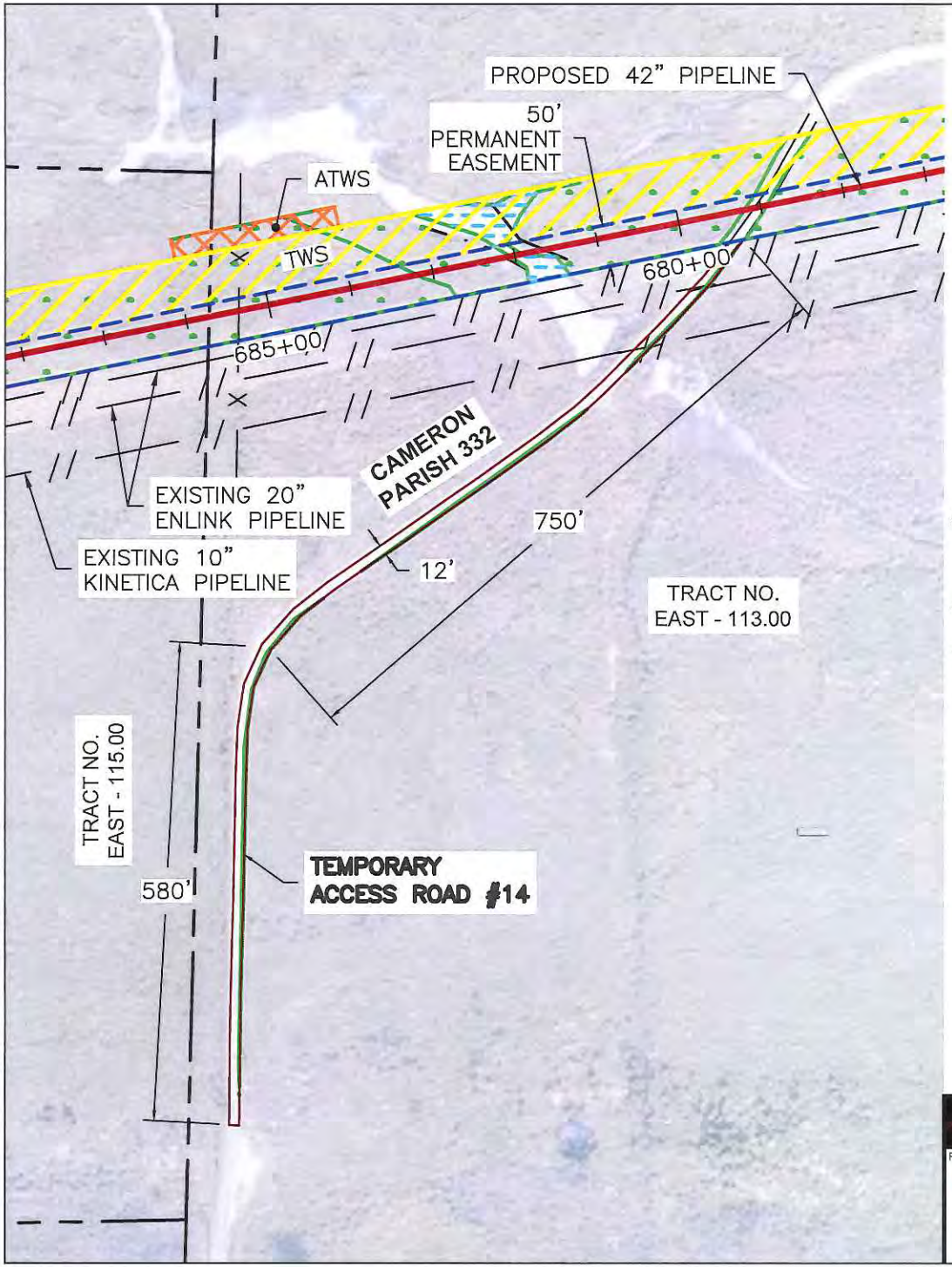

N

0 200 400

1" = 200'

ACCESS ROAD NAME	ACCESS ROAD #14
ACCESS ROAD CLASS	TEMPORARY
ACCESS ROAD LENGTH (FT)	1,330
ACCESS ROAD WIDTH (FT)	12
ACCESS ROAD AREA (SQ FT)	15,920
ACCESS ROAD AREA (AC)	0.37
ACCESS ROAD AREA DISTURBED (SQ FT)	0.00
ACCESS ROAD AREA DISTURBED (AC)	0.00
ACCESS ROAD PERMANENT FILL (CU FT)	0.00
ACCESS ROAD TEMPORARY FILL (CU FT)	0.00
ACCESS ROAD IMPROVEMENTS	EXISTING CONDITIONS ARE SUITABLE, NO IMPROVEMENTS NECESSARY.

REV. LEVEL	DATE	BY	DESCRIPTION	CK.	APP.
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EAST LATERAL ACCESS ROADS

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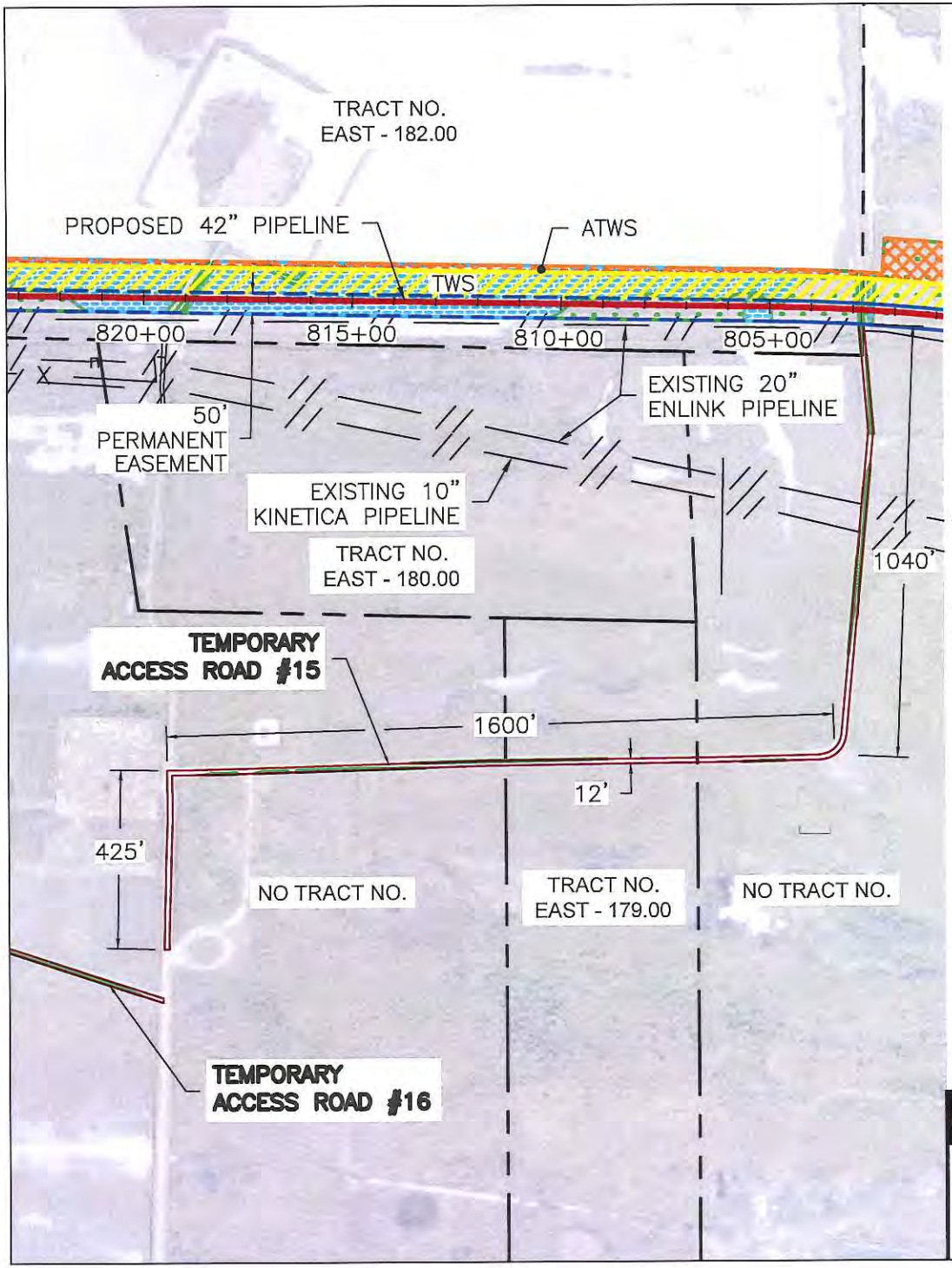
02/09/16	1"=200'	AS		TCPPL-M-502.15	17	A



N

0 400 800

1" = 400'

ACCESS ROAD NAME	ACCESS ROAD #15
ACCESS ROAD CLASS	TEMPORARY
ACCESS ROAD LENGTH (FT)	3,065
ACCESS ROAD WIDTH (FT)	12
ACCESS ROAD AREA (SQ FT)	36,765
ACCESS ROAD AREA (AC)	0.84
ACCESS ROAD AREA DISTURBED (SQ FT)	0.00
ACCESS ROAD AREA DISTURBED (AC)	0.00
ACCESS ROAD PERMANENT FILL (CU FT)	0.00
ACCESS ROAD TEMPORARY FILL (CU FT)	0.00
ACCESS ROAD IMPROVEMENTS	EXISTING CONDITIONS ARE SUITABLE, NO IMPROVEMENTS NECESSARY.

REV. LEVEL	DATE	BY	DESCRIPTION	CK.	APP.
A	02/23/16	AS	ISSUED FOR PERMIT	TCB	DK

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02/09/16	1"=400'	AS		TCPPL-M-502.16	18	A

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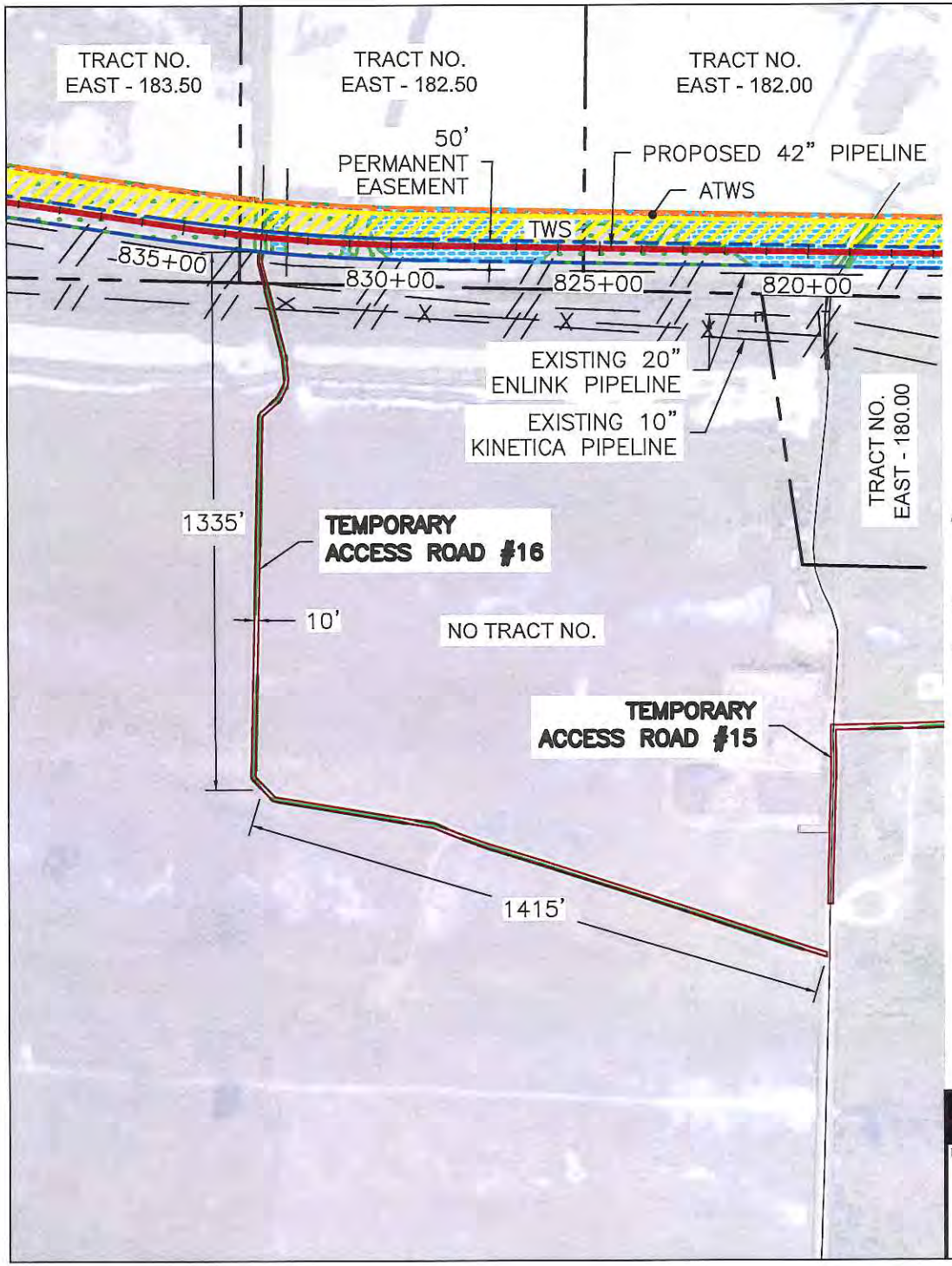

N

0 400 800

1" = 400'

ACCESS ROAD NAME	ACCESS ROAD #16
ACCESS ROAD CLASS	TEMPORARY
ACCESS ROAD LENGTH (FT)	2,750
ACCESS ROAD WIDTH (FT)	10
ACCESS ROAD AREA (SQ FT)	27,510
ACCESS ROAD AREA (AC)	0.63
ACCESS ROAD AREA DISTURBED (SQ FT)	0.00
ACCESS ROAD AREA DISTURBED (AC)	0.00
ACCESS ROAD PERMANENT FILL (CU FT)	0.00
ACCESS ROAD TEMPORARY FILL (CU FT)	0.00
ACCESS ROAD IMPROVEMENTS	EXISTING CONDITIONS ARE SUITABLE, NO IMPROVEMENTS NECESSARY.

REV. LEVEL	DATE	BY	DESCRIPTION	CK.	APP.
A	02/23/16	AS	ISSUED FOR PERMIT	TCB	DK

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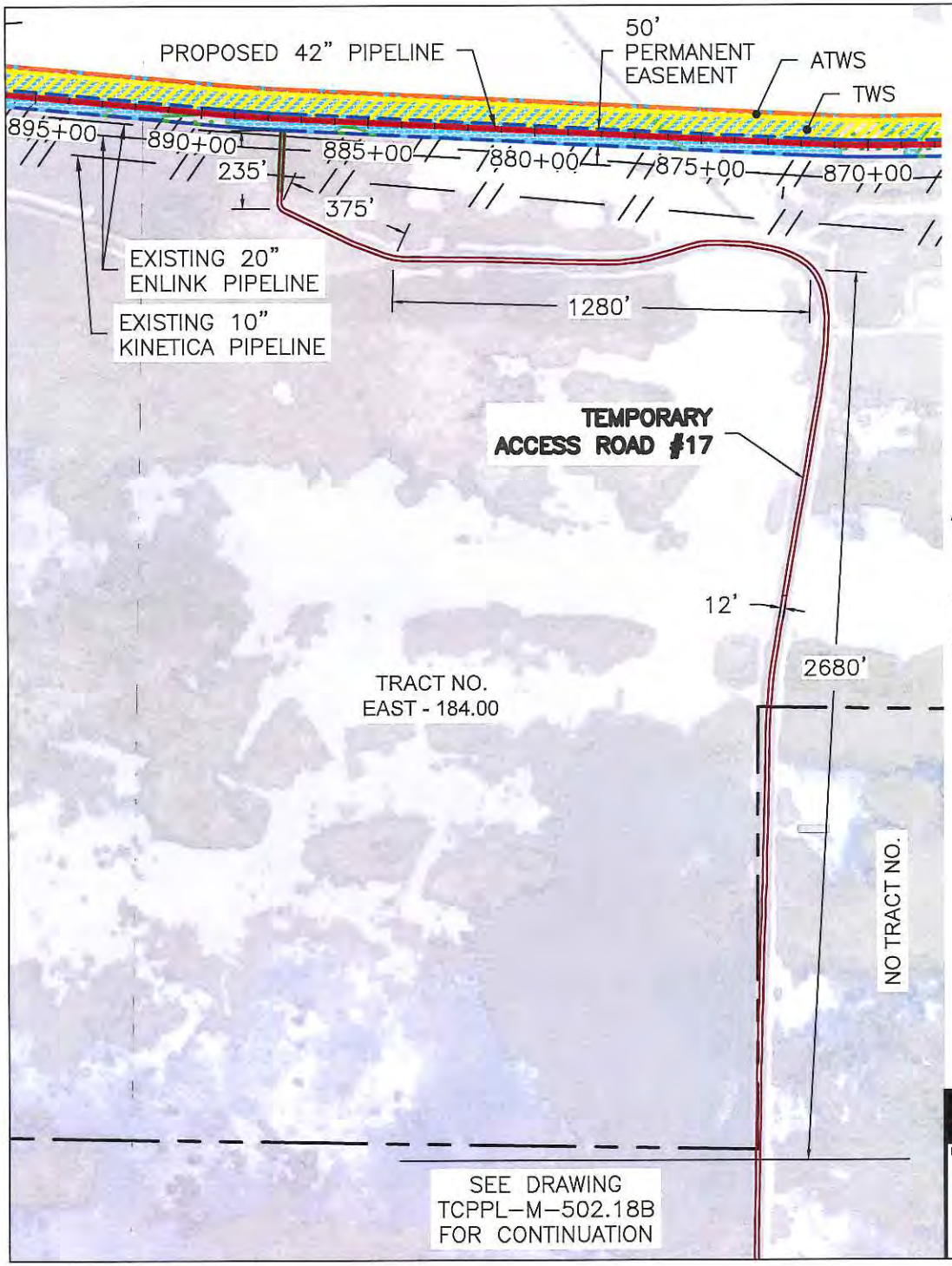

N

0 500 1000

1" = 500'

ACCESS ROAD NAME	ACCESS ROAD #17
ACCESS ROAD CLASS	TEMPORARY
ACCESS ROAD LENGTH (FT)	7,020
ACCESS ROAD WIDTH (FT)	12
ACCESS ROAD AREA (SQ FT)	84,250
ACCESS ROAD AREA (AC)	1.93
ACCESS ROAD AREA DISTURBED (SQ FT)	2,580
ACCESS ROAD AREA DISTURBED (AC)	0.06
ACCESS ROAD PERMANENT FILL (CU FT)	0.00
ACCESS ROAD TEMPORARY FILL (CU FT)	0.00
ACCESS ROAD IMPROVEMENTS	MAY REQUIRE LEVELING FOR FINAL 215 FOOT (TO ROW).

REV. LEVEL	DATE	BY	DESCRIPTION	CK.	APP.
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CAMERON PARISH LOUISIANA

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02/09/16	1"=500'	AS		TCPPL-M-502.18A	20	A

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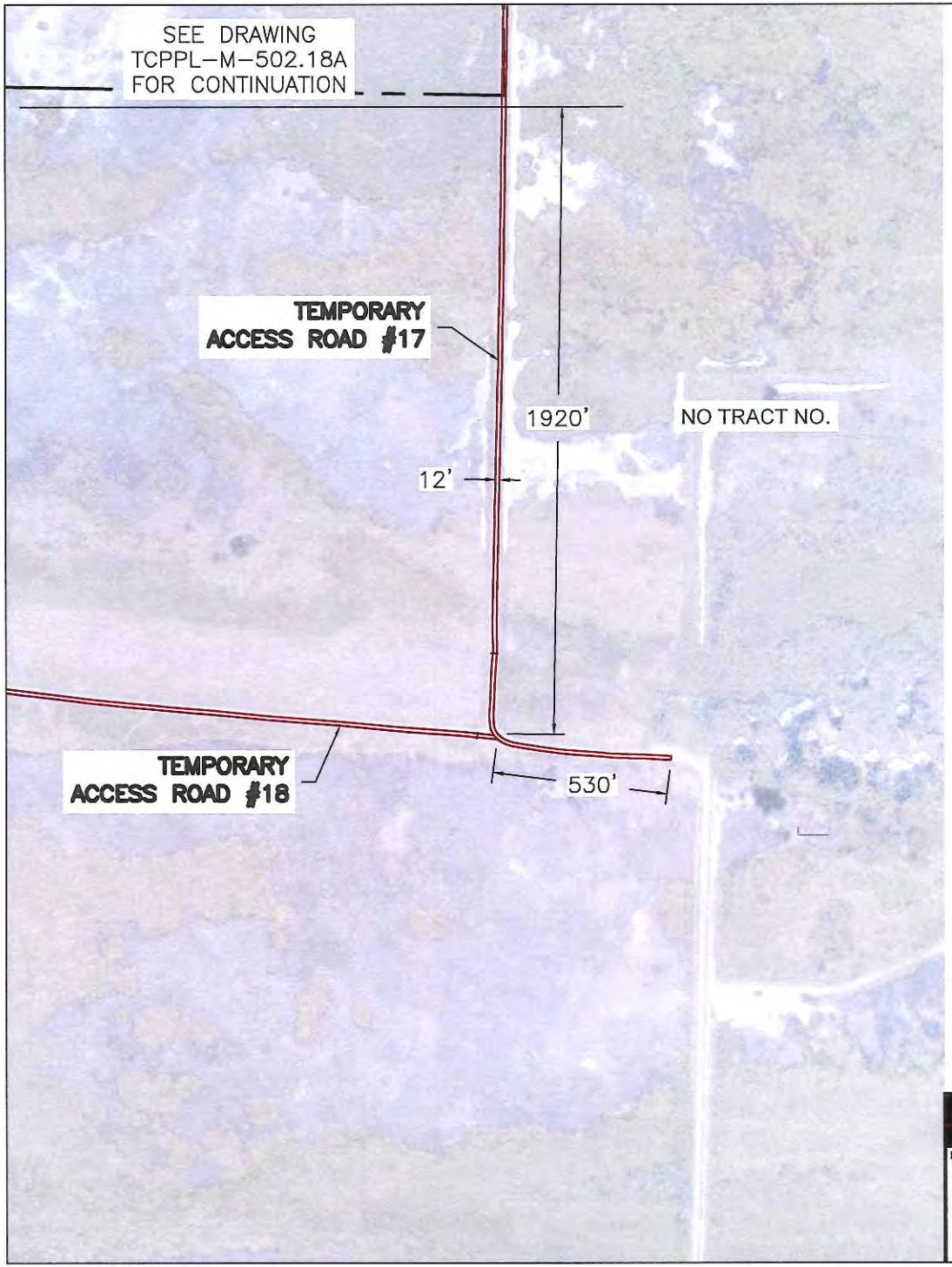

N

0 500 1000

1" = 500'

REV. LEVEL	DATE	BY	DESCRIPTION	CK.	APP.
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CAMERON PARISH LOUISIANA

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02/23/16	1"=500'	AS		TCPPL-M-502.18B	21	A

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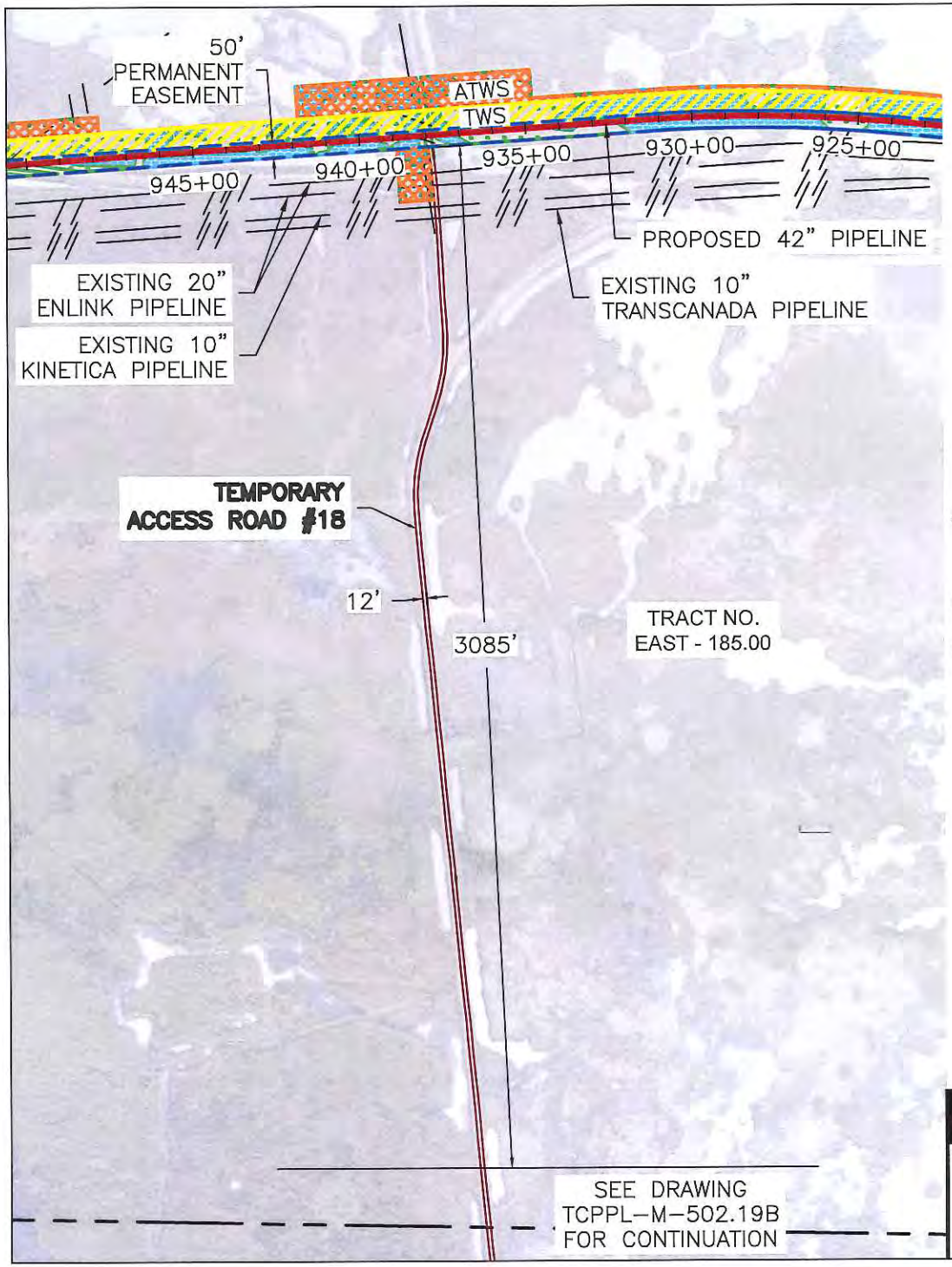

N

0 500 1000

1" = 500'

ACCESS ROAD NAME	ACCESS ROAD #18
ACCESS ROAD CLASS	TEMPORARY
ACCESS ROAD LENGTH (FT)	10,600
ACCESS ROAD WIDTH (FT)	12
ACCESS ROAD AREA (SQ FT)	127,125
ACCESS ROAD AREA (AC)	2.92
ACCESS ROAD AREA DISTURBED (SQ FT)	0.00
ACCESS ROAD AREA DISTURBED (AC)	0.00
ACCESS ROAD PERMANENT FILL (CU FT)	0.00
ACCESS ROAD TEMPORARY FILL (CU FT)	0.00
ACCESS ROAD IMPROVEMENTS	EXISTING CONDITIONS ARE SUITABLE, NO IMPROVEMENTS NECESSARY.

REV. LEVEL	DATE	BY	DESCRIPTION	CK.	APP.
A	02/23/16	AS	ISSUED FOR PERMIT	TCB	DK

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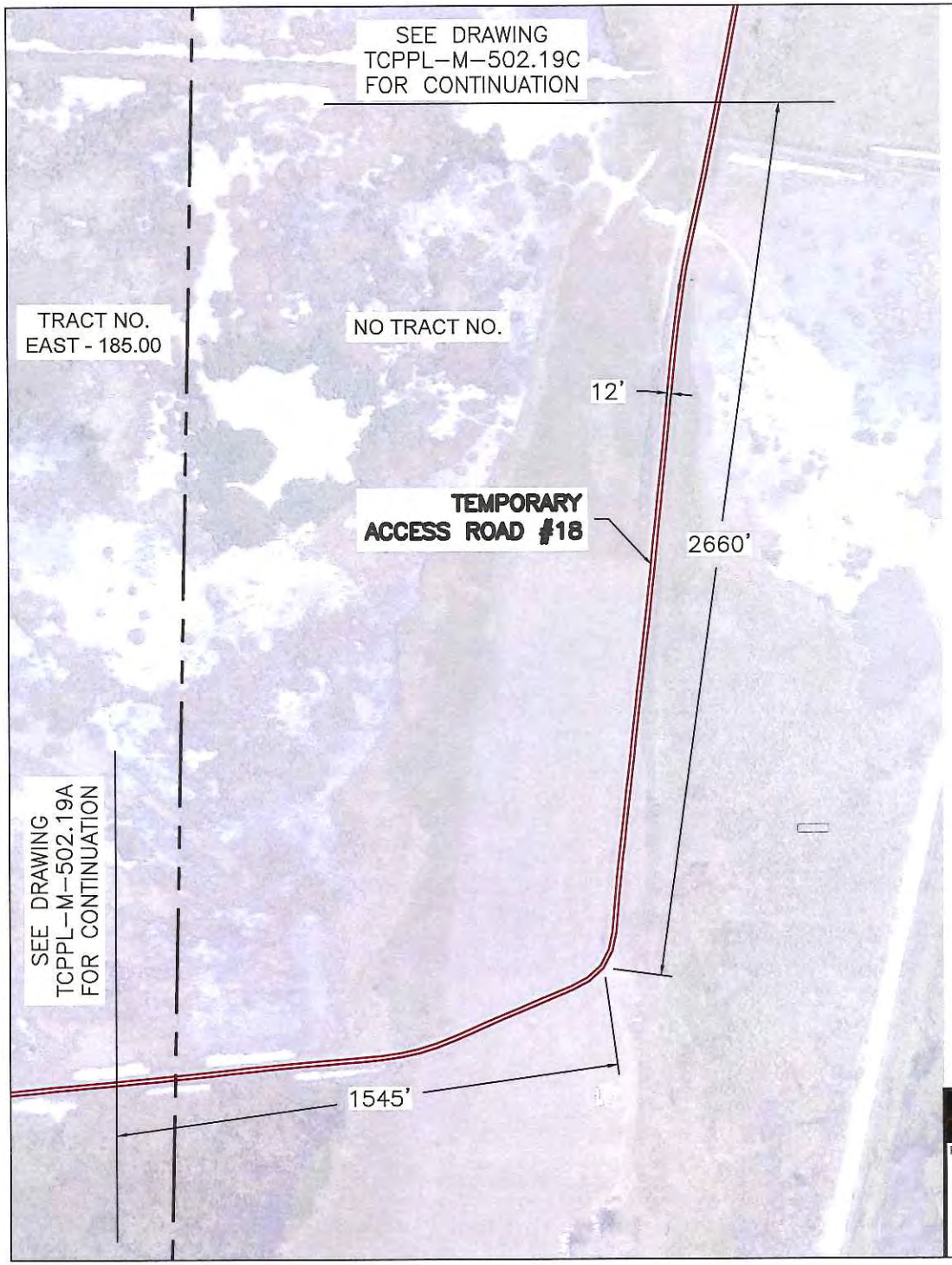
02/23/16	1"=500'	AS		TCPPL-M-502.19A	22	A



N

0 500 1000

1" = 500'

REV. LEVEL	DATE	BY	DESCRIPTION	CK.	APP.
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CAMERON PARISH LOUISIANA

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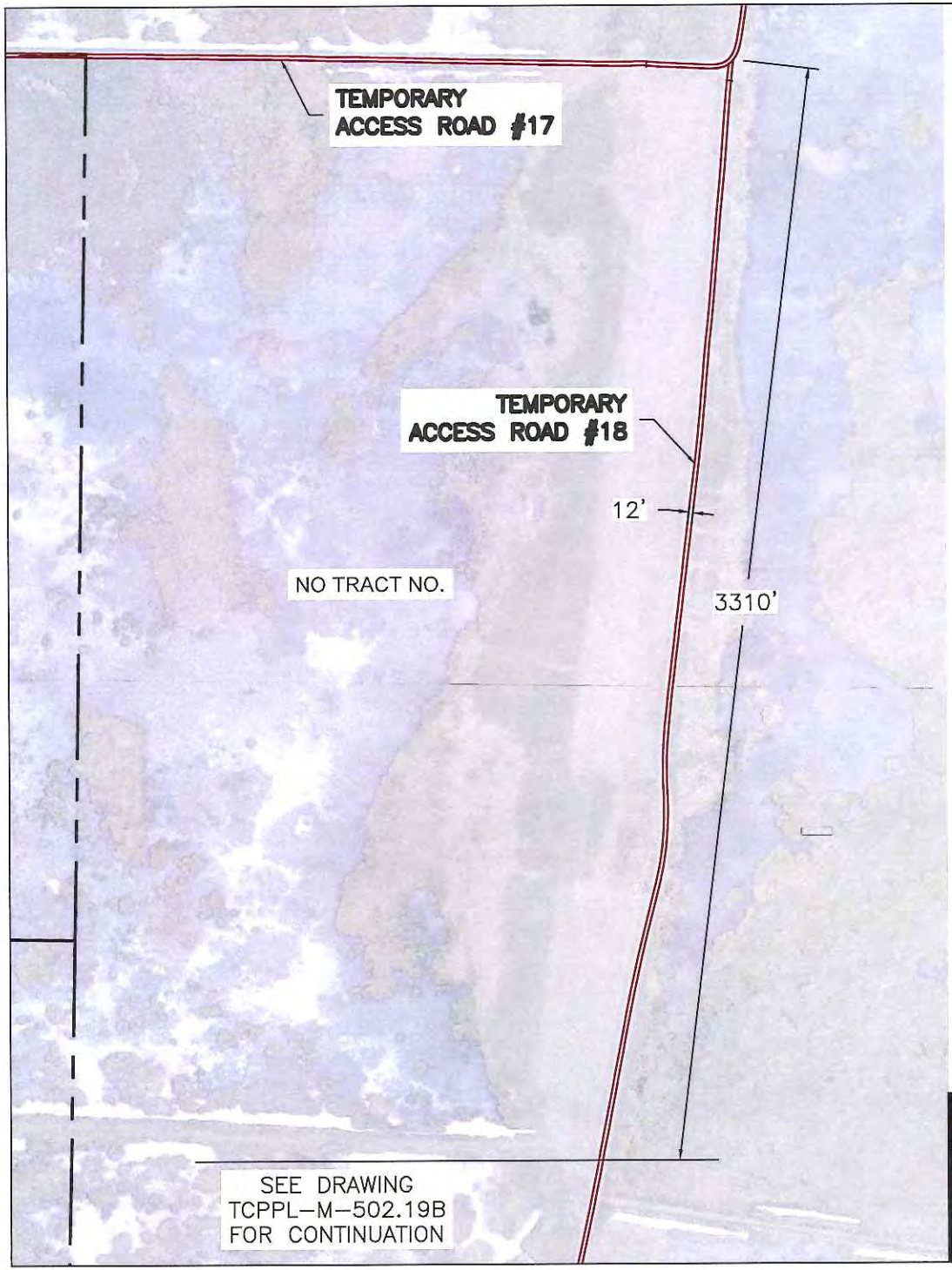
02/09/16	1"=500'	AS		TCPPL-M-502.19B	23	A



N

0 500 1000

1" = 500'

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A	02/23/16	AS	ISSUED FOR PERMIT	TCB	DK

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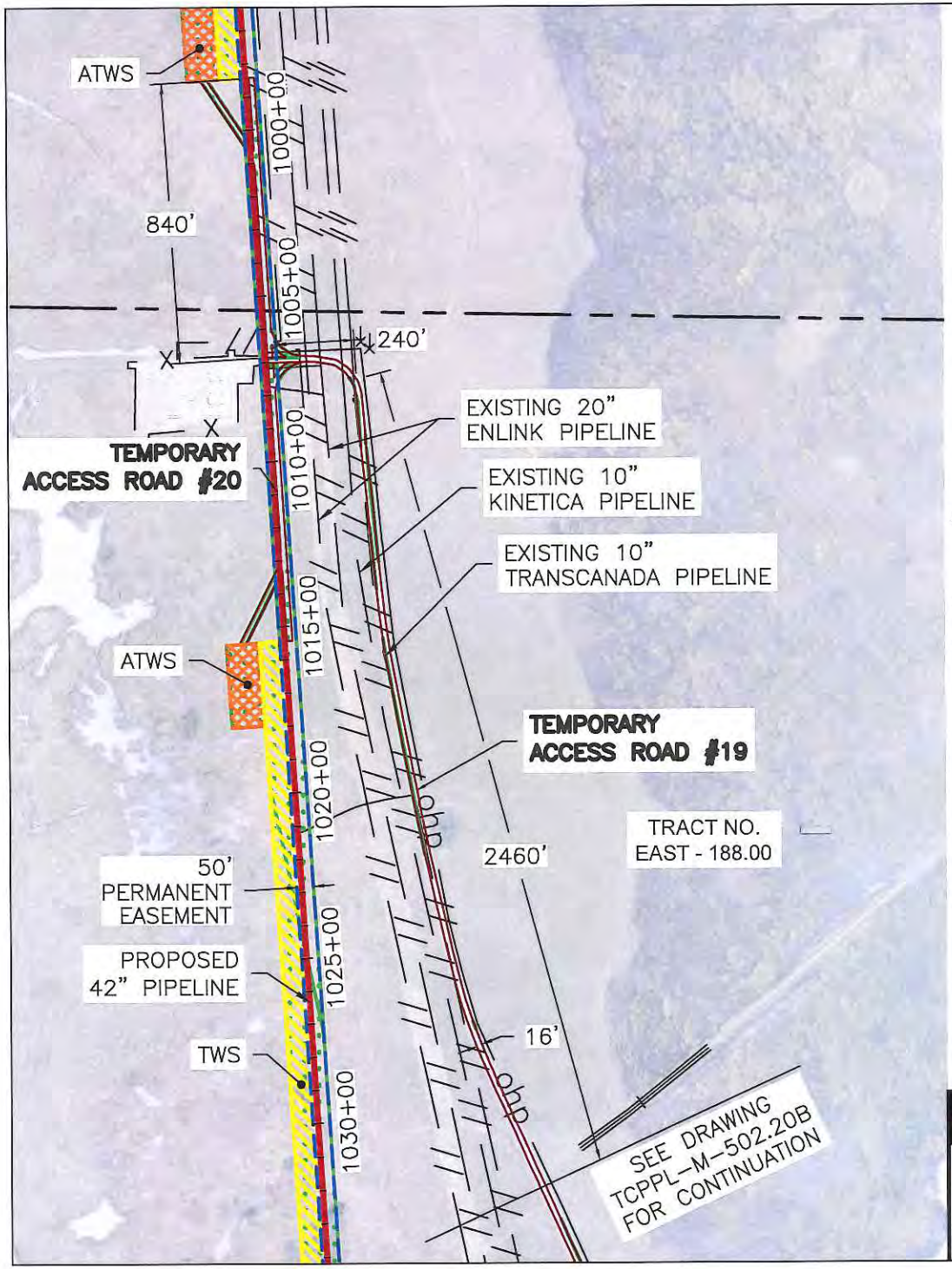
02/23/16	1"=500'	AS		TCPPL-M-502.19C	24	A



N

0 500 1000

1" = 500'

ACCESS ROAD NAME	ACCESS ROAD #19
ACCESS ROAD CLASS	TEMPORARY
ACCESS ROAD LENGTH (FT)	12,150
ACCESS ROAD WIDTH (FT)	16
ACCESS ROAD AREA (SQ FT)	192,950
ACCESS ROAD AREA (AC)	4.43
ACCESS ROAD AREA DISTURBED (SQ FT)	192,950*
ACCESS ROAD AREA DISTURBED (AC)	4.43*
ACCESS ROAD PERMANENT FILL (CU FT)	0.00
ACCESS ROAD TEMPORARY FILL (CU FT)	160,791.67
ACCESS ROAD IMPROVEMENTS	MAY REQUIRE MATTING 16 FOOT WIDE FOR ENTIRE LENGTH.

* AREA DISTURBED BY ACCESS ROAD INCLUDES AREA WITHIN PERMANENT EASEMENT.

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02/09/16	1"=500'	AS		TCPPL-M-502.20A	25	A

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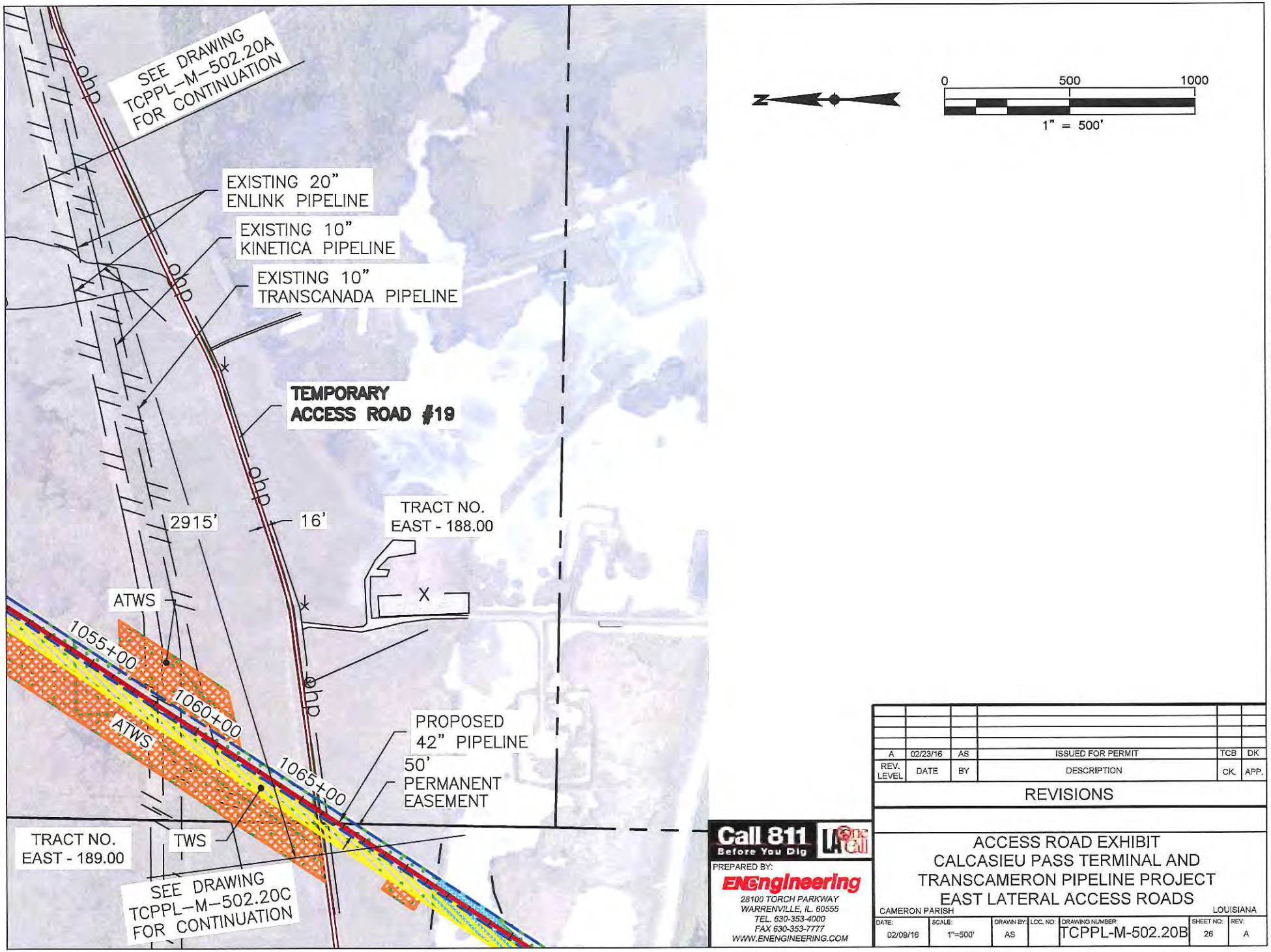

REV. LEVEL	DATE	BY	DESCRIPTION	CK.	APP.
A	02/23/16	AS	ISSUED FOR PERMIT	TCB	DK

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ACCESS ROAD EXHIBIT
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EAST LATERAL ACCESS ROADS

CAMERON PARISH LOUISIANA

DATE:	SCALE:	DRAWN BY:	LCC. NO:	DRAWING NUMBER:	SHEET NO:	REV:
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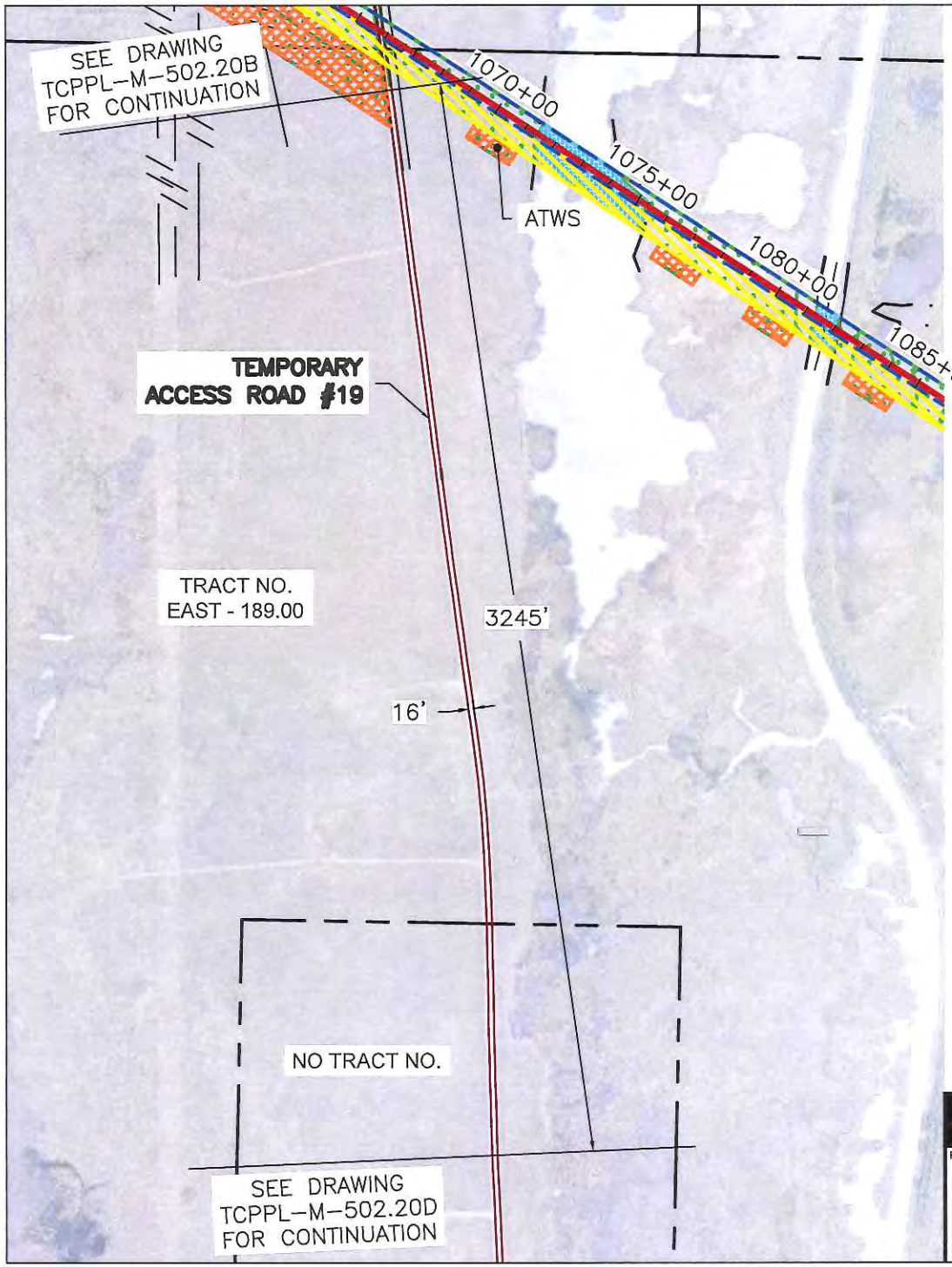

N

0 500 1000

1" = 500'

REV. LEVEL	DATE	BY	DESCRIPTION	CK.	APP.
A	02/23/16	AS	ISSUED FOR PERMIT	TCB	DK

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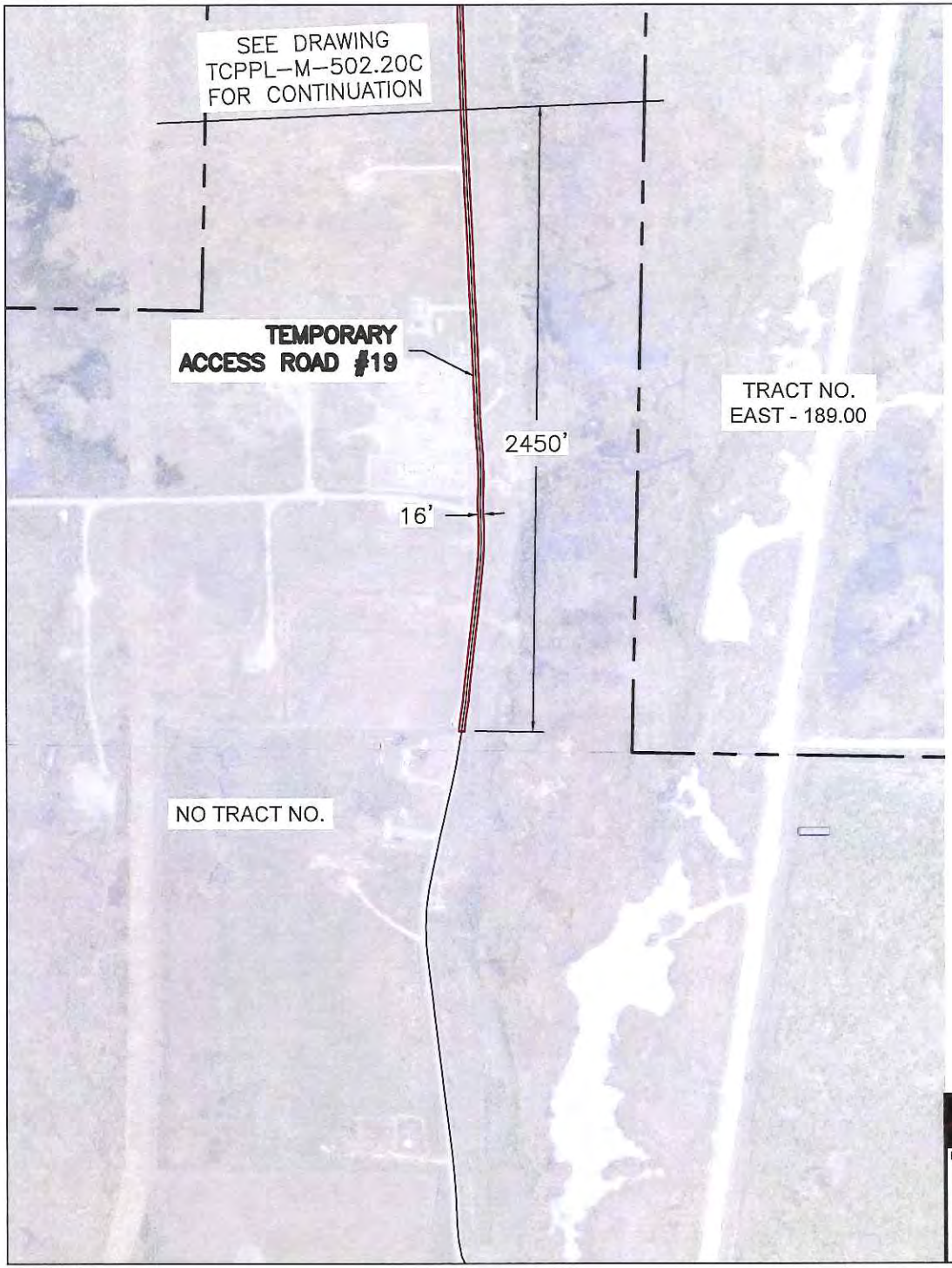

N

0 500 1000

1" = 500'

REV. LEVEL	DATE	BY	DESCRIPTION	CK.	APP.
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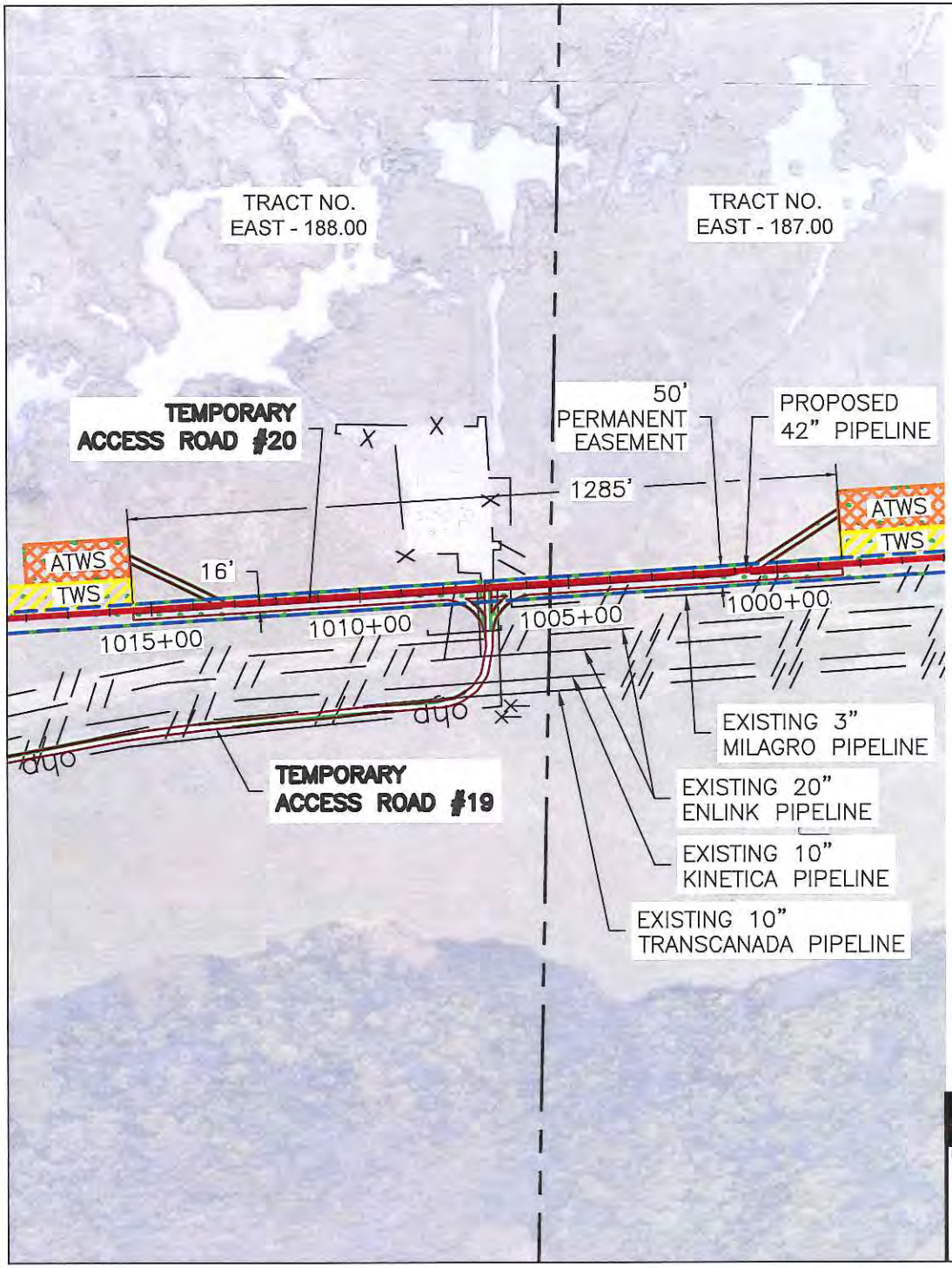

N

0 400 800

1" = 400'

ACCESS ROAD NAME	ACCESS ROAD #20
ACCESS ROAD CLASS	TEMPORARY
ACCESS ROAD LENGTH (FT)	1,285
ACCESS ROAD WIDTH (FT)	16
ACCESS ROAD AREA (SQ FT)	19,190
ACCESS ROAD AREA (AC)	0.44
ACCESS ROAD AREA DISTURBED (SQ FT)	19,190*
ACCESS ROAD AREA DISTURBED (AC)	0.44*
ACCESS ROAD PERMANENT FILL (CU FT)	0.00
ACCESS ROAD TEMPORARY FILL (CU FT)	15,991.67
ACCESS ROAD IMPROVEMENTS	CURRENTLY UNDISTURBED. REQUIRES 16 FOOT WIDE MATTING ENTIRE LENGTH.

* AREA DISTURBED BY ACCESS ROAD INCLUDES AREA WITHIN PERMANENT EASEMENT.

REV. LEVEL	DATE	BY	DESCRIPTION	CK.	APP.
A	02/23/16	AS	ISSUED FOR PERMIT	TCB	DK

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DATE:	SCALE:	DRAWN BY	LOC. NO:	DRAWING NUMBER:	SHEET NO:	REV:
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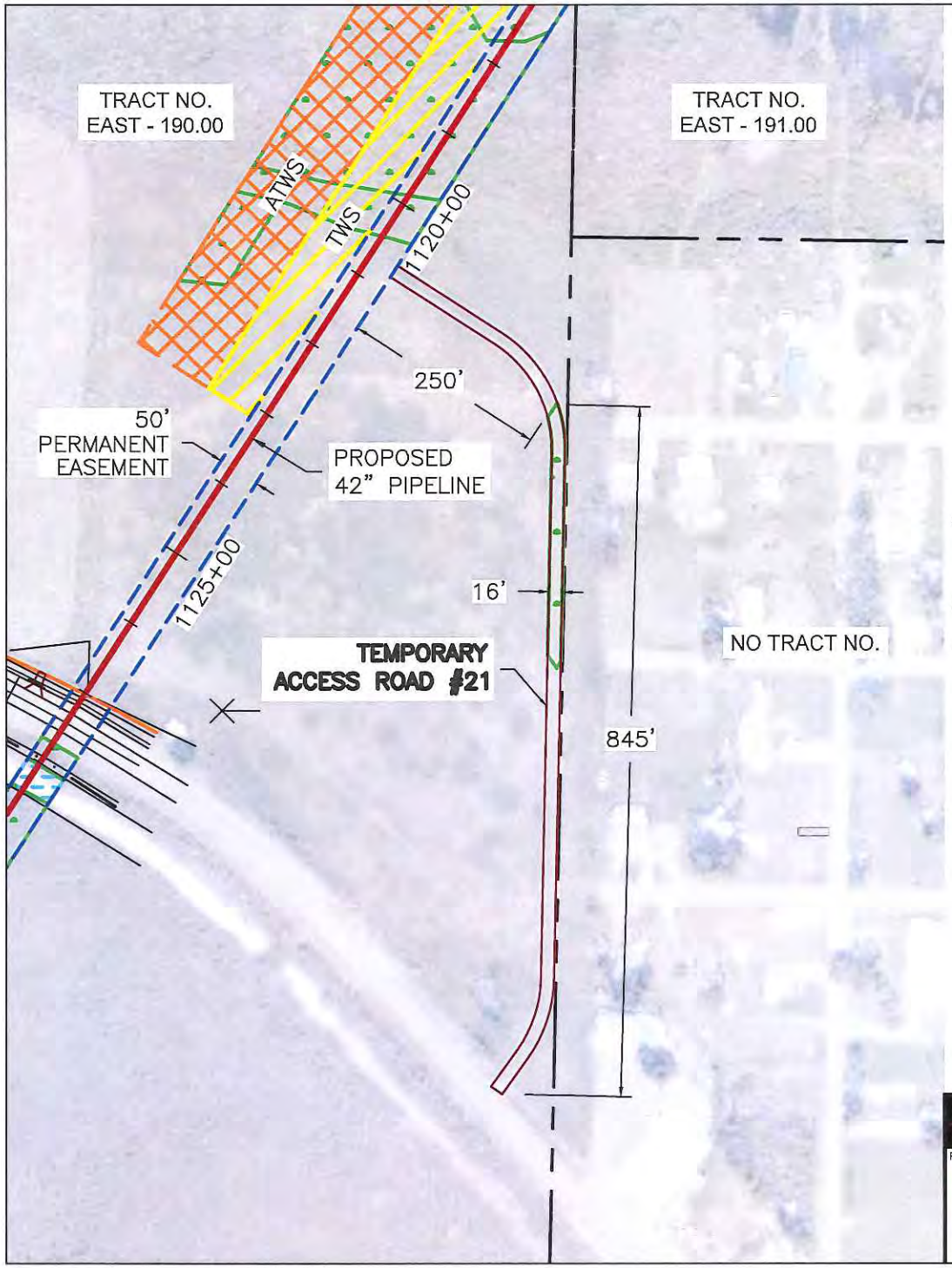

N

0 200 400

1" = 200'

ACCESS ROAD NAME	ACCESS ROAD #21
ACCESS ROAD CLASS	TEMPORARY
ACCESS ROAD LENGTH (FT)	1,095
ACCESS ROAD WIDTH (FT)	16
ACCESS ROAD AREA (SQ FT)	17,500
ACCESS ROAD AREA (AC)	0.40
ACCESS ROAD AREA DISTURBED (SQ FT)	17,500
ACCESS ROAD AREA DISTURBED (AC)	0.40
ACCESS ROAD PERMANENT FILL (CU FT)	0.00
ACCESS ROAD TEMPORARY FILL (CU FT)	14,583.33
ACCESS ROAD IMPROVEMENTS	CURRENTLY UNDISTURBED. REQUIRES 16 FOOT WIDE MATTING ENTIRE LENGTH.

REV. LEVEL	DATE	BY	DESCRIPTION	CK.	APP.
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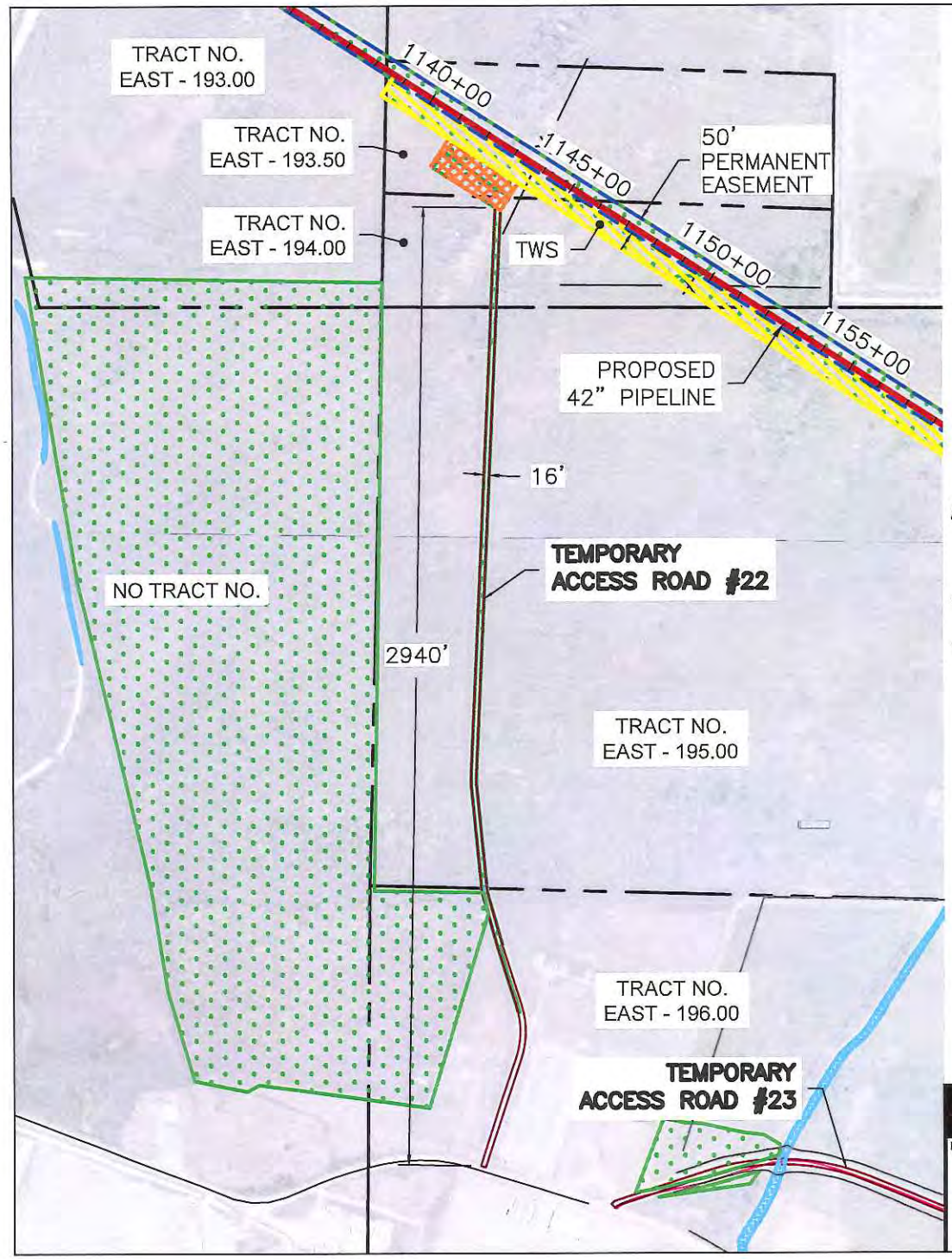

N

0 500 1000

1" = 500'

ACCESS ROAD NAME	ACCESS ROAD #22
ACCESS ROAD CLASS	TEMPORARY
ACCESS ROAD LENGTH (FT)	2,940
ACCESS ROAD WIDTH (FT)	16
ACCESS ROAD AREA (SQ FT)	47,045
ACCESS ROAD AREA (AC)	1.08
ACCESS ROAD AREA DISTURBED (SQ FT)	47,045
ACCESS ROAD AREA DISTURBED (AC)	1.08
ACCESS ROAD PERMANENT FILL (CU FT)	0.00
ACCESS ROAD TEMPORARY FILL (CU FT)	39,204.17
ACCESS ROAD IMPROVEMENTS	CURRENTLY UNDISTURBED. REQUIRES 16 FOOT WIDE MATTING ENTIRE LENGTH.

REV. LEVEL	DATE	BY	DESCRIPTION	CK.	APP.
A	02/23/16	AS	ISSUED FOR PERMIT	TCB	DK

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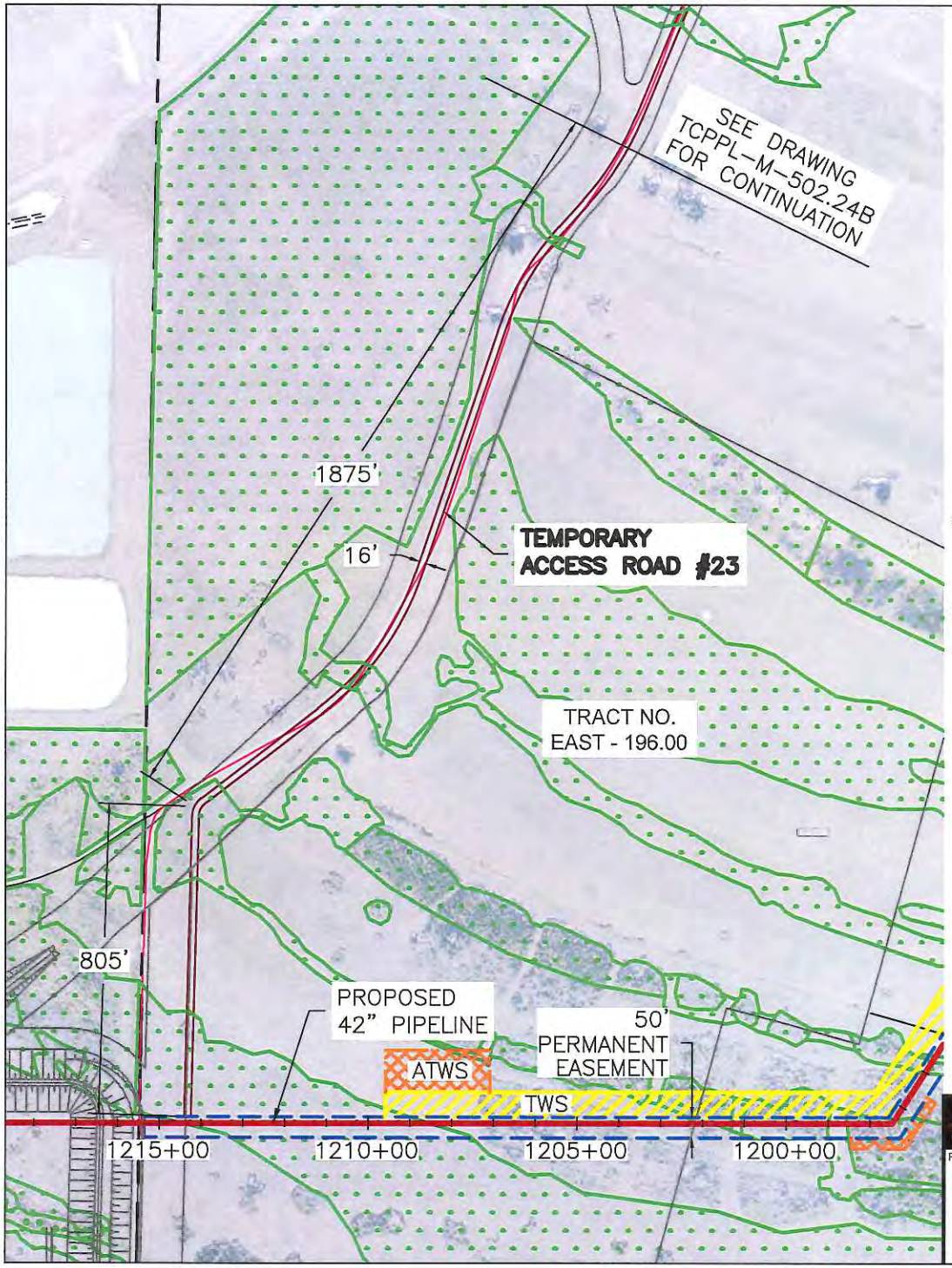
02/09/16	1"=500'	AS		TCPPL-M-502.23	30	A

L:\TR\Projects\157404 Venture Global LNG - Calcasieu Pass FEED\5.0 CADD\5.05 Working Drawings\Pipeline\Access Roads\East_Lateral_Access Roads-JPA.dwg Plotted on: Feb 24, 2016 - 4:13pm by dbegalLakeCharles



N

0 400 800

1" = 400'

ACCESS ROAD NAME	ACCESS ROAD #23
ACCESS ROAD CLASS	TEMPORARY
ACCESS ROAD LENGTH (FT)	4,750
ACCESS ROAD WIDTH (FT)	16
ACCESS ROAD AREA (SQ FT)	76,015
ACCESS ROAD AREA (AC)	1.75
ACCESS ROAD AREA DISTURBED (SQ FT)	0.00
ACCESS ROAD AREA DISTURBED (AC)	0.00
ACCESS ROAD PERMANENT FILL (CU FT)	0.00
ACCESS ROAD TEMPORARY FILL (CU FT)	0.00
ACCESS ROAD IMPROVEMENTS	EXISTING CONDITIONS ARE SUITABLE, NO IMPROVEMENTS NECESSARY.

REV. LEVEL	DATE	BY	DESCRIPTION	CK.	APP.
A	02/23/16	AS	ISSUED FOR PERMIT	TCB	DK

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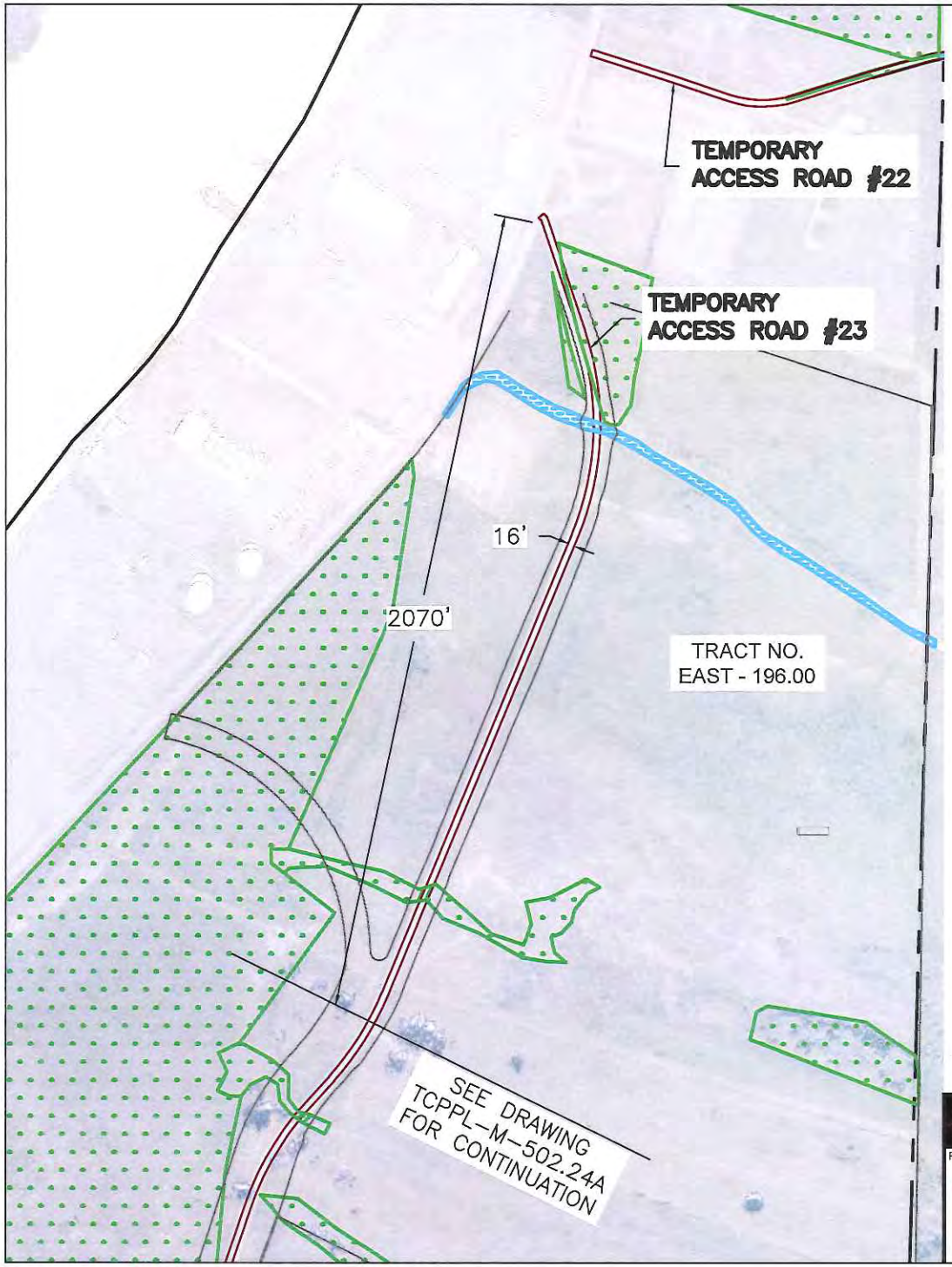

N

0 400 800

1" = 400'

REV. LEVEL	DATE	BY	DESCRIPTION	CK.	APP.
A	02/23/16	AS	ISSUED FOR PERMIT	TCB	DK

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DATE:	SCALE:	DRAWN BY:	LOC. NO:	DRAWING NUMBER:	SHEET NO:	REV:
02/09/16	1"=400'	AS		TCPPL-M-502.24B	33	A

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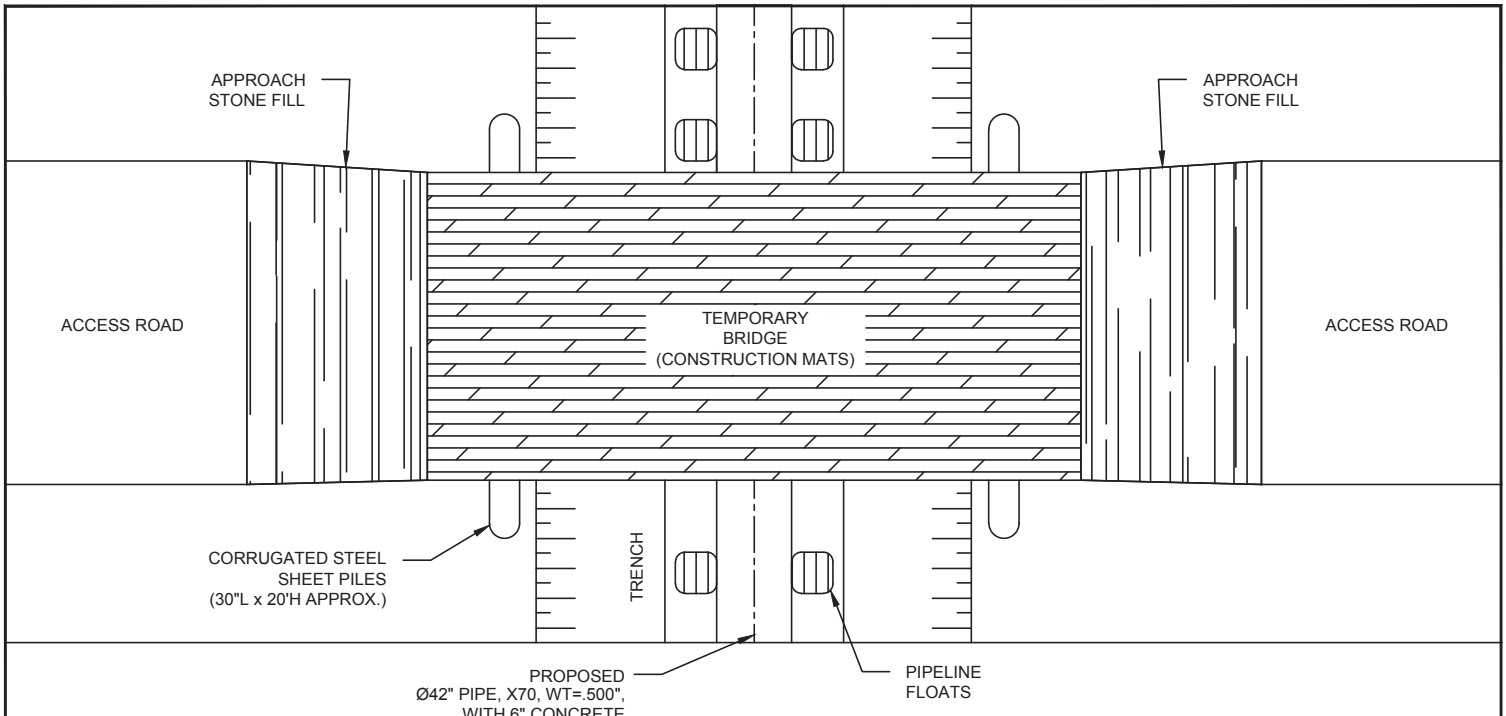
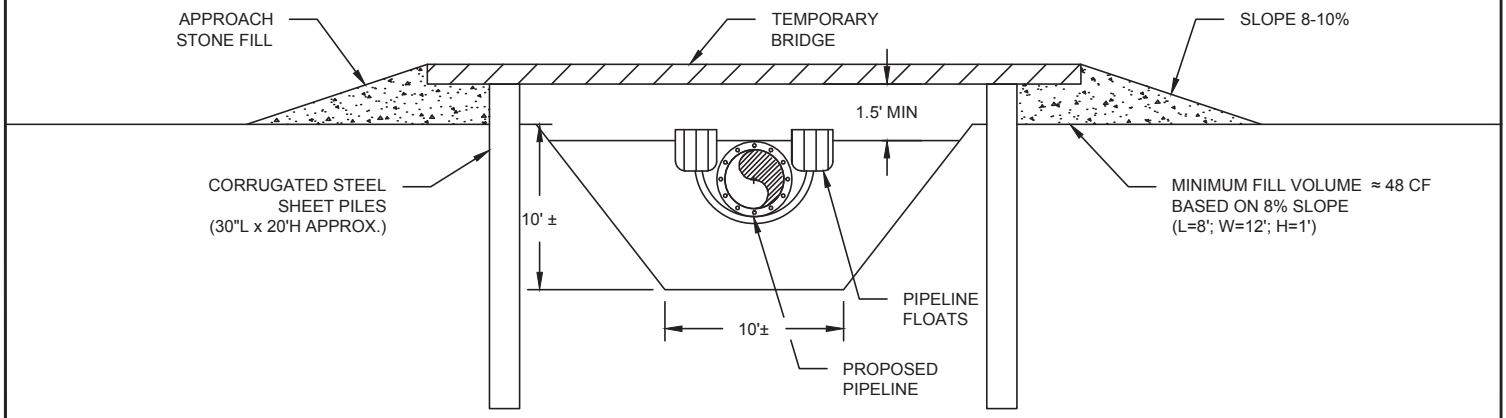


PLAN VIEW
NOT TO SCALE



PROFILE VIEW
NOT TO SCALE

LOCATION STA. WEST LATERAL	
33+80	396+00
121+75	507+90
147+50	630+50
173+80	676+00
205+40	738+65
226+50	
295+20	
343+00	

LOCATION STA. EAST LATERAL	
185+40	833+10
224+00	937+50
236+50	1065+50
257+40	
679+00	
778+10	
802+90	
818+50	

FIGURE 1.3-15e
TYPICAL ACCESS ROAD CROSSING
CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT

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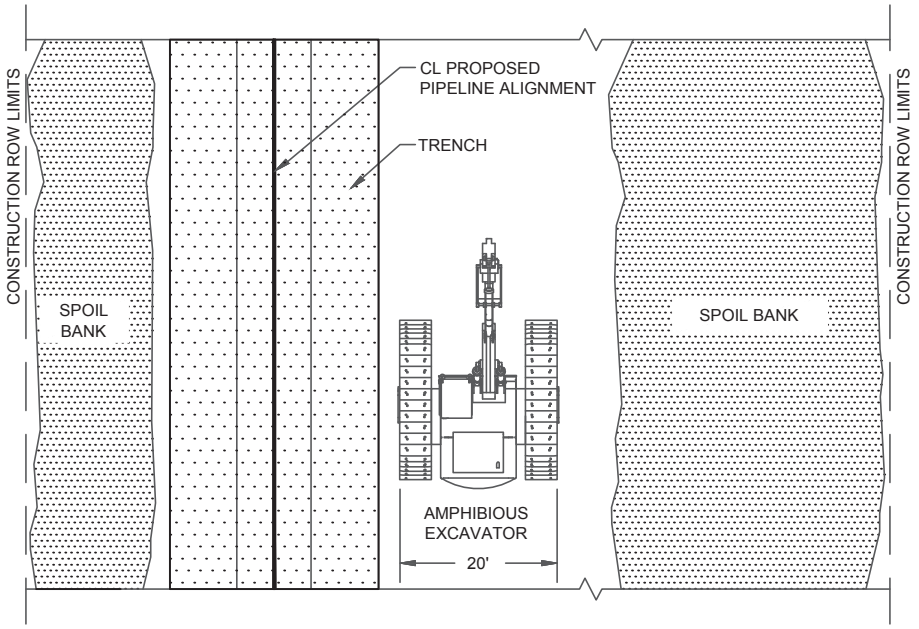
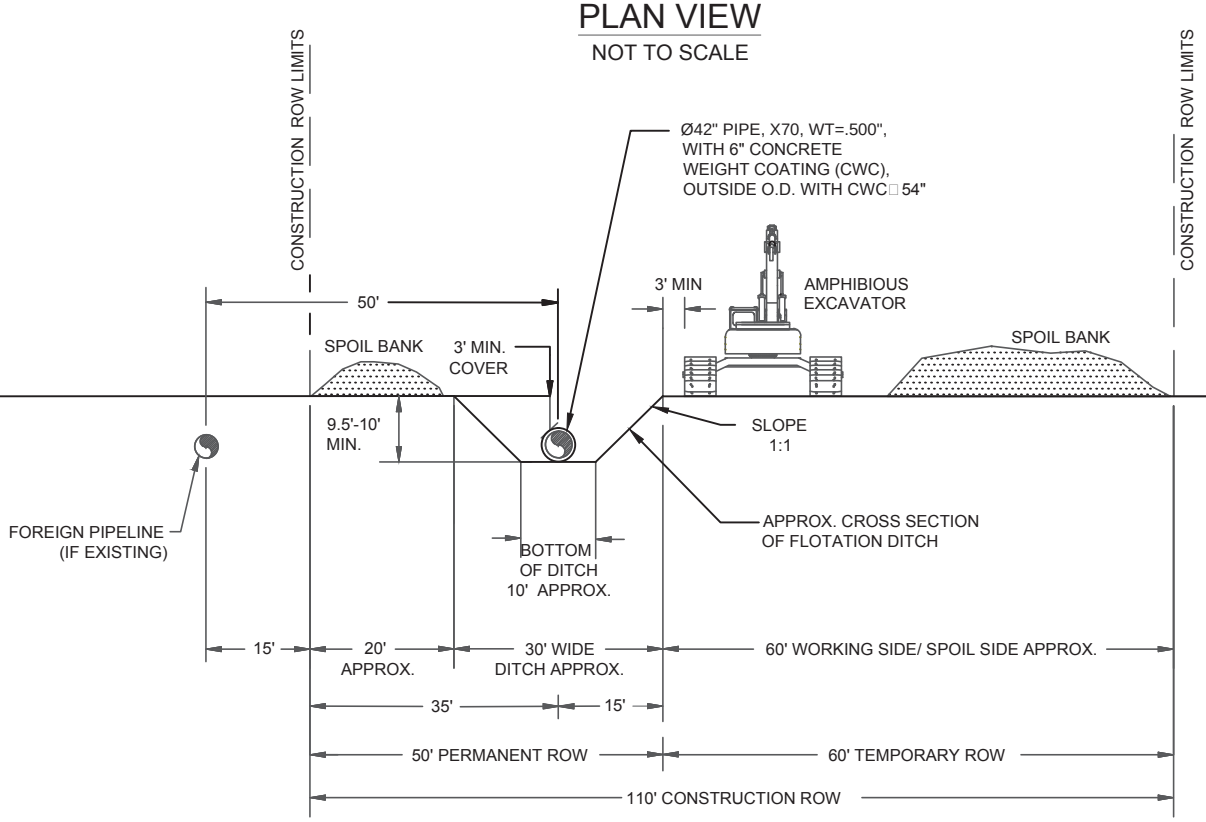
FIGURE 1.3-15e	NTS	07/29/2015	01/15/2016	KBI

APPENDIX C

TYPICAL CONSTRUCTION RIGHT-OF-WAY CONFIGURATIONS



PLAN VIEW
NOT TO SCALE



PROFILE VIEW
NOT TO SCALE

NOTES:

1. CONSTRUCTION RIGHT-OF-WAY (ROW) WILL TYPICALLY BE 110 FEET WIDE CONSISTING OF 50 FEET PERMANENT EASEMENT AND UP TO 60 FEET OF TEMPORARY WORKSPACE. ATWS WILL BE NECESSARY AT FOREIGN PIPELINE, GRAVEL ROAD, CANAL CROSSINGS AND OTHER SPECIAL CIRCUMSTANCES.
2. RESTRICT ROOT GRUBBING TO TRENCH AREA.
3. TOPSOIL SALVAGE IS NOT REQUIRED IN SATURATED SOIL.
4. UTILI□ES AMPHIBIOUS EXCAVATORS AND SUPPORT EQUIPMENT.
5. KEEP SOIL PILES CLEAN OF ALL CONSTRUCTION DEBRIS.
6. LEAVE GAPS IN SPOIL PILES AT OBVIOUS DRAINAGES. DO NOT PUSH UPLAND SOILS INTO CREEKS OR WETLANDS.
7. FABRICATE PIPE IN ATWS STAGING AREAS.
8. BACKFILL TRENCH WITH NATIVE MATERIAL AS EXCAVATED. AVOID SCALPING VEGETATED GROUND SURFACE WHEN BACKFILLING.

FIGURE 1.3-15a(1)
TYPICAL PUSH SECTION ROW
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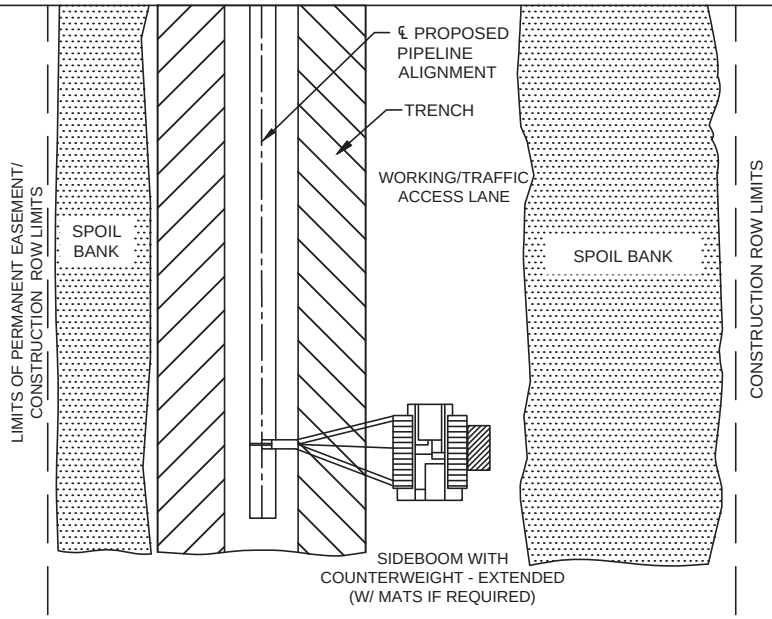
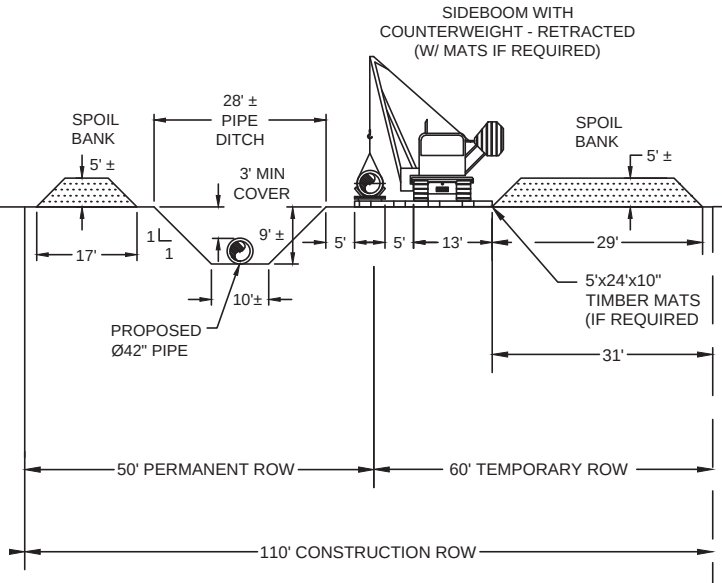
FIGURE 1.3-15a(1)	NTS	07/27/2015	7/30/2015	KBI



WORKSPACE DETAIL

NOT TO SCALE



DITCH DETAIL

NOT TO SCALE

NOTES:

1. CONSTRUCTION RIGHT-OF-WAY (ROW) WILL TYPICALLY BE 110 FEET WIDE CONSISTING OF 50 FEET PERMANENT EASEMENT AND UP TO 60 FEET OF TEMPORARY WORKSPACE. ATWS WILL BE NECESSARY AT FOREIGN PIPELINE, GRAVEL ROAD, CANAL CROSSINGS AND OTHER SPECIAL CIRCUMSTANCES.
2. RESTRICT ROOT GRUBBING TO TRENCH AREA.
3. KEEP SOIL PILES CLEAN OF ALL CONSTRUCTION DEBRIS.
4. LEAVE GAPS IN SPOIL PILES AT OBVIOUS DRAINAGES. DO NOT PUSH UPLAND SOILS INTO CREEKS OR WETLANDS.
5. FABRICATE PIPE IN ATWS STAGING AREAS.
6. BACKFILL TRENCH WITH NATIVE MATERIAL AS EXCAVATED. AVOID SCALPING VEGETATED GROUND SURFACE WHEN BACKFILLING.
7. SELECTION OF CONSTRUCTION METHOD WILL BE BASED ON CONTRACTOR PREFERENCE AND SITE CONDITIONS AT THE TIME OF CONSTRUCTION.

FIGURE 1.3-15a(2-1)
TYPICAL UPLANDS CONSTRUCTION ROW
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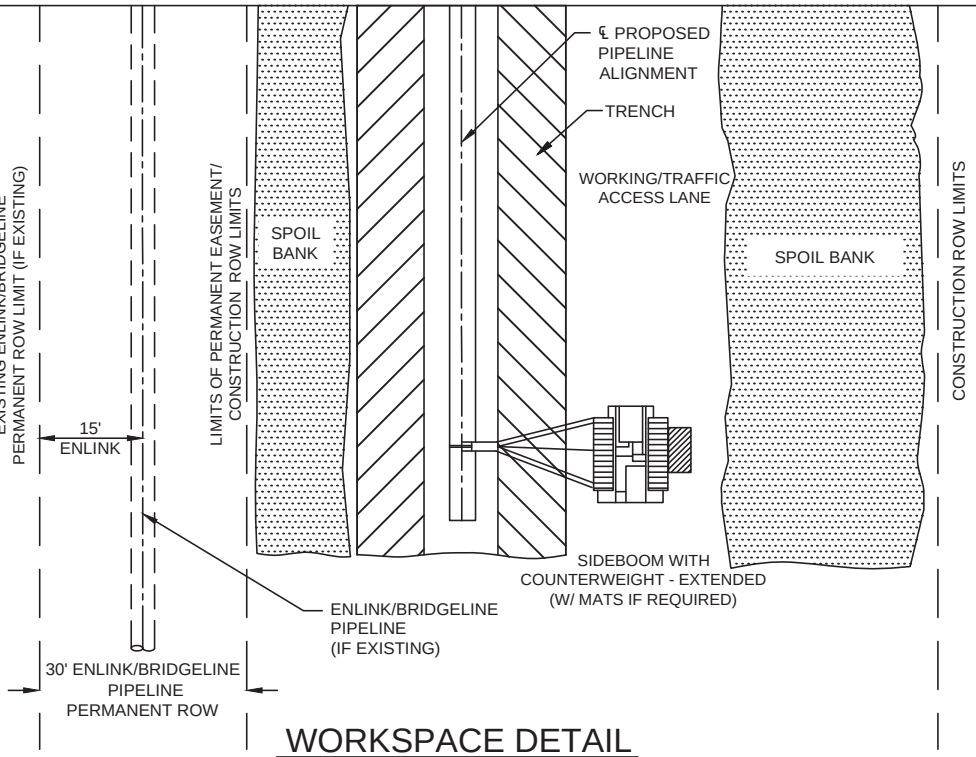
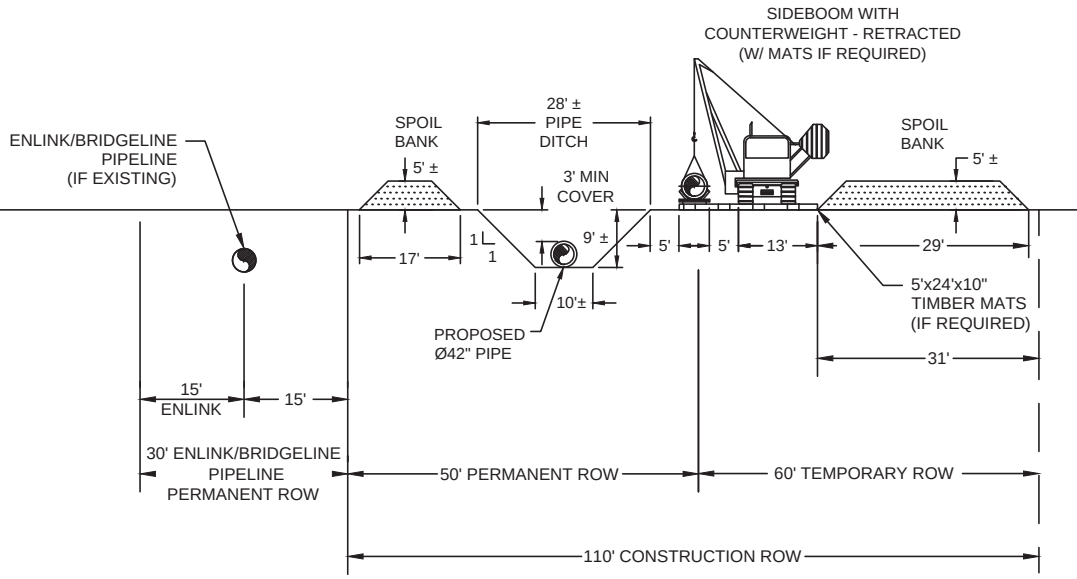
FIGURE 1.3-15a(2-1)	NTS	10/16/2015	01/28/16	KBI



WORKSPACE DETAIL

NOT TO SCALE



DITCH DETAIL

NOT TO SCALE

NOTES:

1. CONSTRUCTION RIGHT-OF-WAY (ROW) WILL TYPICALLY BE 110 FEET WIDE CONSISTING OF 50 FEET PERMANENT EASEMENT AND UP TO 60 FEET OF TEMPORARY WORKSPACE. ATWS WILL BE NECESSARY AT FOREIGN PIPELINE, GRAVEL ROAD, CANAL CROSSINGS AND OTHER SPECIAL CIRCUMSTANCES.
2. RESTRICT ROOT GRUBBING TO TRENCH AREA.
3. KEEP SOIL PILES CLEAN OF ALL CONSTRUCTION DEBRIS.
4. LEAVE GAPS IN SPOIL PILES AT OBVIOUS DRAINAGES. DO NOT PUSH UPLAND SOILS INTO CREEKS OR WETLANDS.
5. FABRICATE PIPE IN ATWS STAGING AREAS.
6. BACKFILL TRENCH WITH NATIVE MATERIAL AS EXCAVATED. AVOID SCALPING VEGETATED GROUND SURFACE WHEN BACKFILLING.
7. SELECTION OF CONSTRUCTION METHOD WILL BE BASED ON CONTRACTOR PREFERENCE AND SITE CONDITIONS AT THE TIME OF CONSTRUCTION.

FIGURE 1.3-15a(2-2)
TYPICAL CONSTRUCTION ROW - UPLANDS PARALLEL FOREIGN PIPELINE
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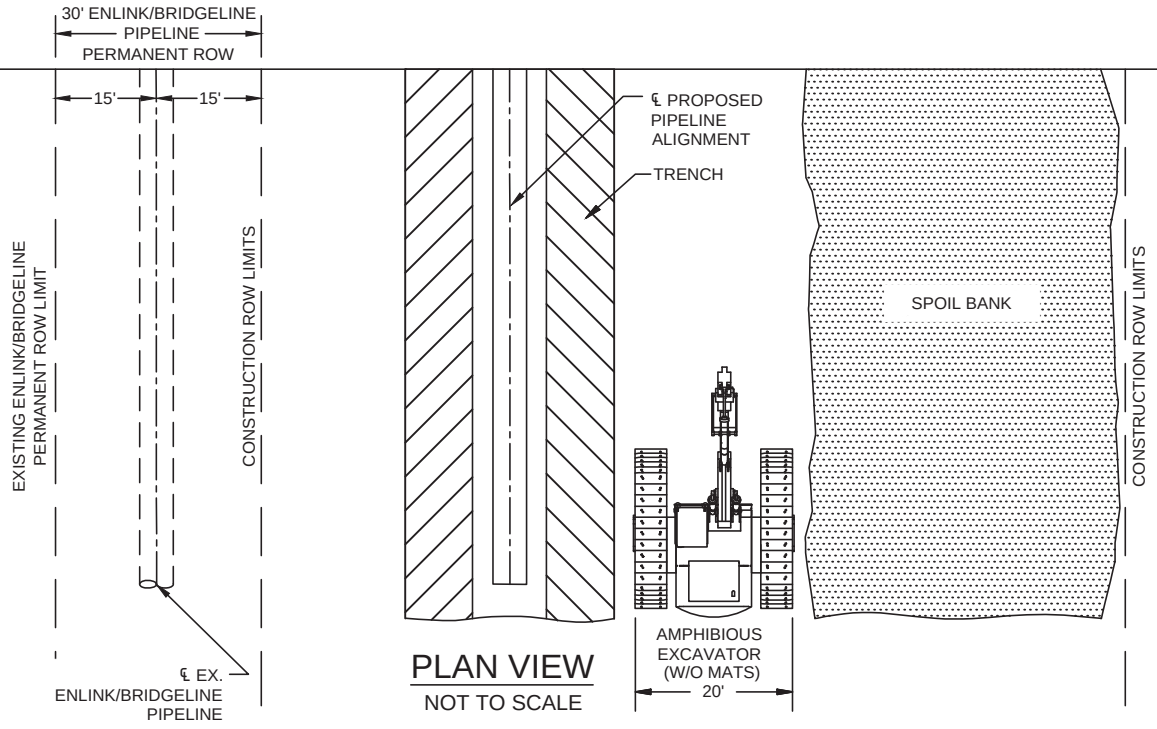
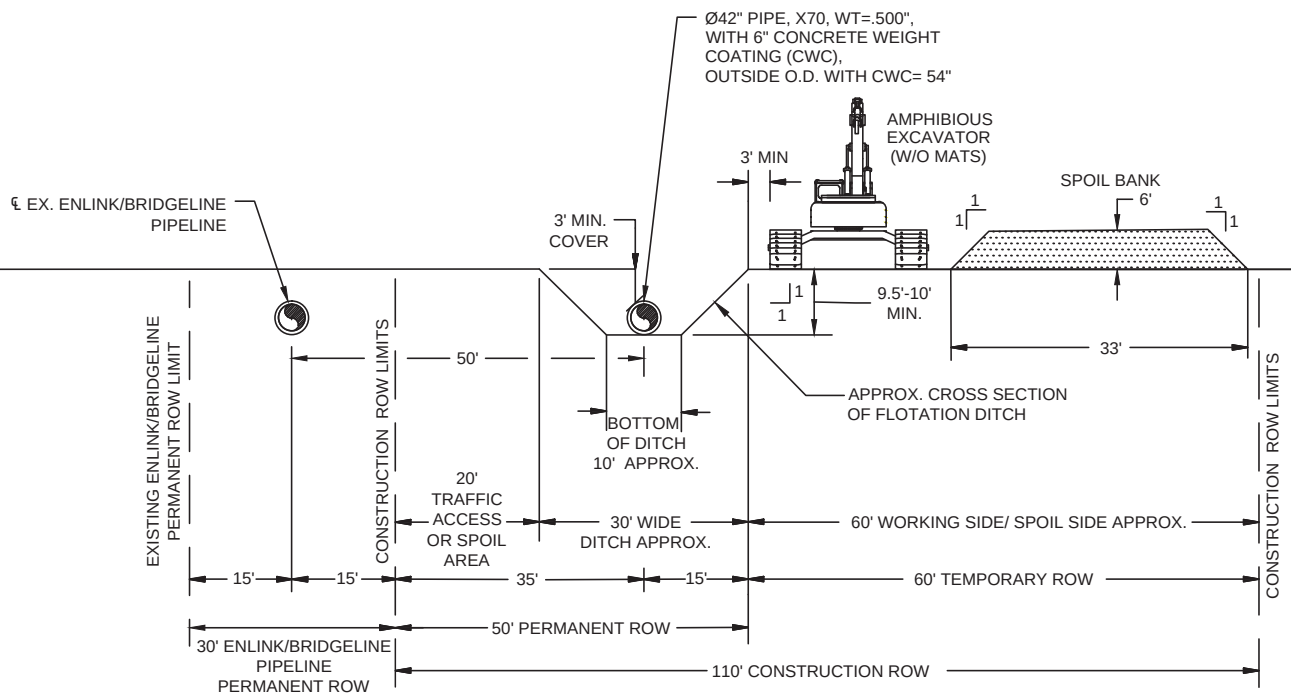
FIGURE 1.3-15a(2-2)	NTS	10/16/2015	01/28/16	KBI



PLAN VIEW
NOT TO SCALE



PROFILE VIEW
NOT TO SCALE

NOTES:

1. CONSTRUCTION RIGHT-OF-WAY (ROW) WILL TYPICALLY BE 110 FEET WIDE CONSISTING OF 50 FEET PERMANENT EASEMENT AND UP TO 60 FEET OF TEMPORARY WORKSPACE. ATWS WILL BE NECESSARY AT FOREIGN PIPELINE, GRAVEL ROAD, CANAL CROSSINGS AND OTHER SPECIAL CIRCUMSTANCES.
2. RESTRICT ROOT GRUBBING TO TRENCH AREA.
3. TOPSOIL SALVAGE IS NOT REQUIRED IN SATURATED SOIL.
4. UTILIZES AMPHIBIOUS EXCAVATORS AND OTHER SUPPORT EQUIPMENT.
5. KEEP SOIL PILES CLEAN OF ALL CONSTRUCTION DEBRIS.
6. LEAVE GAPS IN SPOIL PILES AT OBVIOUS DRAINAGES. DO NOT PUSH UPLAND SOILS INTO CREEKS OR WETLANDS.
7. FABRICATE PIPE IN ATWS STAGING AREAS.
8. BACKFILL TRENCH WITH NATIVE MATERIAL AS EXCAVATED. AVOID SCALPING VEGETATED GROUND SURFACE WHEN BACKFILLING.

FIGURE 1.3-15a(3)
TYPICAL PUSH SECTION ROW (PARALLEL TO EX. ENLINK/BRIDGELINE PIPELINE)
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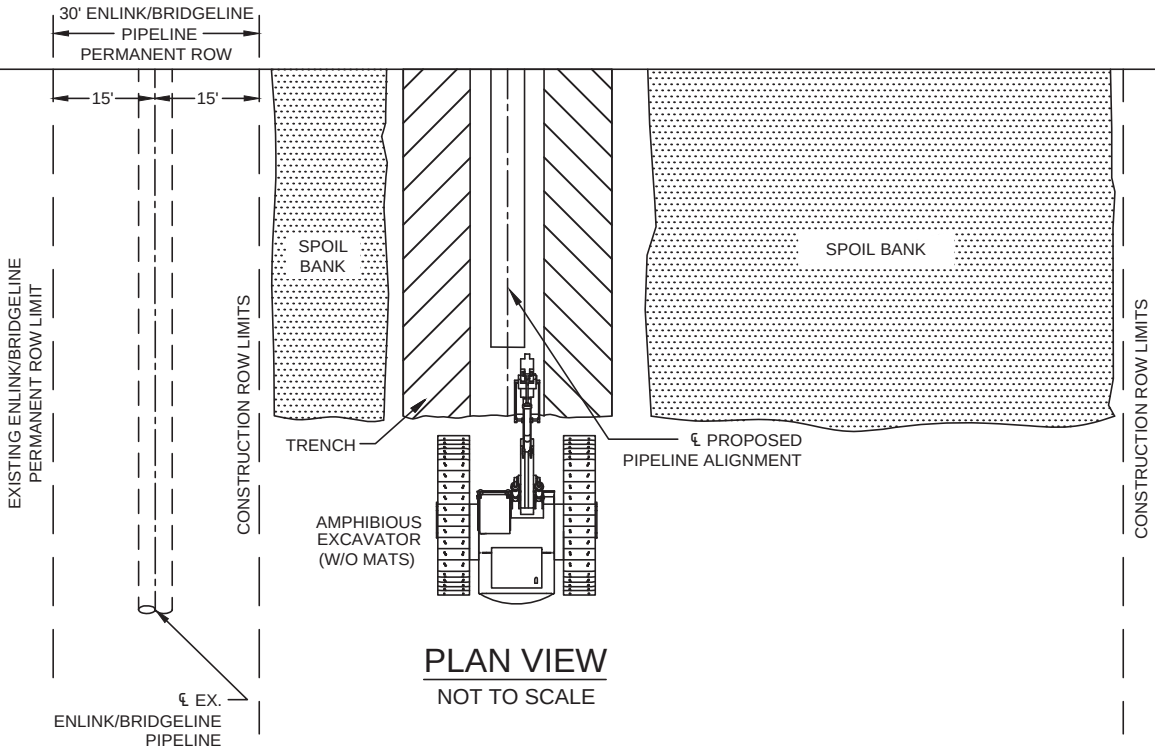
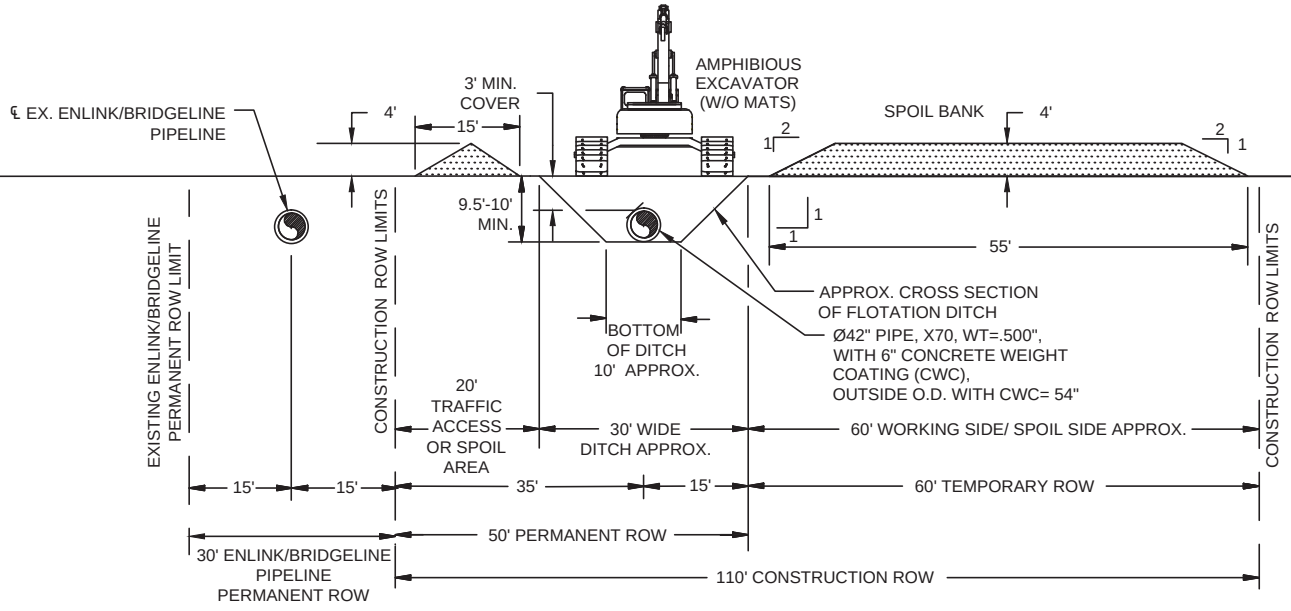
FIGURE 1.3-15a(3)	NTS	07/27/2015	01/13/15	KBI



PLAN VIEW
NOT TO SCALE



PROFILE VIEW
NOT TO SCALE

NOTES:

1. CONSTRUCTION RIGHT-OF-WAY (ROW) WILL TYPICALLY BE 110 FEET WIDE CONSISTING OF 50 FEET PERMANENT EASEMENT AND UP TO 60 FEET OF TEMPORARY WORKSPACE. ATWS WILL BE NECESSARY AT FOREIGN PIPELINE, GRAVEL ROAD, CANAL CROSSINGS AND OTHER SPECIAL CIRCUMSTANCES.
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3. TOPSOIL SALVAGE IS NOT REQUIRED IN SATURATED SOIL.
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5. KEEP SOIL PILES CLEAN OF ALL CONSTRUCTION DEBRIS.
6. LEAVE GAPS IN SPOIL PILES AT OBVIOUS DRAINAGES. DO NOT PUSH UPLAND SOILS INTO CREEKS OR WETLANDS.
7. FABRICATE PIPE IN ATWS STAGING AREAS.
8. BACKFILL TRENCH WITH NATIVE MATERIAL AS EXCAVATED. AVOID SCALPING VEGETATED GROUND SURFACE WHEN BACKFILLING.

FIGURE 1.3-15a(4)
TYPICAL PUSH SECTION ROW (PARALLEL TO EX. ENLINK/BRIDGELINE PIPELINE)
CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT

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FAX 630-353-7777
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CAMERON PARISH, LOUISIANA

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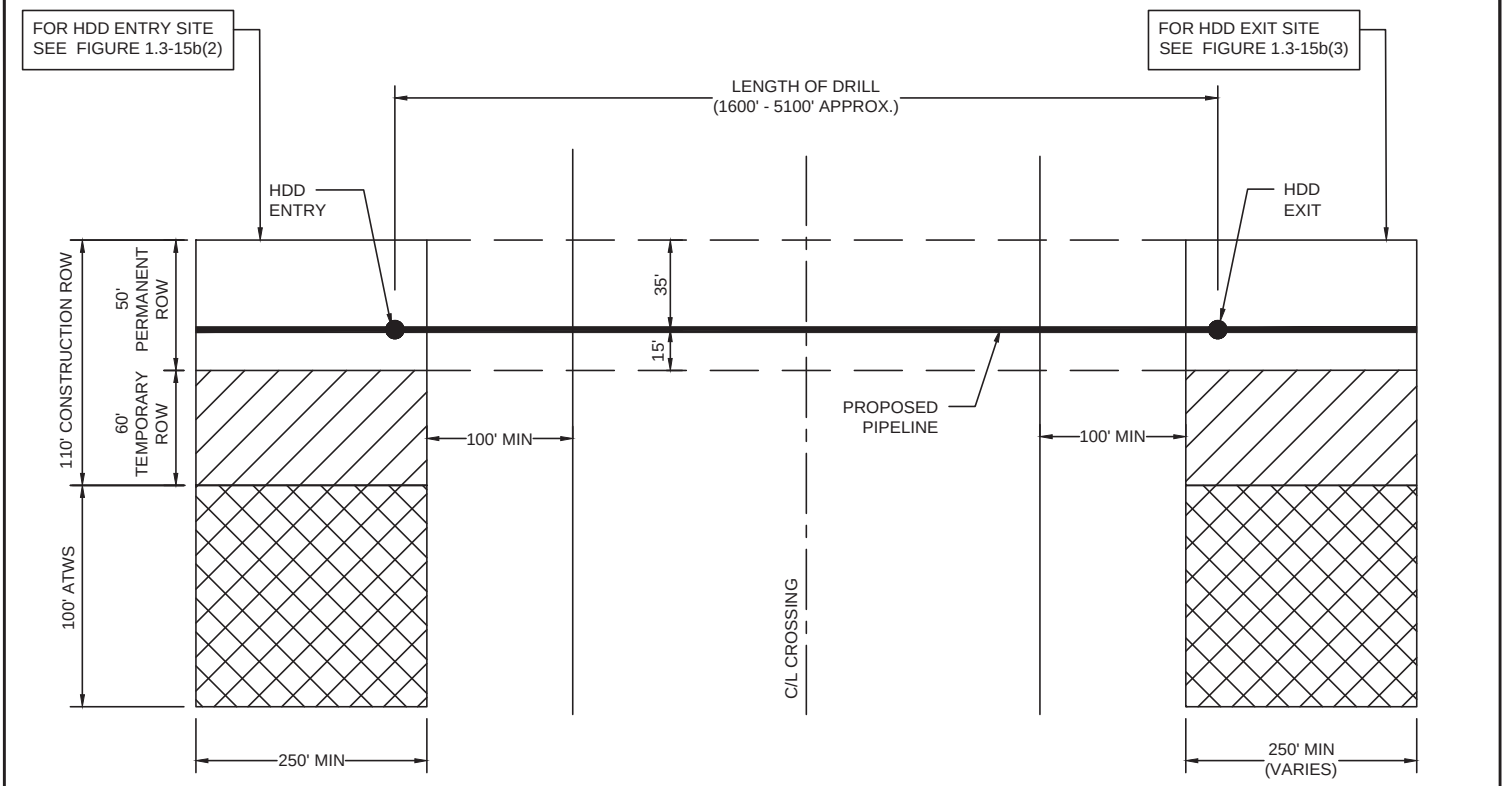
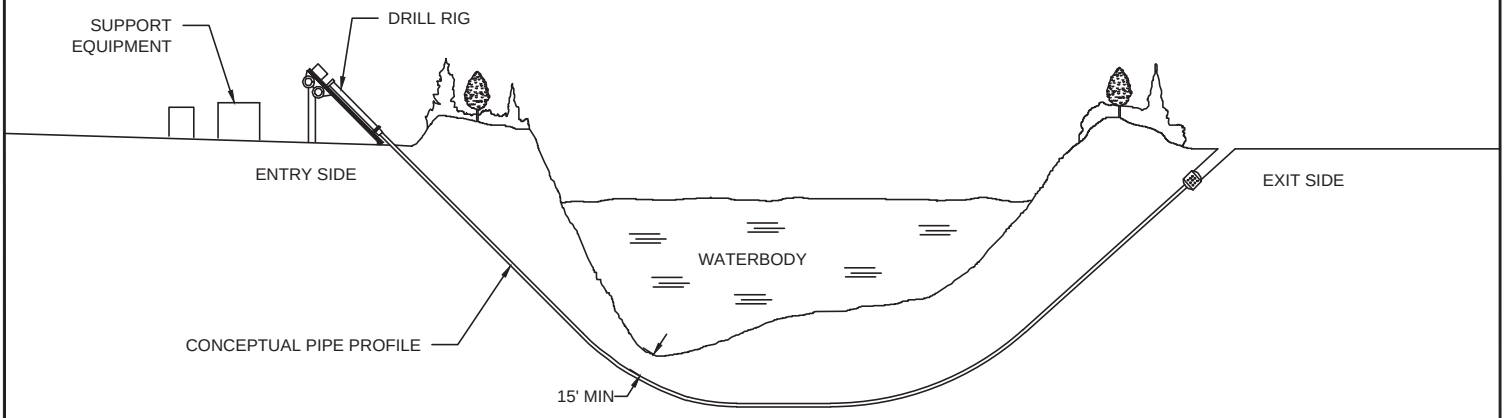
FIGURE 1.3-15a(4)	NTS	07/27/2015	01/28/16	KBI



PLAN VIEW

NOT TO SCALE



PROFILE VIEW

NOT TO SCALE

FIGURE 1.3-15b(1)
TYPICAL HDD CONSTRUCTION ROW
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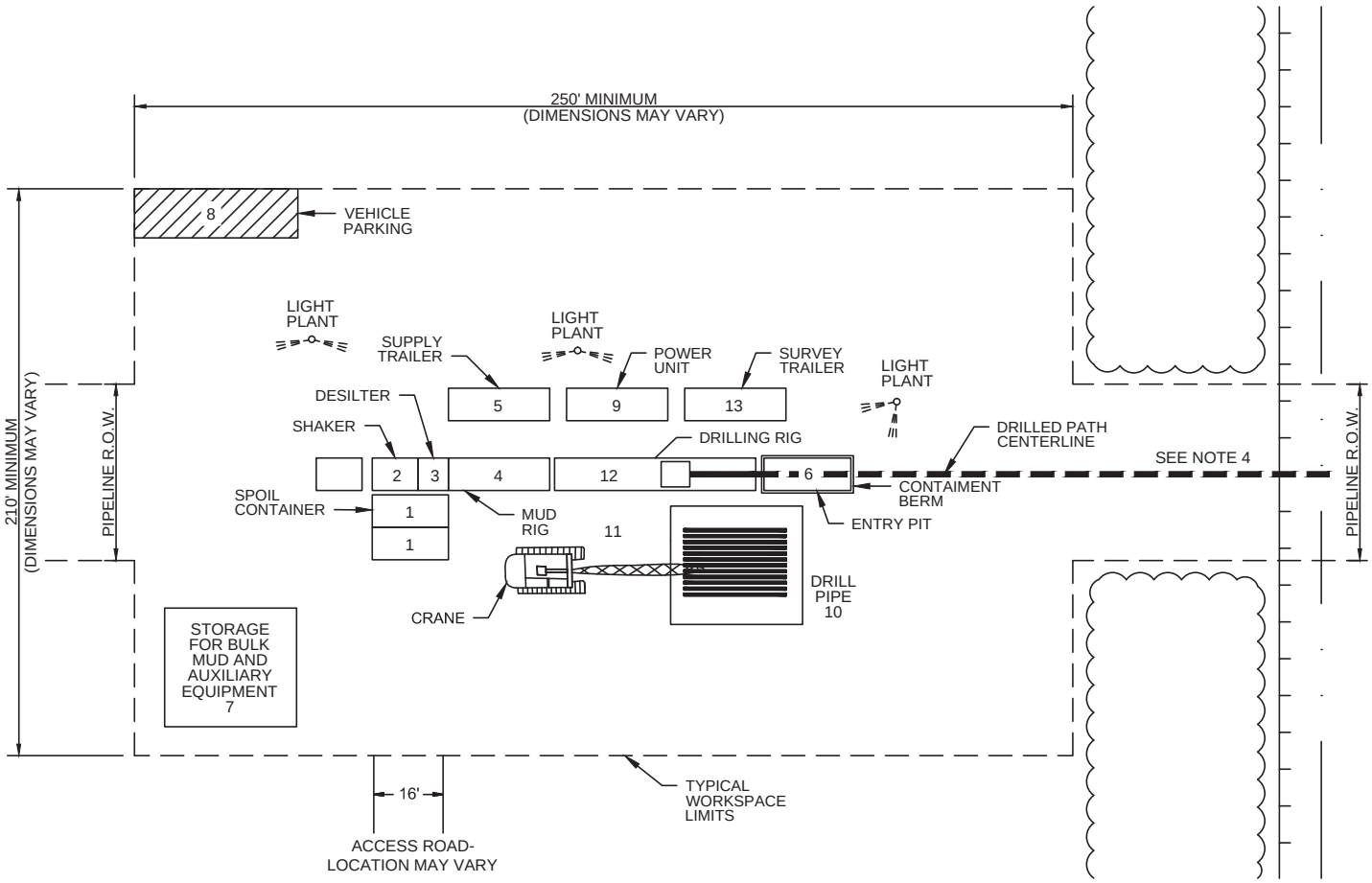
FIGURE 1.3-15b(1)	NONE	07/29/2015	12/21/2015	KBI



EQUIPMENT:

1. SPOIL CONTAINER: 8' x 20'
2. SHAKER: 8' x 12'
3. DESILTER: 8' x 8"
4. MUD RIG: 8.5' x 45'
5. SUPPLY TRAILER: 8' x 25'
6. ENTRY PIT: 10' x 30'
7. STORAGE: 30' x 30'
8. VEHICLE PARKING: 15' x 50'
9. POWER UNIT: 8.5' x 40'
10. DRILL PIPE: 30' x 40'
11. CRANE: 10' x 20'
12. DRILLING RIG: 8.5' x 53'
13. SURVEY TRAILER: 8' x 25'

NOTES:

1. EQUIPMENT ORIENTATION MAY VARY DEPENDING ON CONTRACTOR OR SITE CONDITIONS.
2. EQUIPMENT TO BE SUPPORTED ON THE GROUND SURFACE OR TIMBER MATS AS CONDITIONS DICTATE.
3. SILT FENCE, BERMS AND/OR STRAW BALE BARRIER TO BE USED AS REQUIRED TO PREVENT IMPACTS FROM OCCURRING OUTSIDE OF PROJECT LIMITS.
4. HAND CLEARED ACCESS PATH WILL BE USED TO OBTAIN WATER FROM SOURCE WHERE PERMITTED.

ENTRY SITE PLAN

SCALE: N.T.S.

FIGURE 1.3-15b(2)
TYPICAL HDD ENTRY SITE
CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT

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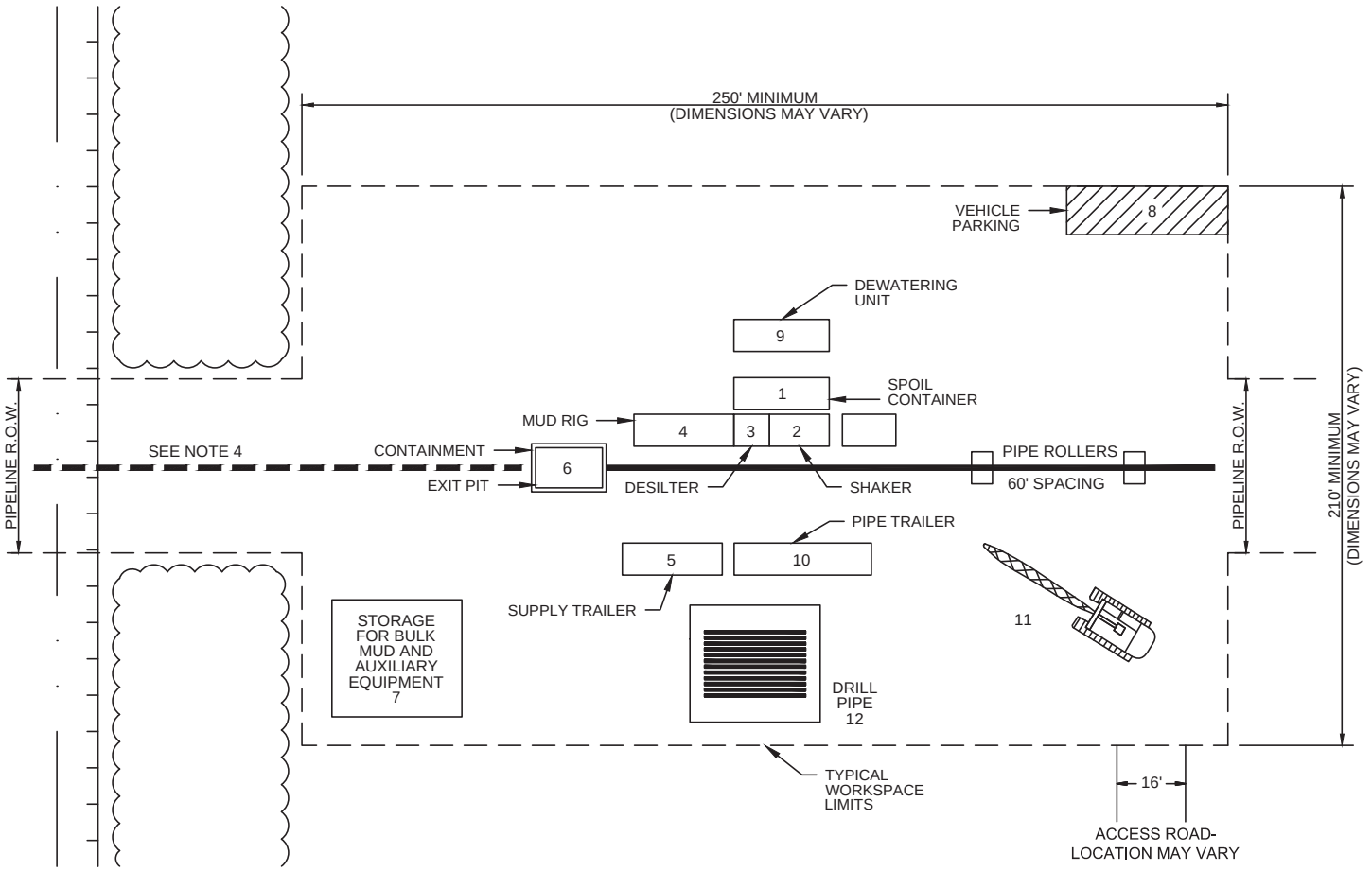
FIGURE 1.3-15b(2)	NONE	12/23/15	01/21/16	MFL



EQUIPMENT:

1. SPOIL CONTAINER: 8' x 20'
2. SHAKER: 8' x 12'
3. DESILTER: 8' x 8"
4. MUD RIG: 8.5' x 45'
5. SUPPLY TRAILER: 8' x 25'
6. EXIT PIT: 10' x 30'
7. STORAGE: 30' x 30'
8. VEHICLE PARKING: 15' x 50'
9. DEWATERING UNIT 15' x 50'
10. PIPE TRAILER 8' x 40'
11. CRANE: 10' x 20'
12. DRILL PIPE: 30' x 40'

NOTES:

1. EQUIPMENT ORIENTATION MAY VARY DEPENDING ON CONTRACTOR OR SITE CONDITIONS.
2. EQUIPMENT TO BE SUPPORTED ON THE GROUND SURFACE OR TIMBER MATS AS CONDITIONS DICTATE.
3. SILT FENCE, BERMS AND/OR STRAW BALE BARRIER TO BE USED AS REQUIRED TO PREVENT IMPACTS FROM OCCURRING OUTSIDE OF PROJECT LIMITS.
4. HAND CLEARED ACCESS PATH WILL BE USED TO OBTAIN WATER FROM SOURCE WHERE PERMITTED.

EXIT SITE PLAN

SCALE: N.T.S.

FIGURE 1.3-15b(3)
TYPICAL HDD EXIT SITE
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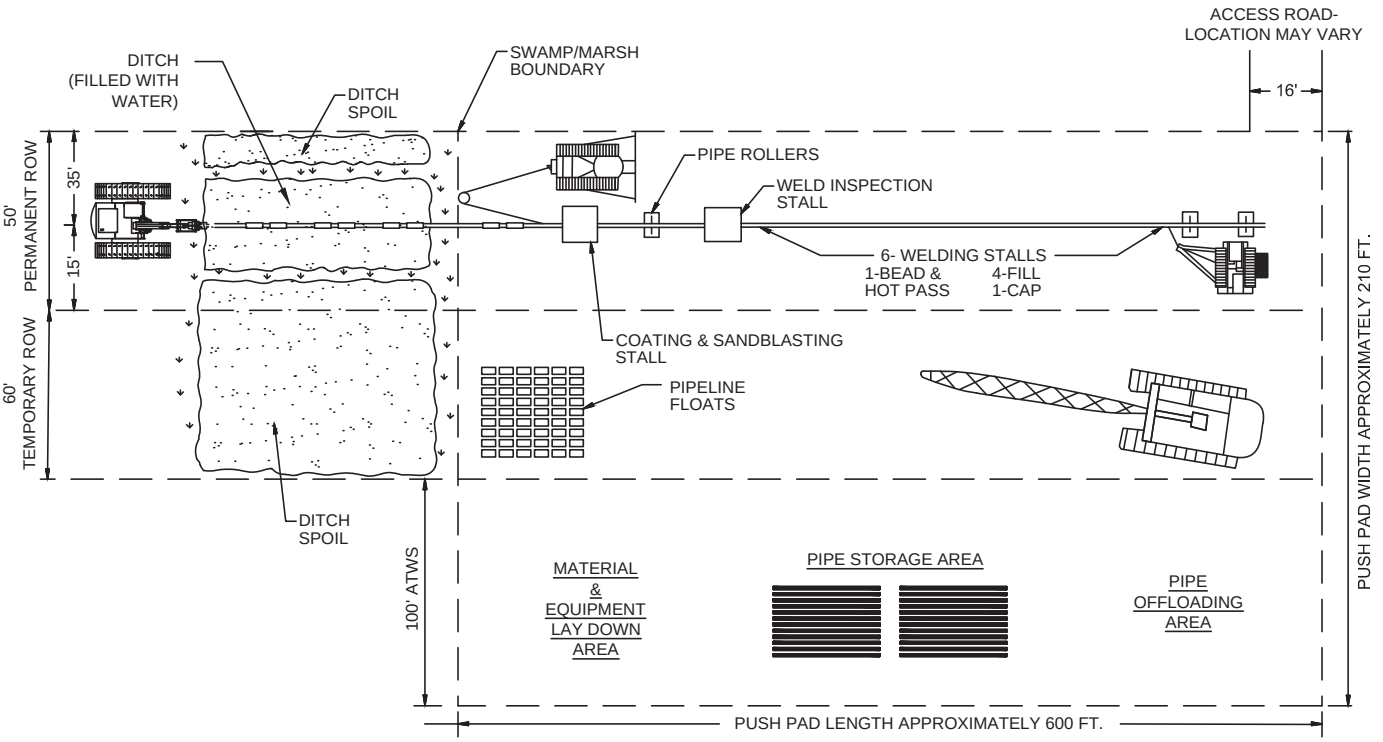
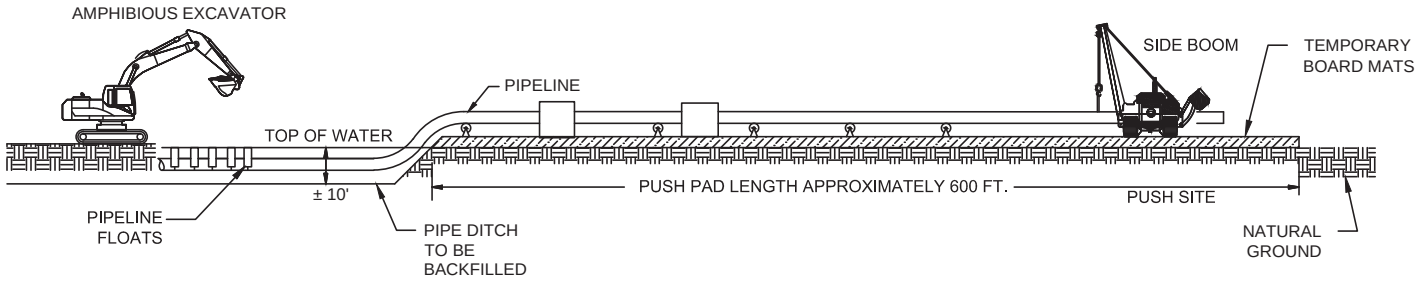
FIGURE 1.3-15b(3)	NONE	12/23/15	01/06/16	KJP



PLAN VIEW
NOT TO SCALE



SIDE VIEW
NOT TO SCALE

LOCATION OF PUSH SITES

WEST LATERAL MP	EAST LATERAL MP
0.01	0.99
7.45	2.77
10.70	7.83
17.48	10.04
	18.79
	19.75
	21.16

NOTES:

1. WORKSPACE SHOWN IS TYPICAL FOR MARSH-TYPE CONSTRUCTION.
2. AS THE PIPE IS WELDED, THE BULLDOZER PULLS THE STRING INTO THE DITCH.
3. TIMBER MATS ARE REQUIRED.

FIGURE 1.3-15c
TYPICAL PUSH SITE (WETLAND CROSSING)
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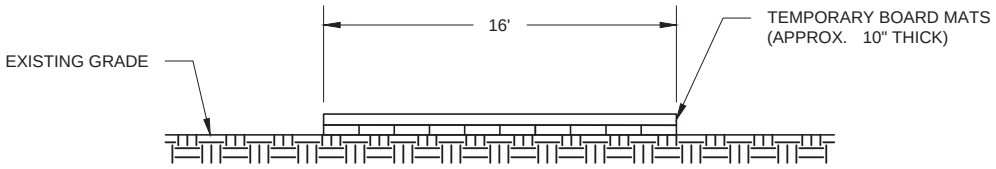
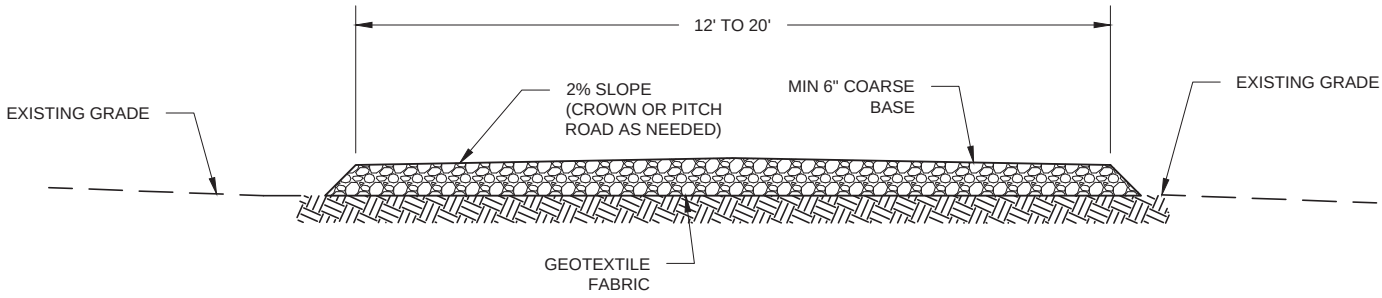
FIGURE 1.3-15c	NONE	07/28/2015	01/28/16	KBI



TYPICAL TEMPORARY ACCESS ROAD CROSS SECTION

NOT TO SCALE



TYPICAL PERMANENT ACCESS ROAD CROSS SECTION

NOT TO SCALE

FIGURE 1.3-15d(1)
TYPICAL TEMPORARY ACCESS ROAD AND PERMANENT ACCESS ROAD CROSS SECTION
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FIGURE 1.3-15d	NONE	07/28/2015	01/28/16	KBI

APPENDIX D

HORIZONTAL DIRECTIONAL DRILL CONTINGENCY PLAN

VENTURE GLOBAL LNG

Horizontal Directional Drilling Contingency Plan

Calcasieu Pass Terminal and TransCameron Pipeline Project

Submitted By:

EN Engineering

Warrenville, Illinois

August 17, 2015

ENEngineering®

TABLE OF CONTENTS

Contents

TRANSCAMERON PIPELINE, LLC
CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT
HDD CONTINGENCY PLAN

1.0 PURPOSE AND NEED

As part of the Calcasieu Pass Terminal and TransCameron Pipeline Project (Project) TransCameron Pipeline, LLC (TransCameron Pipeline) proposes to use the Horizontal Directional Drilling (HDD) method to install pipe across various large spans of wetlands, waterbodies, roads, utilities and other obstacles obstructing the proposed pipeline alignment. The HDD method of installation reduces disturbances during pipeline construction by passing underneath sensitive features at the surface. The HDD method avoids disturbance to the bed and bank of a waterbody being crossed, keeps sensitive environmental resources and vegetation intact, and/or allows for a highway or other fixed feature to be crossed while avoiding open cut excavation between the drill entry and exit points. However, if a natural fracture or an unconsolidated area in the ground is encountered during drilling, an unexpected release of drilling mud could occur. For consistency within this HDD Contingency Plan, an unexpected release of drilling fluid will be referred to as an inadvertent return. Due to the potential of inadvertent returns, it is important to have a thought out plan in place to establish the proper procedures and responsibilities of onsite personnel.

The objective of this HDD Contingency Plan is to:

- Provide procedures that will minimize the potential for release of drilling mud into sensitive resource areas such as wetlands and waterbodies, or onto adjacent upland surfaces;
- Provide for timely detection of inadvertent returns;
- Ensure the implementation of an organized, timely, and “minimum-impact” response in the event an inadvertent return of drilling fluid occurs;
- Ensure that all appropriate notifications are made in a timely manner;
- Provide for an alternative plan in case of drill failure; and,
- Establish the criteria by which TransCameron Pipeline will determine when a proposed HDD crossing is unsuccessful and must be abandoned.

2.0 HDD PROCESS

2.1 DRILLING BASICS

The HDD Method is a technically advanced process involving specialized equipment and skilled operators. The primary environmental risk associated with this construction method comes from the potential for inadvertent release of drilling mud. The supervision of inadvertent release monitoring is the responsibility of both the drilling HDD Contractor and TransCameron Pipeline.

Minimal, consistent loss of drilling mud typically occurs during the HDD operation when layers of loose sand, gravel, or fractured rock are encountered and drilling mud fills voids in those sub-surface materials. However, a significant loss of returning drill mud and a reduction in drilling pressure indicates that excessive seepage is occurring outside of the drill hole.

2.2 DRILLING MUD AND DRILLING MUD SYSTEM

The HDD Method uses drilling mud consisting primarily of water and bentonite, a naturally occurring clay. Drilling mud removes the cuttings from the drill hole, stabilizes the walls of the drill hole, and acts as a coolant and lubricant to the drill bit during the drilling process. The drilling mud mixture consists of 1 to 5 percent bentonite clay and from 0 to 40 percent inert solids from the drill hole cuttings, with the remainder being water.

The drilling mud is prepared in a mixing tank using both new and clean recycled drilling mud. The mud is pumped at rates of 200 gallons per minute (gpm) to 1,000 gpm through the center of the drill pipe to the drilling tools. Return flow is through the annulus created between the wall of the drill hole and the drill pipe. During the pilot hole drilling operation, the cuttings are returned to a small excavation at the entry point called the entry pit. From the entry pit, the returned mud is pumped to the mud processing equipment. Typically, shaker screens, desanders, desilters, and centrifuges process and remove increasingly finer cuttings from the drilling mud. The clean mud is recycled to the mixing tank for reuse in the borehole. The cuttings removed by the cleaning process are disposed of at a site approved to accept this type of material.

3.0 DRILLING MUD RELEASE

3.1 PREVENTION

The HDD method is typically used to avoid congested areas and/or to avoid disturbance of sensitive surface features, including wetlands and waterbodies. HDD does, however, present potential for surface disturbance through inadvertent drilling mud releases. Drilling mud releases are typically caused by blockage of the return flow path around the drill pipe where pressurization of the drilling mud rises above the containment capability of the overburden soil material. Pressurized drilling mud follows the path of least resistance, which may result in the drilling mud flowing to the ground surface should the annulus around the drill pipe become plugged. Releases may follow fractures in bedrock or other voids in the strata that allow the mud to penetrate the surface.

3.1.1 Suitable Material and Adequate Criteria

Prevention of drilling mud seepage is a major consideration in determining the profile of the HDD crossing. The primary factors in selecting the pipeline crossing profile include the type of soil and rock in the geological material and the depth of cover material. Cohesive soils, such as clays, dense sands and competent rock are considered ideal materials for horizontal drilling. The depth of adequate overburden is also considered.

The areas that present the highest potential for drilling mud seepage are the drill entry and exit points where the overburden depth is minimal. At both the entry and exit points, above ground containment containers will provide temporary storage for the inadvertently released drilling mud or seepage until it can be pumped back into the drilling system.

3.1.2 Pipeline Geometry

The geometry of the pipeline profile can also affect the potential for drilling fluid seepage. In a profile which forces the pipe to make compound or excessively tight radii turns, downhole pressures can build up, thereby, increasing the potential for drilling fluid seepage. The profiles

for the proposed crossings minimize this potential, with very smooth and gradual vertical curves. HDD design and planning minimizes the potential for pressure buildup caused by pipeline geometry.

3.1.3 General Observations Regarding Inadvertent Returns

The risk of HDD inadvertent returns can also be reduced by evaluating these subsurface conditions prior to construction that could be conducive to inadvertent returns or drill failure:

- Highly permeable soil such as gravel;
- Soil test bore holes in close proximity to the drill path;
- Presence of rock joints or other subsurface fractures;
- Considerable differences in the elevations of HDD entry and exit points; and
- Disturbed soil, such as fill.

3.1.4 Responsibility of Drilling HDD Contractor

Project specifications will require that the HDD Contractor be fully qualified and experienced with HDD construction. The HDD Contractor will be responsible for monitoring down-hole drilling fluid pressures and drilling fluid flows and keeping these parameters within safe limits. The HDD Contractor will also be responsible for complying with all permit requirements, technical specifications, and this HDD Contingency Plan. The HDD Contractor will be required to submit a detailed pre-construction contingency plan that supplements this plan. The plan should include measured design considerations that the HDD Contractor made in their HDD design to mitigate inadvertent returns. General HDD activities will be conducted consistent with TransCameron Pipeline's Storm Water Pollution Prevention Plan (SWPPP).

3.1.5 Training

Prior to the start of construction, the Construction Manager and EI will verify that the construction field crew members receive the following site-specific training:

- Review provisions of this HDD Contingency Plan, equipment maintenance and site-specific permit and monitoring requirements;
- Review location of sensitive environmental resources at the site and relevant permit conditions; review inspection procedures for inadvertent return prevention and be familiar with containment equipment and materials;
- Review HDD Contractor/crew obligation to temporarily suspend forward progress of the drilling upon first evidence of the occurrence of an inadvertent return and to report any inadvertent returns to the EI;
- Review operation of the control equipment and the location of control materials, as necessary and appropriate; and,
- Review protocols for reporting observed inadvertent returns and communication with appropriate regulatory agencies.

3.2 DETECTION AND MONITORING PROCEDURES

The HDD Contractor, Construction Inspector and Environmental Inspector (EI) will perform continuous monitoring of the HDD operation to ensure adequate protection/controls have been

installed. As noted, field personnel will be trained regarding their responsibility to promptly report inadvertent releases to the EI onsite.

The HDD Contractor will provide a trained operator with experience in HDD techniques to monitor drilling fluid returns at the drilling mud return pits. If the EI or operator identifies seepage of drilling fluid, the EI has the authority to halt construction until the seepage is controlled and corrective action taken. The EI will be responsible for reporting any drilling fluid seepage or spill in monitoring reports and notifying the appropriate agencies as discussed below.

3.2.1 Monitoring procedures will include:

1. Inspection along the drill path;

2. Continuous examination of drilling mud pressure gauges and return flows to the surface pits; and

3. Monitoring of drilling status information regarding drilling conditions and drill profile alignments.

3.2.2 If a release occurs in a wetland or waterbody:

1. The drilling mud will be contained where practicable;

2. Continue inspection to determine any potential for movement of released drilling mud within the wetland or waterbody;

3. Collect drilling mud returns at the location for future analysis, if required; and

4. EI to provide photographic documentation and other documentation of the release (TransCameron Pipeline will keep photographs of release events on record).

Throughout the drilling and inspection effort, the HDD Contractor, Construction Inspector and EI will work together to avoid any drilling operation shut-downs. Avoiding shut-downs increases the likelihood of a successful drill and can limit the timeframe of potential inadvertent returns.

4.0 NOTIFICATION PROCEDURES

If monitoring indicates a release is occurring or has occurred, the HDD Contractor will begin containment immediately while the Construction Inspector or EI will notify TransCameron Pipeline construction management personnel immediately.

TransCameron Pipeline will notify the appropriate agencies (see appendix for contact information) immediately upon discovery of an inadvertent wetland or waterbody release, detailing the location and nature of the release, corrective actions being taken, and whether the release poses any threat to public health and safety.

5.0 CORRECTIVE ACTION

In the event that an inadvertent return is observed or suspected during an HDD crossing, it will be assessed to determine the amount of drilling mud (or slurry) being returned and the potential for the inadvertent return to reach the ground, wetland, or waterbody. Response measures will vary based on the location of inadvertent return as described below. At a

minimum, the following containment, response, and clean-up equipment will be available at each bored crossing location at the time such crossing occurs:

- sand bags
- silt fence;
- plastic sheeting;
- turbidity barriers;
- shovels, pails;
- push brooms;
- squeegees;
- pumps and sufficient hose;
- mud storage tanks; and
- Vacuum truck on 24-hour call (a vacuum truck may be on site to haul return mud back to the recirculating tank.)

TransCameron Pipeline will address an inadvertent release immediately upon discovery. The following measures will be implemented to minimize or prevent further release, contain the release, and clean up the affected area.

5.1 HDD ENTRY AND EXIT LOCATIONS

There is a greater potential for drilling fluid seepage at the entry and exit locations than other areas along the HDD. In the contingency planning for the pipeline crossing, drilling fluid seepage at the entry and exit locations has been considered, and preventative actions have been developed. To contain and control drilling fluid seepage on the land area, there will be earth-moving equipment such as backhoes or small bulldozers, portable pumps, sandbags, and straw bales available at each of the drilling sites. Any drilling fluid seepage will first be contained and isolated using sandbag berms, straw bales, silt screens or other suitable structures. For larger returns, a sump may need to be excavated for containment purposes. Once the return is effectively contained, pumps or vacuum trucks will be used to remove accumulated drilling fluid and, if practical, return it to the active drilling fluid system.

If public health and safety are threatened by an inadvertent release, drilling operations will be shut down until the threat is eliminated.

5.2 WATERBODY OR WETLAND RELEASE

Straw bales and silt fences will also be on site readily available for upland and wetland containment situations. Sufficient spill-absorbent material will be on-site in the event of an inadvertent return. All inadvertent returns will be immediately contained and reported as required.

Should an inadvertent return occur within waterway, HDD Contractor will notify appropriate parties and evaluate the potential impact of the return on a site-specific basis in order to determine an appropriate course of action. In general, TransCameron Pipeline does not believe that it is environmentally beneficial to try to contain and collect drilling fluid returns in a waterway. HDD drilling fluids are nontoxic, and discharge of the amounts normally associated with inadvertent returns do not pose a threat to public health and safety. Placement of containment structures and attempting to collect drilling fluid within a waterway often result in greater environmental impact than allowing the drilling fluid returns to dissipate naturally.

The HDD Contractor will be responsible for using a drilling fluid with the appropriate viscosity, maintaining the appropriate amount of pressure, and for establishing and maintaining containment measures at each drill endpoint. If an inadvertent return is observed or suspected within a wetland or waterbody, the following measures will be implemented:

5.2.1 Wetland Locations

- Temporarily suspend forward drilling and promptly notify the Construction Manager and EI.
- Notification of an inadvertent return to the appropriate Regulatory Agencies listed in the appendix of this HDD Contingency Plan. As long as such notification is possible (e.g., there is phone service) and it does not interfere with response activities, the Regulatory Agencies mentioned above shall be notified within two (2) hours of the inadvertent return event.
- The Construction Manager and EI will evaluate wetland inadvertent returns and, in consultation with TransCameron Pipeline and Regulatory Agencies, implement appropriate response and cleanup measures. Inadvertent return slurries in or adjacent to wetlands will be removed to the extent practical and the area restored to its previous condition. Efforts to contain and recover slurry in wetlands may result in further disturbance by equipment and personnel, and possibly offset the benefit gained in removing the slurry. Because it is difficult to predict the effect of an inadvertent return and attempts to recover the slurry, any inadvertent returns within a wetland will be evaluated on a case-by-case basis, and an appropriate level of response will be implemented with the intent to minimize any further impact to the area.
    - If the amount of the inadvertent return slurry is too small to allow the practical physical collection from the affected area, it will be diluted with fresh water and/or the fluid will be allowed to dry and dissipate naturally.
    - If the amount of the slurry exceeds that which can be contained with hand-placed barriers, small collection sumps (less than 5 cubic yards) may be used to remove the slurry.
    - If the amount of the slurry exceeds that which can be contained and collected using small sumps, drilling operations will be suspended until the inadvertent return can be brought under control. Suspending drilling operations immediately is not ideal because the loss of pressure in the borehole could result in a collapse of the borehole.
    - The slurry will be stored in a temporary holding tank or other suitable structure, for reuse or disposal.

Secondary containment will be used for portable equipment brought onto the project site (such as portable pumps). Secondary containment will consist of spill basins large enough to contain the equipment or earthen berms designed to encompass the equipment, lined with polyethylene sheeting. After the inadvertent release is stabilized and any required removal is completed, document post-cleanup conditions with photographs and prepare incident report describing time, place, actions taken to remediate inadvertent release, and measures implemented to prevent recurrence, in accordance with SWPPP. Incident reports will be provided to TransCameron Pipeline and distributed to appropriate Regulatory Agencies.

If public health and safety are threatened, drilling mud circulation pumps will be turned off. This measure will be taken as a last resort because of the potential for drill hole to collapse resulting from loss of down-hole pressure. If monitoring indicates that the intake water quality at adjacent or downstream user locations is impacted to the extent that it is no longer suitable for treatment, alternative water sources (i.e., trucked or bottled water) will be provided to impacted users. TransCameron Pipeline will assist agencies with any sampling they may require.

5.2.2 Waterbody Locations

- Temporarily suspend forward progress and notify the Construction Manager and EI. The EI will monitor the extent of the slurry plume.
- Notification of an inadvertent return to the appropriate Regulatory Agencies listed in the appendix of this HDD Contingency Plan. As long as such notification is possible (e.g., there is phone service) and it does not interfere with response activities, the Regulatory Agencies mentioned above shall be notified within two (2) hours of the inadvertent return event.
- Initiate containment measures and recovery of the slurry as appropriate. Containment is not always feasible for waterway inadvertent returns. However, conditions will be assessed as to whether hand-placed containment, recovery or other measures, such as silt curtains and turbidity barriers, would be effective and beneficial at the specific inadvertent return location. Returns will be contained using sandbags and contained mud recovered by pumping or other means effectively removing the mud to the best extent practical.
- Evaluate the current drill profile (e.g., drill pressures, pump volume rates, drilling mud consistency) to identify means to prevent further inadvertent return events. Drilling operations will be suspended if the return poses a threat to human health and safety or the environment.
- Once the return is mitigated and controlled, forward progress of the drilling may resume.

5.3 UNCONTROLLABLE RELEASE

If an inadvertent release of drilling mud exceeds that which can be contained and controlled either because of volume or rate, HDD activities will cease. An evaluation will provide the probable cause of the release and the stage of the drill installation. Based on the evaluation, the measures described in the following paragraphs will be implemented.

Depending on the current stage of the installation, the HDD Contractor may choose to plug the hole near the fracture with heavyweight material (i.e., sawdust, nut shells, bentonite pellets, or other commercially available non-toxic product). If the inadvertent release of drilling mud occurs while drilling the pilot hole, the HDD Contractor may choose to back out of the hole by a predetermined distance and then create a new hole by drilling out of the original hole. Therefore, Procedures 1 or 2 listed below could occur in either order.

1. Plug the fissures/fracture, then:

    a) Pump sealers such as sawdust, nutshells, bentonite pellets, or other commercially available non-toxic products into the drill hole;

    b) Let set for an appropriate period of time (dependent upon sealant used); and

    c) Resume HDD construction activities.

2. If a fissure/fracture cannot be plugged, then, if practical:

    a) Remove drill pipe from the existing drill hole to a point where a new drill path can be attempted by drilling out of the existing hole and creating a new hole. The original hole will be abandoned and filled with bentonite and cuttings. The cuttings that are returned to the hole should only be equal to those removed from the hole. The return should not be under high pressure, therefore additional releases would not be anticipated.

    b) Resume HDD construction activities.

3. If the original drill path cannot be utilized:

    a) Abandon the original drill hole by pumping bentonite and cuttings downhole, then seal the top 5 vertical feet with grout. Grouting abandoned drill holes is an industry standard practice and serves to prevent the abandoned hole from disrupting groundwater flow.

    b) Move the drill rig to a new, adjacent location.

    c) Verify that the new, adjacent location meets the requirements of all applicable project permits and approvals. If the new, adjacent location does not meet the requirements of all applicable project permits and approvals, operations will cease until new permits and approvals are received.

    d) Design an alternative alignment for the re-drill.

    e) Begin HDD re-drill activities.

If all HDD attempts fail, then the crossing will be constructed using an alternative method after all necessary permits and approvals have been received. Failure is defined in Section 6.0.

6.0 HDD FAILURE AND ABANDONMENT CRITERIA

TransCameron Pipeline considers the failure criteria described below as sufficient reason to abandon the HDD process and install the crossing using an approved alternative method.

6.1 PILOT HOLE STEP FAILURE

The HDD installation method will be considered a failure if there are two unsuccessful attempts at completing the pilot hole. If this happens, the HDD Contractor will demobilize its equipment from the site after approval from TransCameron Pipeline.

6.2 HOLE OPENING STEP FAILURE

The HDD installation method will be considered a failure if there is one unsuccessful attempt at opening the hole to the required diameter, as long as the failure does not include losing parts of the hole opening tool or loss of the entire hole opening tool downhole. The HDD Contractor will then be allowed 7 working days to attempt to retrieve the missing tool or parts from the hole and continue the hole opening process. If failure occurs, the HDD Contractor will demobilize its equipment from the site after approval from TransCameron Pipeline.

6.3 PULLBACK STEP FAILURE

The HDD installation method will be considered a failure if there is one unsuccessful attempt at completing the pullback, unless the pipe can be removed from the hole. In the latter case, a second attempt will be made after the hole has been reopened and reconditioned with any necessary hole opening passes as determined jointly by the HDD Contractor and TransCameron Pipeline. If failure occurs, the HDD Contractor will demobilize its equipment from the site after approval from TransCameron Pipeline.

6.4 MECHANICAL BREAKDOWN FAILURE

The HDD installation method will be considered a failure if, at any point during the HDD, the HDD Contractor has a major mechanical breakdown and after either repairing or replacing the broken drilling rig or vital ancillary equipment, the drill pipe, hole opening tool, or pipeline cannot be rotated or pulled. If failure occurs, the HDD Contractor will demobilize its equipment from the site after approval from TransCameron Pipeline.

7.0 HDD ABANDONMENT APPROVALS

TransCameron Pipeline will provide on-site inspection during the HDD process to keep adequate documentation, daily progress reports, as-built information, etc., and will describe the events leading up to the HDD failure. TransCameron Pipeline will submit this documentation to the appropriate agencies notifying them of the HDD failure and TransCameron Pipeline's schedule for implementing the approved alternate crossing method as described in Section 8.0. The HDD Contractor will not demobilize until TransCameron Pipeline's approval has been received. The alternative crossing method will not be implemented until TransCameron Pipeline has received confirmation that the FERC and U.S. Army Corps of Engineers (USACE) have received the documentation of HDD failure.

8.0 HDD CONTINGENCY

If HDD failure occurs, TransCameron Pipeline will construct the proposed pipeline facilities across both wetland/ waterbody complexes using the open cut trenching method that is described in TransCameron Pipeline's Project-specific *Wetland and Waterbody Construction and Mitigation Procedures* and is the approved method for crossings outside of the designated HDD areas. Push-pull/float installation will be used where hydrological conditions and sufficient pipeline length make this approach feasible.

TransCameron Pipeline will ensure that the necessary authorizations have been obtained from the appropriate federal (FERC/USACE) and state agencies prior to the implementation of any alternative crossing methods.

9.0 REGULATORY CONTACTS

Agency Notification Requirements

1. U.S. Army Corps of Engineers –
   Safety, Security, and Occupational Health — Phone Number: 504-862-2207
   Construction Division — Phone Number: 504-862-2235

2. Louisiana Department of Environmental Quality –
   Southwest Regional Office (Billy Eakin) — Phone Number: 337-491-2667

3. Louisiana Department of Natural Resources –
   Pipeline Incidents Hotline — Phone Number: 225-342-5505

4. Federal Energy Regulatory Commission –
   Hotline: — Phone Number: 202-502-8390

APPENDIX E

COMPENSATORY MITIGATION PLAN AND BENEFICIAL USE OF DREDGED MATERIAL PLAN

VENTURE GLOBAL LNG

CALCASIEU PASS

TransCameron PIPELINE

Applicants:
Venture Global Calcasieu Pass, LLC
TransCameron Pipeline, LLC

Compensatory Mitigation Plan
and
Beneficial Use of Dredged Material Plan

August 2018

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ADDENDA

LIST OF ATTACHMENTS

PREFACE

Venture Global Calcasieu Pass, LLC (Venture Global Calcasieu Pass) and TransCameron Pipeline, LLC (TransCameron Pipeline) (referred to separately as Applicant or collectively as Applicants)[1,2] have submitted a formal application to the Federal Energy Regulatory Commission (FERC) for authorization under the Natural Gas Act to construct and operate natural gas liquefaction, storage, and export facilities (Terminal) as well as a pipeline lateral (East Lateral Pipeline) and appurtenant facilities (Pipeline System). This proposed development is collectively referred to as the Calcasieu Pass Terminal and TransCameron Pipeline Project or the Project. As part of the Project, the Applicants will dredge an area along the Calcasieu Ship Channel to facilitate marine transportation of the liquefied natural gas (LNG); they will also dredge and fill areas required for Terminal and Pipeline System construction.

The Applicants have each filed a joint permit application (JPA) for a Clean Water Act (CWA) Section 404/River and Harbors Act of 1899 (RHA) Section 10 permit and a Coastal Use Permit (CUP) from the U.S. Army Corps of Engineers (USACE), New Orleans District and the Louisiana Department of Natural Resources (LDNR), Office of Coastal Management (OCM), respectively. A combined application, covering all the facilities proposed by both Applicants, was subsequently requested by and submitted to the USACE, on the basis that the Terminal and Pipeline System are considered a single project under USACE review procedures. Pursuant to both state and federal law, mitigation is required to address the unavoidable impacts of the dredging and filling activities in wetlands and coastal waters. The Applicants' proposed mitigation is described in this Compensatory Mitigation Plan (CMP), which also incorporates the Applicants' Beneficial Use of Dredged Material (BUDM) Plan.

The land-based Terminal development will result in unavoidable permanent impacts on approximately 126.6 acres of wetlands, 2.5 acres of waters, and 0.9 acre of mudflats. Construction of the Pipeline System will result in permanent impacts on approximately 1.4 acres of wetlands and 0.01 acre of waters. In addition, extended temporary reduction of wetlands value and function will be associated with the long-term construction use (3 to 4 years) of several temporary workspaces (TWS) and temporary access roads at the Terminal location. Approximately 28.3 acres of wetlands will be subject to these extended temporary impacts.

In total, the Project will permanently impact approximately 128.0 acres of wetlands, 2.5 acres of onshore waters, and 0.9 acre of tidal mudflats; in addition, approximately 28.3 acres of wetlands will be subject to extended temporary impacts. These are the impacts that are addressed in this CMP. Other Project-related wetland and waterbody impacts, as described and quantified in Table A of each JPA drawing package, are considered temporary and short-term (less than one-year construction use); as such, they will be mitigated by restoration of pre-construction conditions, to the extent practicable, and do not require compensatory mitigation.

The Applicants are proposing a combination of mitigation banking and permittee-responsible marsh creation/restoration as the means of compensating for the Project's unavoidable permanent impacts and extended temporary impacts on wetlands, waters, and mudflats. The banking will mitigate impacts to palustrine emergent (PEM) (Fresh Marsh),

[1] As used herein, the term "Applicant" means Venture Global Calcasieu Pass, LLC when referring to the Terminal and Marine Facilities components of the proposed development and TransCameron Pipeline, LLC when referring to the Pipeline System components. The term "Applicants" refers to both companies collectively. Each Applicant has independently completed and submitted the joint permit application form seeking authorization for its respective proposed work. This CMP/BUDM Plan is a document shared between the Applicants to describe the collective CMP/BUDM approach.

[2] Venture Global Calcasieu Pass, LLC and TransCameron Pipeline, LLC are wholly owned subsidiaries of Venture Global LNG, Inc.

palustrine scrub-shrub (PSS), and palustrine forested (PFO) wetlands; the marsh creation/ restoration will mitigate impacts to estuarine emergent (EEM) (Saline Marsh) and estuarine scrub-shrub (ESS) wetlands. Any mitigation required for the small acreage of permanently impacted onshore waters (both tidal and non-tidal) and mudflats will be accommodated in the marsh creation/restoration plan.

Banking credits to offset the Project's unavoidable permanent and extended temporary impacts on 112.5 acres of PEM (Fresh Marsh) and PSS wetlands have been secured from the South Fork Coastal Mitigation Bank (SFCMB), operated by Delta Land Services and located about 20 miles north of the Terminal. Banking credits to offset the Project's extended temporary impacts on 2.5 acres of PFO wetlands will be secured from a bank offering bottomland hardwood credits.

The marsh creation/restoration will take place at the East Cove Unit of the Cameron Prairie National Wildlife Refuge (CPNWR), managed by the U.S. Fish and Wildlife Service (FWS) and located about four miles north of the Terminal. During Terminal construction, sufficient dredged material from the Calcasieu Ship Channel will be transported to the CPNWR to create/restore the appropriate offset acreage of marsh. In addition to providing compensatory wetlands mitigation, this will constitute beneficial use of dredged material as defined by the LDNR. The remainder of the dredged material will be placed in a nearshore area about two miles southwest of the Terminal. While this placement will afford limited protection for the recently restored West Beach, the Applicants anticipate that the LDNR's beneficial use requirement will be satisfied by making an appropriate volume-based contribution to the Coastal Resources Trust Fund, in accordance with Louisiana Administrative Code (LAC), Title 43, Part I, Section 723.H.

The Applicants' delivery of dredged material to the CPNWR and subsequent marsh creation/restoration is designed and measured to offset the unavoidable permanent and extended temporary impacts on 41.2 acres of EEM (Saline Marsh) and ESS wetlands (both tidal and non-tidal), along with the 2.5 acres of onshore waters (both tidal and non-tidal) and 0.9 acre of mudflats as necessary. `

Based on application of the Louisiana Wetlands Rapid Assessment Method (LRAM) Version 2.0 and consideration of the LDNR/OCM's preliminary Wetland Value Assessment (WVA), the Applicants estimate that the 39.7 acres of permanently impacted estuarine wetlands will be compensated nominally at a 1.36:1 ratio and the 1.5 acres of estuarine wetlands subject to extended temporary impacts will be compensated nominally at a 0.87:1 ratio. This corresponds to 54.9 acres of marsh creation/restoration at the CPNWR, assuming a 20-year monitoring period. Under this scenario, approximately 288,000 cubic yards of dredged material would be required. However, to maximize the wetlands creation/restoration mitigation acreage and the volume of dredged material delivered to the CPNWR for this purpose, and in return for a reduced monitoring period of 15 years, the Applicants propose to deliver about 720,000 cubic yards of dredged material to the CPNWR to create/restore about 137.0 acres of wetlands.

Applying Project cost estimates for pumping of dredged material to the CPNWR, which accord with the USACE's unit pricing for pumping of dredged material (USACE, 2010b), the Applicants' supply of dredged material for 137.0 acres of marsh restoration incurs an incremental cost of between about $10 million and $13 million compared with material placement at or near the Terminal location. If a banking option were available to compensate for the estuarine wetland impacts that these 137.0 acres are intended to offset, the comparative banking cost would likely be considerably less than the cost of marsh creation/restoration. The Applicants submit that the financial value of the dredged material provision to the CPNWR is even greater than this, because

this private contribution of dredged material will allow marsh restoration in the region to advance independently of any constraints imposed by government funding cycles and delivery capacities.

The 720,000 cubic yards of dredged material proposed for delivery to the CPNWR for BUDM represents sandy/silty material that would be removed first, can be pumped through a long-distance pipeline, and has acceptable substrate characteristics for marsh creation/restoration. Based on the Applicant's geotechnical studies and feedback from prospective dredging contractors, much of the approximately 4,280,000 cubic yards of remaining material to be dredged consists primarily of clay that is not compatible with long-distance transportation by pipeline. Significant cost constraints and technical impracticalities prohibit the delivery of these additional volumes to the CPNWR. With an absence of other feasible beneficial use locations for this material, nearshore placement, with a corresponding Coastal Resources Trust Fund contribution of $4.28 million (final amount to be based on final nearshore disposal volume), is the proposed course of action.

The proposed mitigation is consistent with the Louisiana Comprehensive Master Plan for a Sustainable Coast (Coastal Protection and Restoration Authority [CPRA], 2017] and will result in a positive impact on the ecological value of the Louisiana Coastal Zone. The proposed mitigation efforts will be undertaken in the same hydrologic basin as the Project-related impacts and will produce better than in-kind mitigation for these impacts.

This CMP complies with USACE and LDNR mitigation requirements and their regulatory bases. The Applicants' intent to purchase bank credits to offset unavoidable permanent and extended temporary impacts on palustrine wetlands, in combination with permittee-responsible marsh creation/restoration at the CPNWR to offset unavoidable permanent and extended temporary impacts on estuarine wetlands, will result in no, or minimal, impact on the environment and in no "net loss of coastal ecological value." Similarly, this CMP will achieve the USACE's "fundamental objective" of using compensatory mitigation to offset environmental losses from unavoidable impacts on waters of the United States.

In addition to the information provided in the main text (Sections 1 through 5) of this CMP/BUDM Plan, detailed information that addresses the specific mitigation plan requirements of the USACE and LDNR is provided in Addenda A and B, respectively.

1.0 INTRODUCTION

The Applicants propose to convey, liquefy, store, and export natural gas. Venture Global Calcasieu Pass proposes to construct and operate the Terminal on the Calcasieu Ship Channel in Cameron Parish, Louisiana. The Terminal will be located on a portion of an 828.6-acre property for which Venture Global Calcasieu Pass has secured long-term lease agreements (Venture Global Property). The facilities at this location will include a liquefaction plant, two LNG storage tanks, two LNG berthing docks (Marine Facilities), an electric generation facility, and appurtenant structures. TransCameron Pipeline is proposing the development of the Pipeline System, consisting of one 42-inch-diameter, 23.4-mile-long natural gas pipeline (East Lateral Pipeline), appurtenant aboveground facilities, and two permanent access roads. The East Lateral Pipeline will bring feed gas to the Terminal from interconnection points with existing pipelines in Cameron Parish. The location and footprint of the Terminal and Pipeline System are depicted on Figure 1.

The Applicants submitted a formal application to the FERC on September 4, 2015 for approval under the Natural Gas Act and anticipate that FERC authorization to site, construct, and operate the facilities will be issued by January 2019. Construction is scheduled to commence shortly thereafter and last for about 36 - 38 months, with a full facility in-service target date no later than first quarter 2022.

1.1 Plan Purpose

With respect to waters of the United States and state-defined wetlands, compensatory mitigation is required to offset the unavoidable permanent and extended temporary impacts that will occur from dredge and fill activities associated with construction of the Terminal, Marine Facilities, and Pipeline System. These impacts are considered with respect to both functional value and acreage reduction. The Applicants are proposing a combination of mitigation banking and permittee-responsible marsh creation/restoration as the means of compensating for the Project's unavoidable permanent and extended temporary impacts on wetlands, waters, and mudflats. The banking will mitigate impacts to PEM (Fresh Marsh), PSS, and PFO wetlands; the marsh creation/restoration will mitigate impacts to EEM (Saline Marsh) and ESS wetlands, both tidal and non-tidal. Any mitigation required for the small acreage of permanently impacted onshore waters (both tidal and non-tidal) and mudflats will be accommodated in the marsh creation/restoration plan.

The banking will take place primarily or exclusively at the SFCMB, operated by Delta Land Services and located about 20 miles north of the Terminal. The marsh creation/restoration will take place at the East Cove Unit of the CPNWR, managed by the FWS and located about four miles north of the Terminal.

This CMP is a component of the JPA submitted by each Applicant to the LDNR/OCM and the combined application submitted jointly by both Applicants to the USACE New Orleans District. The JPAs and combined application provide justification and analysis of the Project's design elements, alternatives, and impacts. This CMP addresses the mitigation of unavoidable permanent and extended temporary impacts on wetlands and waterbodies. It also serves as the BUDM Plan in accordance with LAC, Title 43, Part I, Section 723.H.

In addition to the information provided in the main text (Sections 1 through 5) of this CMP/BUDM Plan, detailed information that addresses the specific mitigation plan requirements of the USACE and LDNR is provided in Addenda A and B, respectively.

1.2 Regulatory Basis

Pursuant to both state and federal law, mitigation is required to address dredge/fill impacts in wetlands and coastal waters.[3]

Under USACE regulations, compensatory mitigation must be used to offset those unavoidable permanent impacts on waters of the United States that are authorized through the issuance of Department of the Army (DA) permits, pursuant to Section 404 of the CWA and/or Sections 9 or 10 of the RHA.[4] The USACE regulations set forth three types of compensatory mitigation: permittee-responsible mitigation, mitigation banking, and in-lieu fee (ILF) mitigation.[5] When evaluating compensatory mitigation options, the USACE will consider what is "environmentally preferable,"[6] and retains the discretion "to determine the appropriateness and practicability of any compensatory mitigation required for DA permits."[7]

Under LDNR regulations, compensatory mitigation is required to offset those unavoidable impacts on state wetlands that are authorized through the issuance of a CUP, pursuant to LAC 43: I.724.A. LDNR regulations also require beneficial use of material dredged from marine transportation projects.[8] LDNR regulations provide for permittee-responsible mitigation, mitigation banking, ILF mitigation, and such other mitigation as may be approved by the LDNR.[9] The LDNR regulations authorize "other compensatory mitigation options determined to be appropriate by the secretary."[10] The required BUDM can be used to satisfy mitigation requirements.[11]

This CMP complies with USACE and LDNR mitigation requirements and their regulatory bases. The Applicants' intent to purchase bank credits to offset unavoidable permanent and extended temporary impacts on palustrine wetlands, in combination with permittee-responsible marsh creation/restoration at the CPNWR to offset unavoidable permanent and extended temporary impacts on estuarine wetlands, will result in no, or minimal, impact on the environment and in no "net loss of coastal ecological value."[12] Similarly, this CMP will achieve the USACE's "fundamental objective" of using compensatory mitigation to offset environmental losses from

3 See Title 33 Code of Federal Regulations (CFR) § 332.3; LAC 43:I. 724.A.

4 33 CFR 332.1(a) and 332.2(a)(1).

5 33 CFR 332.1(a)(1). "Permittee-responsible mitigation" means an aquatic resource restoration, establishment, enhancement, and/or preservation activity undertaken to provide compensatory mitigation for which the permittee retains full responsibility. 33 CFR § 332.2. "Mitigation bank" means a site, or suite of sites, where resources (e.g., wetlands, streams, riparian areas) are restored, established, enhanced, and/or preserved for the purpose of providing compensatory mitigation for impacts authorized by DA permits. 33 CFR § 332.2. "In-lieu fee program" means a program involving the restoration, establishment, enhancement, and/or preservation of aquatic resources through funds paid to a governmental or non-profit natural resources management entity to satisfy compensatory mitigation requirements for DA permits. 33 CFR § 332.2.

6 33 CFR § 332.3(a)(1). According to USACE regulations, the district engineer determines the compensatory mitigation to be required in a DA permit, "based on what is practicable and capable of compensating for the aquatic resource functions that will be lost as a result of the permitted activity." In making this determination, the district engineer "must assess the likelihood for ecological success and sustainability, the location of the compensation site relative to the impact site and their significance within the watershed, and the costs of the compensatory mitigation project." Id. Moreover, "[r]estoration should generally be the first option considered because the likelihood of success is greater and the impacts on potentially ecologically important uplands are reduced compared to establishment, and the potential gains in terms of aquatic resource functions are greater, compared to enhancement and preservation." 33 CFR § 332.3(a)(2).

7 USACE, Final Rule, 73 Fed. Reg. 19,632 (2008).

8 LAC 43:I.723.H.1.a.

9 LAC 43:I.724.

10 LAC 33:I.724.E.1.d.

11 LAC 33:I.707.B and LAC 33.I.723.H.3.a.

12 See LAC 43.I.724.B.1.c.

unavoidable impacts on waters of the United States.[13] Accordingly, the Applicants request that the LDNR and USACE approve this CMP.

1.3 Site Description

The Project has three distinct components: Terminal, Marine Facilities, and Pipeline System, as further described below. The Terminal and Marine Facilities will be located on a portion of the 828.6-acre Venture Global Property (see Figure 2). The Venture Global Property consists of largely undeveloped land on the east side of the Calcasieu Ship Channel, with the southernmost boundary located approximately 500 feet north of the Gulf of Mexico in Cameron Parish, Louisiana. It is bordered by the Calcasieu Ship Channel to the west, a parish road (Davis Road) and commercial waterfront businesses to the north, private property used for raising cattle to the east, and the Cameron Jetty Pier Facility and state lands along the Gulf of Mexico shoreline to the south. The Pipeline System will extend about 23.4 miles eastward from the east edge of the Venture Global Property to a point of interconnect with two existing transmission pipeline systems.

Terminal

Terminal development includes the construction of a marine berm on the west side of the Terminal Site, a steel pile floodwall on the east, north, and south sides, and placement of fill material to achieve a uniform grade elevation inside the wall/berm. Facilities to be located inside the wall/berm include a liquefaction plant, two LNG storage tanks, an electric generation facility, and appurtenant structures. Marine Facilities, to be located outside and adjacent to the western berm, include two LNG berthing docks within a dredged and excavated berthing area. The Terminal will also include two permanent access roads (Northwest Access Road and Northeast Access Road) and an administration/security building complex located outside the wall/berm. The Terminal Site as defined in this CMP includes the walled/bermed area, ramps for the access roads across the wall/berm, and the administration/security building complex. A separate restricted access service road, the Southwest Service Road, will be constructed between the Northeast Access Road and Cameron Parish's Jetty Pier Facility south of the Terminal Site. This gravel road will border the east and south perimeter wall and provide local authorities with restricted access to/from the Cameron Parish Jetty Pier Facility.

In addition to the permanent operational area described above, certain areas will be utilized to provide temporary support during construction. These include five temporary workspaces (TWS) and two temporary access roads (DeHyCo Access Road and Martin Access Road) located outside the walled/bermed area but on the Venture Global Property.

Venture Global Calcasieu Pass has secured agreements to temporarily use five existing marine industrial yards for construction support. Four of these construction support facilities are located on the Calcasieu Pass Channel near the Venture Global Property and are identified as the Martin Support Facility, the DeHyCo Support Facility, the Baker Hughes Support Facility, and the Liberty Support Facility. They will be used for the receipt and storage of bulk materials, large equipment, and other supplies delivered by barge during construction. In addition, one or more temporary concrete batch plants will be installed at one or more of these facilities.

A fifth construction support facility (Mudd Support Facility) will be located at an existing marine industrial yard on the west bank of the Calcasieu Ship Channel, opposite the Terminal.

[13] 33 CFR 332.3(a).

This facility will be used for construction worker parking and as a point of embarkation/ debarkation for these workers crossing the Calcasieu Ship Channel via a private ferry service. The reciprocal point of embarkation/debarkation of the east side of the Calcasieu Ship Channel will be at one of the four Construction Support Facilities on the Calcasieu Pass Channel.

Marine Facilities

Creation of the berthing area will require dredging and excavation to a depth of -44.3 feet North American Vertical Datum of 1988 (NAVD 88) (-42 feet Mean Low Gulf [MLG]) from near the Federal Navigation Channel's eastern limit within the Calcasieu Ship Channel to a line eastward of the existing shoreline. The berthing area will include a turning basin and two LNG carrier loading docks. The docks will be constructed as steel-pile supported structures and will collectively include 2 loading platforms, 8 breasting dolphins, 12 mooring dolphins, and 6 intermediate walkway supports.

Pipeline System

The Pipeline System consists of the East Lateral Pipeline, appurtenant aboveground facilities (meter station and mainline valves), and permanent access roads. The East Lateral Pipeline is a 42-inch-diameter steel pipeline extending in length eastward for about 23.4 miles from the Terminal to a point of interconnect with two existing gas transmission pipeline systems. In water-saturated or inundated areas, the steel pipe will be installed with a 6-inch-thick concrete coating to achieve negative buoyancy, giving an overall outside diameter of 54 inches. The pipeline will be installed using a combination of horizontal directional drill (HDD), push, and upland trenching methods. To support pipeline construction, 23 temporary access roads, 2 permanent access roads, and 1 temporary contractor yard will be required. The permanent access roads will also provide operational access to the meter station and stand-alone mainline valve.

2.0 AVOIDANCE AND MINIMIZATION OF IMPACTS ON WETLANDS AND WATERS

Avoidance and minimization of impacts on resource areas have been principal factors in Project planning. Multiple site locations and layouts were examined to identify the most suitable location to construct the Terminal. The proposed Terminal location minimizes loss and fragmentation of high quality habitat, while offering the necessary water access frontage on the Calcasieu Ship Channel. The Terminal will be situated within previously disturbed habitat affected by a road, cattle grazing, oil and gas activities, and construction and maintenance of the Calcasieu Ship Channel, including dredged material disposal. The East Lateral Pipeline will be collocated with existing linear rights-of-way to minimize impacts on undisturbed natural communities. As described in the JPA Narrative, the Project has been reconfigured since the original JPA was filed in August 2015 and permanent wetland impacts have been reduced from 215.0 acres to 128.0 acres.

The Terminal location was chosen based on sufficient property size and waterfront area, distance from residential areas, proximity to the coastal shoreline (which favors the beneficial use of dredged material for shoreline and/or marsh improvement projects), and minimization of impacts on higher quality wetland habitat. Further analysis of alternative locations is contained in the JPA Narrative. Wetland delineations performed within the Venture Global Property indicate the presence of generally low quality estuarine and palustrine wetlands. The Terminal and Marine Facilities were designed to avoid 272.0 acres (62 percent) of wetlands on the Venture Global Property by placing the facilities in a compact and efficient layout.

Extended temporary wetland impacts are associated with four temporary workspaces (Northwest TWS, Southwest TWS, Northeast TWS, and Eastern TWS) and two temporary access roads (DeHyCo Access Road and Martin Access Road) at the Terminal location. Avoidance and minimization of wetland impacts has been integral to the location selection and configuration design for each of these workspaces and access roads. Elsewhere at the Terminal location, the short-term temporary wetland impacts associated with the Floodwall TWS (construction use less than one year) have been reduced, reflecting the acreage reduction described in the May 16, 2018 response to LDNR/OCM's April 23, 2018 request for additional information (CUP No. P20150857).

The proposed East Lateral Pipeline is collocated with existing pipelines, electric transmission lines, and/or roads for approximately 86 percent of its length. The pipeline will be primarily constructed using HDD and "push method" techniques to avoid or minimize wetland and waterbody impacts. The HDD method eliminates surface impacts along the pipeline route between the drill entry and exit points; the push method reduces impacts because pipe joints are stored and welded at staging areas rather than parallel to the trench as in conventional methods, thereby reducing equipment use and traffic flow along the right-of-way. As a result of the reduced space demands, the push method allows a reduction in the width of the construction right-of-way compared with conventional methods in comparable conditions, in this case a decrease from 125 to 110 feet. This combination of collocation, construction right-of-way width reduction, HDD, and push method construction minimizes habitat fragmentation and impacts on wetlands and waters.

Since the original JPA was filed in August 2015, the Pipeline System has been reduced from 42.7 miles to 23.4 miles through removal of the previously proposed West Lateral Pipeline and permanent wetland impacts have been reduced from 2.8 acres to 1.4 acres. The locations and footprints of the pipeline temporary workspaces, contractor yard, and temporary access roads were optimized to minimize the spatial extent and impacts of these temporary features. For example, several potential contractor yard locations were originally evaluated, of which one was selected, using wetland impact minimization as a principal selection criterion. The impacts associated with installation of the pipeline itself are considered temporary and, following construction, preconstruction conditions will be restored to the extent practicable.[14]

The proposed locations and footprints of the Pipeline System's permanent facilities were optimized to minimize impacts by collocating near existing pipeline-related facilities operated by others. This collocation minimizes fragmentation of wetlands and waterbodies to the greatest extent practicable.

3.0 UNAVOIDABLE IMPACTS ON WETLANDS AND WATERS

On behalf of the Applicants, Natural Resource Group, LLC, an ERM Group Company (NRG/ERM) and SWCA Environmental Consultants performed wetland delineations of the Venture Global Property in several separate mobilizations between October 2014 and February 2016. Wetland delineations were similarly conducted in several separate mobilizations by NRG/ERM on the East Lateral Pipeline route between December 2014 and April 2016.[15] All delineation surveys were

[14] In accordance with LDNR standard procedures and the Project-specific Wetland and Waterbody Construction and Mitigation Procedures (based on FERC Procedures), the Applicants will restore temporarily disturbed locations to preconstruction conditions, as assessed and to the level determined appropriate after one full growing season following the end of construction disturbance. Areas not deemed sufficiently restored will either be reworked and monitored by the Applicants, under agreement with the LDNR and other pertinent federal and state agencies, or will be quantified and post-construction mitigation agreed upon in coordination with the appropriate agencies.

[15] Under separate cover, the Applicants submitted five Wetland and Waterbody Delineation Reports - dated June 16, 2015; June 30, 2015; August 25, 2015; March 7, 2016; and May 11, 2016 - to the USACE, New Orleans District, Surveillance and

conducted in accordance with the routine determination procedures described in the USACE Wetland Delineation Manual (USACE, 1987) and Regional Supplement to the USACE Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region, Version 2 (Regional Supplement) (USACE, 2010a). The results of the wetland delineations were submitted to the USACE New Orleans District with successive jurisdictional determination requests. A preliminary jurisdictional determination for the Project was received on January 9, 2017.

3.1 Venture Global Property

Approximately 441.4 acres of jurisdictional wetlands were delineated within the 828.6-acre Venture Global Property, on which the Terminal will be located. In designing the Terminal layout to minimize environmental impacts, approximately 272.0 acres of the wetlands will be avoided and 169.4 acres will be impacted, of which 126.6 acres will be permanently impacted and 28.3 acres will be subject to extended temporary impacts. An additional 15.4 acres, associated with the Floodwall TWS, will be subject to short-term temporary impacts only and will be restored to pre-construction conditions in accordance with the *Project-specific Wetland and Waterbody Construction and Mitigation Procedures*. As such, they are not addressed further in this CMP.

Of the 7.9 acres of waters delineated at the Venture Global Property, 2.5 acres will be permanently impacted, 0.2 acre will be temporarily impacted, and 5.2 acres will be avoided. Of the 1.0 acre of mudflats delineated at the Venture Global Property, 0.93 acre will be permanently impacted, 0.02 acre will be temporarily impacted, and 0.05 acre will be avoided. The wetlands were generally identified as being of low quality due to previous disturbance associated with altered hydrology, fill activities, adjacent development, oil and gas exploration and production (wells, well pads, access roads, etc.), and cattle grazing.

The delineated wetlands, waters, and mudflats at the Venture Global Property are depicted on Figure 2. The vegetation communities exhibited a diversity of fresh, intermediate, brackish, and salty prairie species. The observed vegetation was categorized into five habitat types based on the following factors:

- location with respect to Davis Road;
- species salinity tolerances;
- defined habitat types where the same species have been observed and recorded elsewhere by research scientists and governmental agencies;
- tidal influence from the Calcasieu Ship Channel and tropical storm tides; and
- localized watershed rainfall.

The five habitat types are:

- tidal, brackish-saline herbaceous-scrub marsh;
- non-tidal brackish-saline, herbaceous-scrub marsh;
- non-tidal, herbaceous-scrub, salty prairie;

Enforcement Division. The same information, with additional mapping as requested by the USACE, was submitted on October 18, 2016. The USACE issued a Preliminary Jurisdictional Determination for the Project on January 9, 2017.

- non-tidal, fresh-intermediate, herbaceous-scrub marsh; and
- non-tidal, fresh-intermediate forested wetland.

The vegetation was categorized using salinity tolerances and habitat information from Radford et al. (1968), Chabreck and Condrey (1979), Stutzenbaker (1999), Allain and Sylva (2007), Flora of North America (2015), Louisiana Natural Heritage Program (2015), and the Natural Resources Conservation Service (2015).

Davis Road is a public road running north-south through the western side of the Venture Global Property. The road acts as a hydrologic and tidal barrier; therefore, only the marsh lying west of Davis Road is influenced by diurnal tides. Davis Road was constructed at an elevation greater than the mean high water and impedes a diurnal tidal exchange eastward. There are three corrugated metal pipe culverts beneath Davis Road: one is gated (Cameron Parish Drainage District No. 3), preventing flow eastward but allowing flow westward; the other two are not gated and have been observed without water flow.[16]

Given the hydrologic barrier afforded by Davis Road and landscape position, the salinity tolerances of species recorded east of Davis Road are influenced by storm-induced saltwater ponding rather than tidal effects. This ponding causes increased soil salinity by evaporation in some areas, whereas the soil salinity in other areas is diluted by rainfall runoff. These conditions create a spatially diverse mix of common coastal southwestern Louisiana habitats as described below.

- The non-tidal brackish-saline herbaceous-scrub marsh east of Davis Road is subject to sporadic tropical storm surges resulting in saltwater ponding and potential minor inflows from one-way flap-gated water control structures designed to release water. In addition, areas supporting this habitat type within the Venture Global Property are at a higher elevation than the average daily mean high tide. Therefore, storm-induced saline water ponding within this area causes saline elements to eventually become concentrated by evapotranspiration and then to be diluted by rainfall events.

- The non-tidal herbaceous-scrub salty prairie, non-tidal fresh-intermediate herbaceous-scrub marsh, and non-tidal fresh-intermediate forested wetland habitat types within the Venture Global Property are subject to sporadic tropical storm tides and rainfall runoff from adjacent ridges. The longitudinal ridges and swales lying east to west allow for the reduction of salinities and establishment of fresh-intermediate marsh species. The non-tidal fresh-intermediate herbaceous-scrub marsh designation reflects increased species diversity, lower salinity tolerances, landscape positioning (swales), and localized rainwater runoff.

Based on the Cowardin classification system, the wetland types identified at the Venture Global Property include estuarine emergent, estuarine scrub-shrub, estuarine mosaic, palustrine forested, palustrine emergent, and palustrine scrub-shrub. Generally, the tidal brackish-saline marsh, the non-tidal brackish-saline marsh, and the herbaceous-scrub salty prairie habitats align with an estuarine classification, whereas the non-tidal fresh-intermediate herbaceous-scrub marsh aligns with the palustrine marsh and transitions between palustrine and estuarine classifications under the Cowardin classification. Table 1 shows the classification alignments as

[16] Water flow between the east and west sides of Davis Road was observed at open culverts on June 23, 2015. At the southern and middle culverts, no water was observed flowing under the road. However, at the northern gated culvert, water was observed flowing westward through the flap gate.

applied in this CMP. An impact summary, showing Cowardin wetland classifications and acreage details on a facility-specific basis, is presented in Table 2.

TABLE 1

Calcasieu Pass Terminal and TransCameron Pipeline Project
Habitat and Wetland Type Classifications and Alignment

Habitat Type	Wetland Type (Cowardin)	Wetland Value Assessment (WVA)	Louisiana Wetlands Rapid Assessment Method (LRAM) Version 2.0
Tidal, brackish-saline herbaceous-scrub marsh	Estuarine Emergent (EEM)	Saline Marsh	Brackish Marsh
	Estuarine Scrub-Shrub (ESS)	Estuarine Scrub-Shrub (ESS)	Brackish Marsh
Non-tidal brackish-saline, herbaceous-scrub marsh	Estuarine Emergent (EEM)	Saline Marsh	Brackish Marsh
	Estuarine Scrub-Shrub (ESS)	Estuarine Scrub-Shrub (ESS)	Brackish Marsh
Non-tidal, herbaceous-scrub, salty prairie	Estuarine Emergent (EEM)	Saline Marsh	Brackish Marsh
Non-tidal, fresh-intermediate, herbaceous-scrub marsh	Palustrine Emergent (PEM)	Fresh Marsh	Fresh/Intermediate Marsh / Wet Pasture
	Palustrine Scrub-Shrub (PSS)	Palustrine Scrub-Shrub (PSS)	Fresh/Intermediate Marsh / Wet Pasture
Non-tidal, fresh-intermediate forested wetland	Palustrine Forested (PFO)	Bottomland Hardwood	Hardwood Flats

Approximately 16.4 acres of tidal saline marsh fronting the Calcasieu Ship Channel will be permanently impacted through berm development or conversion to open water in the LNG berthing area. This acreage can be considered as essential fish habitat (EFH) for red drum, reef fish, coastal migratory pelagics, and shrimp, due to tidal hydrologic connectivity with mapped EFH areas (National Marine Fisheries Service [NMFS], 2015). Approximately 1.3 acres of tidal waters and 0.9 acre of tidal mudflats will be permanently impacted at the same location and can also be considered EFH.

3.2 Pipeline System

Along the East Lateral Pipeline, a total of 333.4 acres of waters and wetlands are located within the construction limits, of which 15.9 acres will be avoided by horizontal directional drilling. Pipeline construction will result in 1.4 acres of permanent impacts on wetlands and waters associated with aboveground facilities and access roads, as shown in Table 2. The remaining wetlands and waters will be subject to short-term temporary impacts only and will be restored to pre-construction conditions in accordance with the *Project-specific Wetland and Waterbody Construction and Mitigation Procedures*. As such, they are not addressed further in this CMP.

TABLE 2

Calcasieu Pass Terminal and TransCameron Pipeline Project
Wetland and Waterbody Acreages by Facility, Habitat Classification, and Impact Type

Facility	Wetland/Waterbody Type	Impact Acreage	
		Permanent	Extended Temporary
VENTURE GLOBAL PROPERTY			
Operational Footprint			
Tidal Wetlands and Waters			
Terminal Site (includes Admin/Security Buildings)	Estuarine Emergent	2.44	0.00
	Estuarine Scrub-Shrub	0.64	0.00
	Mudflats	0.30	0.00
	Waters	0.06	0.00
Marine Facilities (area removed by excavation)	Estuarine Emergent	6.59	0.00
	Estuarine Scrub-Shrub	6.76	0.00
	Mudflats	0.63	0.00
	Onshore Waters	0.14	0.00
	Calcasieu Ship Channel Waters	1.06	0.00
	Tidal Subtotal	**18.62**	**0.00**
Non-tidal Wetlands and Waters			
Terminal Site (includes Admin/Security Buildings)	Estuarine Emergent	11.06	0.00
	Estuarine Scrub-Shrub	0.03	0.00
	Estuarine Mosaic	7.40	0.00
	Palustrine Emergent	58.96	0.00
	Palustrine Scrub-Shrub	27.17	0.00
	Waters	1.16	0.00
Northeast Access Road	Estuarine Emergent	0.03	0.00
	Palustrine Emergent	1.76	0.00
	Palustrine Scrub-Shrub	0.03	0.00
	Waters	0.06	0.00
Southwest Service Road	Estuarine Emergent	0.33	0.00
	Estuarine Mosaic	0.09	0.00
	Palustrine Emergent	0.23	0.00
Marine Facilities (area removed by excavation)	Estuarine Emergent	3.08	0.00
	Non-tidal Subtotal	**111.39**	**0.00**
Temporary Footprint (Extended Impacts)			
Tidal Wetlands and Waters			
DeHyCo Access Road	Estuarine Emergent	0.00	0.04
	Estuarine Scrub-Shrub	0.00	0.02
Southwest TWS	Estuarine Emergent	0.00	0.01
	Tidal Subtotal	**0.00**	**0.07**
Non-tidal Wetlands and Waters			
Martin Access Road	Estuarine Emergent	0.00	0.72
	Palustrine Emergent	0.00	0.07
Eastern TWS	Palustrine Emergent	0.00	20.14
	Palustrine Scrub-Shrub	0.00	3.12
	Palustrine Forested	0.00	2.54
Southwest TWS	Estuarine Emergent	0.00	0.74
Liberty Support Center	Palustrine Emergent	0.00	0.92
	Non-tidal Subtotal	**0.00**	**28.25**

TABLE 2

Calcasieu Pass Terminal and TransCameron Pipeline Project
Wetland and Waterbody Acreages by Facility, Habitat Classification, and Impact Type

Facility	Wetland/Waterbody Type	Impact Acreage	
		Permanent	Extended Temporary
PIPELINE SYSTEM			
Operational Footprint			
Non-tidal Wetlands			
Aboveground Facilities	Estuarine Emergent	0.01	0.00
	Estuarine Scrub-Shrub	1.24	0.00
	Palustrine Emergent	0.13	0.00
	Waters	0.01	0.00
	Non-tidal Subtotal	**1.39**	**0.00**
	PROJECT SUMMARY		
	Tidal Wetlands Total	**16.43**	**0.07**
	Tidal Waters Total	**1.26**	**0.00**
	Tidal Mudflats Total	**0.93**	**0.00**
	Tidal Features Total	**18.62**	**0.07**
	Non-tidal Wetlands Total	**111.55**	**28.25**
	Non-tidal Waters Total	**1.23**	**0.00**
	Non-tidal Features Total	**112.78**	**0.00**
	PROJECT TOTAL	**131.40**	**28.32**

4.0 COMPENSATORY MITIGATION AND BENEFICIAL USE OF DREDGED MATERIAL

Compensatory mitigation for the Project is required to offset the acreage and/or functional loss of wetlands and waters permanently impacted or temporarily impacted over an extended period of construction use (3 to 4 years).[17] Mitigation for impacts on wetlands and waters can be accomplished through mitigation banks, ILF programs, and/or permittee-responsible mitigation. The Applicants understand that ILF mitigation is currently unavailable to compensate for Project impacts and, on this basis, was eliminated from further consideration.

The Applicants are proposing the purchase of mitigation bank credits to compensate for unavoidable permanent and extended temporary impacts on 112.5 acres of PEM (Fresh Marsh) and PSS wetlands. Sufficient appropriate credits are available at the SFCMB, which is located in Cameron Parish about 20 miles north of the Terminal Site. Both the Project and the SFCMB are located within the Lower Calcasieu Watershed (U.S. Geological Survey Hydrologic Unit Code 08080206) and the Project is within the bank's primary service area. The Applicants have established a binding agreement with the bank's owner, Delta Land Services, such that the required wetland credits are available for purchase. The Applicants will offset the extended temporary loss of 2.5 acres of palustrine forested wetland by purchasing bottomland hardwood bank credits.

With respect to EEM (saline) and ESS wetlands, both tidal and non-tidal, which account for 41.2 acres of the Project's permanent and extended temporary wetland impacts, banking options are not available. The Applicants are proposing permittee-responsible mitigation to offset these impacts and, as necessary, the permanent loss of 2.5 acres of waters and 0.9 acre of

[17] 33 CFR §§ 332.1(a) and 332.2(a)(1).

mudflats. For this mitigation, the Applicants are proposing that a portion of the material dredged from the Calcasieu Ship Channel during construction of the Marine Facilities be delivered to the East Cove Unit of the CPNWR to create/restore an appropriate offset acreage of brackish marsh. In this way, the dredged material will be used beneficially to create and restore better than in-kind[18] compensation for impacts on wetlands, waters, mudflats, and EFH. The remainder of the material dredged from the Calcasieu Ship Channel during construction of the Marine Facilities will be placed about one to two miles southwest of the Terminal in a nearshore area off the West Beach, affording limited protection for the recently restored beach.

Based on an assessment of BUDM placement options, as described in Section 4.2, the Applicants concluded that the CPNWR represents the preferred location for marsh creation/restoration to offset losses of EEM (Saline Marsh) and ESS wetlands, mudflats, and waters (both tidal and non-tidal). No other on-shore site offers the same combination of suitable acreage, required habitat characteristics, relative proximity, property availability, and schedule compatibility.

During Project design, the Applicants conducted a spoil disposal analysis for different sites, volumes, and end uses. This analysis concluded that pumping spoil material to the CPNWR in quantities above those necessary to create/restore marsh to mitigate losses of EEM (Saline Marsh) and ESS wetlands, tidal mudflats, and waters (both tidal and non-tidal) would be technically challenging and economically prohibitive, costing much more than other disposal options closer to the Terminal. The most cost effective, technologically feasible, and environmentally compatible approach is to place the remaining spoil material in a nearshore area off the West Beach as described above.

The Project's planned compensatory mitigation involving the provision of dredged material for permittee-responsible marsh creation/restoration, in combination with banking, is consistent with the Louisiana Coastal Master Plan (CPRA, 2017) and focuses on replacing marsh within the same drainage basin as the Project impacts.

4.1 Compensatory Mitigation – Quantitative Profile

A summary of permanent and extended temporary acreage impacts by habitat type and proposed mitigation is presented in Table 3. The Applicants used the LRAM Version 2.0 to determine functional quality and corresponding credit requirements for the impacted wetland types and acreages. The banking credit requirements for the PEM (Fresh Marsh) and PSS impacts are based on the established credit acre value (5.9) for Fresh-Intermediate Marsh at the SFCMB. The credit acre value (5.9) for the CPNWR marsh creation/restoration is based on an estimate of the functional quality of the existing and restored marsh at this location. The results of the analysis are summarized in Table 4.

[18] "In-kind" means a resource of a similar structural and functional type to the affected resource. 33 CFR § 332.2.

TABLE 3

Calcasieu Pass Terminal and TransCameron Pipeline Project
Summary of Wetland and Waterbody Impact Acreages and Proposed Mitigation

Habitat Type	Impact Acreages		Proposed Mitigation
	Permanent	Extended Temporary	
WETLANDS			
Terminal Location			
Estuarine Emergent Wetlands (Tidal) – Saline Marsh	9.03	0.05	CPNWR – Brackish Marsh Restoration
Estuarine Scrub-Shrub Wetlands (Tidal)	7.40	0.02	CPNWR – Brackish Marsh Restoration
Subtotal:	**16.43**	**0.07**	
Estuarine Emergent Wetlands (Non-Tidal) – Saline Marsh	21.99[1]	1.46	CPNWR – Brackish Marsh Restoration
Estuarine Scrub-Shrub Wetlands (Non-Tidal)	0.03	0.00	CPNWR – Brackish Marsh Restoration
Subtotal:	**22.02**	**1.46**	
Total:	**38.45**	**1.53**	
Palustrine Emergent Wetlands – Fresh Marsh	60.95	21.13	SFCMB - FIM Credits
Palustrine Scrub-Shrub Wetlands	27.20	3.12	SFCMB - FIM Credits
Palustrine Forested Wetlands – Bottomland Hardwood	0.00	2.54	Bank – Bottomland Hardwood Credits
Subtotal:	**88.15**	**26.79**	
Total Wetland Impacts at Terminal Site:	**126.60**	**28.32**	
Pipeline System			
Estuarine Emergent Wetlands (Non-tidal) – Saline Marsh	0.01	0.00	CPNWR – Brackish Marsh Restoration
Estuarine Scrub-shrub Wetlands (Non-tidal)	1.24	0.00	CPNWR – Brackish Marsh Restoration
Palustrine Emergent Wetlands (Non-tidal)	0.13	0.00	SFCMB - FIM Credits
Subtotal:	**1.38**	**0.00**	
Total Project Wetland Impacts:	**127.98**	**28.32**	
WATERS / MUDFLATS			
Terminal Site			
Mudflats (Tidal)	0.93	0.00	CPNWR – Brackish Marsh Restoration
Waters (Tidal and Non-Tidal)	2.48	0.00	CPNWR – Brackish Marsh Restoration
Pipeline System			
Waters	0.01	0.00	CPNWR – Brackish Marsh Restoration
Total Project Waters/Mudflats Impacts:	**3.42**	**0.00**	

[1] Includes 7.49 acres of estuarine mosaic wetland

As indicated in Table 4, the Applicants will compensate for 112.5 acres of permanent and extended temporary impacts on PEM (Fresh Marsh) and PSS by purchasing 140.8 credit acres of Fresh-Intermediate (FIM) Marsh credits at the SFCMB; in addition, the Applicants will compensate for extended temporary impacts on 2.5 acres of PFO wetland by purchasing 1.6 credit acres of bottomland hardwood from a bank offering such credits.

Table 4 also indicates that the permanent and extended temporary impacts on EEM (Saline Marsh) and ESS wetlands amount to 41.2 acres and the corresponding credit requirement is 54.9 acres. The creation/restoration of 54.9 acres of brackish marsh at the CPNWR would require approximately 288,000 cubic yards of dredged material to attain the necessary marsh elevation and would involve a 20-year monitoring period under LDNR regulations. However, to maximize the wetlands creation/restoration mitigation acreage and the volume of dredged

material delivered to the CPNWR for this beneficial use, and in return for a reduced monitoring period of 15 years, the Applicants propose to deliver about 720,000 cubic yards of dredged material to the CPNWR to create/restore 137.0 acres of marshland. BUDM Plan details are provided in Section 4.3.

TABLE 4

LRAM Version 2.0 Assessment
Required Mitigation by Habitat and Mitigation Site

Impact by Habitat	Mitigation Site (Habitat Offset Type)	Permanent Impacts *(i-value sum)*	Extended Temporary Impacts *(i-value sum)*	LRAM Credits/Acre Offered	LRAM Credits Required	Mitigation Acres Required
Terminal Location						
PEM (Fresh Marsh)	SFCMB (Fresh Marsh)	61.08 *i-value sum 8.0*	21.13 *i-value sum 5.1*	5.9	596.40	101.08
PSS		27.20 *i-value sum 8.0*	3.12 *i-value sum 5.1*		233.51	39.58
	Subtotal:	**88.15**	**24.25**		**829.91**	**140.66**
PFO	Bottomland Hardwood Bank	0.00 -	2.54 *i-value sum 3.6*	5.6	9.14	1.63
	Subtotal:	**0.00**	**2.54**		**9.14**	**1.63**
EEM – Tidal (Saline Marsh)	CPNWR (Brackish Marsh)	9.03 *i-value sum 8.5*	0.05 *i-value sum 5.6*	5.9	77.04	13.06
EEM – Non-tidal (Saline Marsh)		21.99 *i-value sum 8.0*	1.46 *i-value sum 5.1*		183.37	31.08
ESS - Tidal		7.40 *i-value sum 7.5*	0.02 *i-value sum 4.6*		55.59	9.42
ESS – Non-tidal		0.03 *i-value sum 6.0*	0.00 -		0.18	0.03
	Subtotal:	**38.45**	**1.53**		**318.18**	**53.59**
Pipeline System						
EEM – Non-tidal (Saline Marsh)	CPNWR (Brackish Marsh)	0.01 *i-value sum 8.0*	0.00 -	5.9	0.08	0.01
ESS – Non-tidal		1.24 *i-value sum 6.0*	0.00 -		7.44	1.26
	Subtotal:	**1.25**	**0.00**		**7.52**	**1.27**
PEM (Fresh Marsh)	SFCMB (Fresh Marsh)	0.13 *i-value sum 8.0*	0.00 -	5.9	1.04	0.18
	Subtotal:	**0.13**	**0.00**		**1.04**	**0.18**
	Total (SFCMB):	**88.28**	**24.25**		**830.95**	**140.84**
	Total (Bottomland Hardwood Bank):	**0.00**	**2.54**		**9.14**	**1.63**
	Total (CPNWR):	**38.58**	**1.53**		**317.22**	**54.86**

In addition to providing compensatory mitigation for 41.2 acres of permanent and extended temporary estuarine wetland impacts, the creation/restoration of 137.0 acres of brackish marsh will provide the necessary compensation for the Project's permanent impacts on 2.5 acres of waters and 0.9 acre of mudflats. The unavoidable disturbance of 8.3 acres of fragmented brackish marsh during spoil deposition at the marsh creation/restoration area is considered a short-term temporary impact (less than one year) and is therefore not included in this CMP.

The mitigation strategy offered in this CMP is consistent in principle with the preliminary determination issued by LDNR/OCM on March 26, 2018, based on LDNR's WVA, whereby PEM (Fresh Marsh) and PSS wetland impacts will be mitigated with Fresh/Intermediate Marsh banking credits from the SFCMB, PFO wetland impacts will be mitigated with bottomland hardwood bank credits, and EEM (Saline Marsh) and ESS wetland impacts will be mitigated by creation/restoration of 137.0 acres of brackish marsh at the CPNWR with a 15-year monitoring period. However, this CMP provides updated (decreased) wetland impact acreages, reflecting Project modifications resulting from the subsequent Needs, Alternatives, and Justification analysis. The mitigation credit acreages reflect not only the updated wetland impact acreages but the LRAM analysis, which yields more conservative replacement values than the WVA for all wetland and impact types.

4.2 Compensatory Mitigation – Marsh Creation/Restoration at CPNWR

Agency-designated beneficial use areas at the East Cove Unit of the CPNWR are shown on Figure 3. For the permittee-responsible creation/restoration of 137.0 acres of brackish marsh, the Applicants propose to utilize two adjacent open water areas, within the west-central portion of the East Cove Unit (see Figures 4, 5D, and 6[19]).

Based on descriptions provided in the Comprehensive Conservation Plan for the Sabine NWR (2007) (the East Cove Unit was formerly part of the Sabine NWR), the wider expanse of marsh in which these areas are located has been subject to historic degradation and loss of vegetative cover through erosion and saltwater intrusion. The East Cove Unit supports almost 15,000 acres of brackish and salt marsh, dominated by *Spartina patens and Spartina alterniflora*. Water salinity is monitored and water levels are managed to benefit existing marsh vegetation and facilitate restoration.

The specific locations of spoil deposition and the design of the marsh creation/restoration are based on the Applicants' (a) evaluation of site conditions, as determined through preconstruction bathymetric and magnetometer surveys, (b) the quantity of available and suitable dredged material, as determined through geotechnical investigations of the borrow area that were completed in 2015, and (c) consultation with CPNWR staff. The design of the marsh creation/restoration area is also based in part on geotechnical investigations that were completed by the Applicants in 2017 at both the marsh creation/restoration area and the borrow area, as documented in the attached geotechnical report (Attachment A).

Dredging during construction and long-term maintenance at the Terminal location will be primarily performed using a hydraulic cutter-suction dredge.[20] Maintenance dredge material, depending on volume and frequency, may be removed by other methods and transported by

[19] Figure 6 indicates a total marsh restoration area of 145.3 acres, accounting for approximately 8.3 acres of existing isolated marsh fragments around which the 137.0 acres of new marsh will be developed.

[20] Areas landward of the existing shoreline will be excavated using mechanical equipment and a portion of the excavated material may be reused at the Terminal. At depths below the reach of the mechanical equipment, the hydraulic cutter-suction dredge will remove the material to the dredging depth as shown in the JPA Drawings and described in the JPA Narrative.

hopper barge. During construction, dredged material production will be balanced with the receipt capacity of the creation/restoration site(s) and factored into development and execution of the Project's construction schedule.

For the 720,000 cubic yards of spoil delivered to the CPNWR, a temporary slurry pipeline will be installed from the dredge area to the marsh creation/restoration area(s), using a combination of floating, submerged, bored, and land surface pipe sections (see Figures 1, 3, 4, 5a-d, 6, 8, 9, 10, and 12). The original pipeline route ran north along the Calcasieu Ship Channel and the East Fork of the Calcasieu River through Calcasieu Lake, crossing into the CPNWR from the north; however, based on recommendations from the LDNR and Louisiana Department of Wildlife and Fisheries, the route was modified to avoid the public oyster seeding ground in Calcasieu Lake.

From the dredging area, the modified pipeline route runs north for about 0.6 mile along the Calcasieu Ship Channel, continuing up the Calcasieu Pass Loop along the eastern shore of Monkey Island for about 2.0 miles. The route then trends to the northeast for about 0.7 mile, crossing Calcasieu Pass Loop to move on shore and pass west of the Town of Cameron. It continues east for 2.9 miles, then heads north for 0.7 mile to the eastern marsh creation/restoration area in the CPNWR. The overall length of the route as described is approximately 6.9 miles. Access to the western marsh creation/restoration area will be either through a direct pipeline link across open water between the northern sections of the east and west areas, or via a pipeline link along the open water channel on the southern edge of the CPNWR, as illustrated in Figures 4, 5D, and 6.

Seven booster pumps will be located along the route, to maintain spoil flow during pipeline operation. Two of the booster pumps will be on floating platforms in the Calcasieu Pass Loop; the remaining five booster pumps will be on land-based platforms. The pipeline route is shown in detail in Figures 4 and 5a-d; land-based booster pump platform layouts are illustrated in Figure 11.

The proposed marsh creation/restoration area design, including containment berm construction details and cross-sections depicting anticipated elevations of the marsh creation/restoration area and containment berm, is depicted in Figure 7. Based on site-specific bathymetry in the marsh creation/restoration area, average existing marsh elevations surrounding the marsh creation/restoration area (approximately 0.8 feet NAVD 88), and mean low and mean high water in the marsh creation/restoration area (0.42 feet and 0.91 feet, respectively), the desired final elevation of placed materials is approximately 1.0 feet NAVD 88.

A target marsh final grade of 1.0 feet NAVD 88 with a tolerance of ±0.3 feet at the end of 5 years is planned for the Project. The Applicants analyzed settlement of the proposed hydraulically-placed dredged fill using the USACE's Primary Consolidation, Secondary Compression, and Desiccation of Dredged Fill (PSDDF) software. Given the elevation of the mud-line in open water areas within the marsh creation/restoration area, along with the characteristics of borrow area sediment and the existing substrate of the marsh creation/restoration area, a fill elevation of approximately 1.5 to 2.0 feet NAVD 88 will be required to achieve the final design elevation of approximately 1.0 feet NAVD 88. The bathymetric profile within the potential placement area(s), as well as material settlement and consolidation conditions, influences the actual volume of dredge material required. Fill placement will be closely monitored and adjusted as necessary to achieve the target marsh elevation. Section 5.3 of the attached geotechnical report (Attachment A) includes settlement analyses (with settlement curves) for the marsh creation/restoration area.

The Applicants performed slope stability analyses on various containment dike sections for the proposed marsh creation/restoration areas. The dikes will be constructed by excavating a borrow trench and placing the excavated material adjacent to the trench to build up the dike. Settlement was evaluated for containment dikes constructed with a crest elevation of +4 feet NAVD 88 and 4H:1V side slopes. The maximum settlement calculated will result in a dike crest elevation of more than 3.2 feet NAVD 88, sufficient to contain the sediment proposed for marsh creation/restoration. The borrow area for the dikes will subsequently be filled with dredged material. Section 5.2 of the attached geotechnical report (Attachment A) includes settlement analyses (with settlement curves) for the dikes.

To construct naturally-functioning intertidal marsh land, measures will be implemented to ensure the containment dikes at the marsh creation/restoration area allow tidal flow. As soon as spoil placement is completed, the berms will be degraded to the extent possible without risking spoil loss, to minimize the need for returning to the site with heavy equipment. The marsh/creation restoration area will be surveyed 30 days following the placement of fill material to ensure that the fill elevations are consistent with the design elevations. At that point, the containment dikes will be degraded to within 0.5 feet of the marsh fill level existing at the time. Also, 25-foot-wide gaps will be located at each tidal creek[21] and spaced every 500 feet along the containment berms. These gaps will be cut as low as possible without risking the release of fill material. The gaps will be monitored during the first year following construction to ensure that they are degrading naturally. If the gaps do not show the necessary rate of natural degradation, they will be manually degraded to the lowest adjacent grade to ensure intertidal flow. This process will continue during subsequent monitoring events.

4.3 Proposed Beneficial Use of Dredged Material

Initial estimates indicate that approximately 2.0 million cubic yards (*in-situ*) of material will be excavated landward of the existing shoreline at the Terminal Site and approximately 2.8 million cubic yards (*in-situ*) of material will be dredged seaward of the existing shoreline to the eastern limit of the Federal Navigation Channel, to reach the required water depth of -44.3 NAVD 88 for the LNG carrier berthing area and turning basin.[22] Therefore, factoring in an additional 200,000 cubic yards overdredge allowance, approximately 5,000,000 *in-situ* cubic yards of material will be excavated or dredged to create the Marine Facilities.

During Terminal construction, about 720,000 cubic yards of the dredged material will be transported to the CPNWR to create/restore approximately 137.0 acres of brackish marsh. In addition to providing wetlands mitigation, this will constitute BUDM in accordance with LDNR policy and regulations.

Based on the Applicants' geotechnical studies and feedback from prospective dredging contractors, much of the remaining 4,280,000 cubic yards of dredged material consists primarily of clay that is not compatible with long-distance transportation by pipeline. This material will be placed in a nearshore area adjacent to the Calcasieu Pass Jetty Channel and along the West Beach, about one to two miles southwest of the Terminal. Preliminary design indicates that the material would be placed shoreward of the -12-foot contour. The maximum area of coverage will be approximately 1,328 acres, based on a minimum 2-foot-thick layer of material (see Figures 4

[21] Several tidal creeks will be created in the marsh creation/restoration area to increase tidal connectivity, as illustrated in Figure 6.

[22] For ease or reference, both excavated and dredged material is referred to as "dredged material" in this CMP/BUDM Plan, unless specifically indicated otherwise.

and 12). If the layer thickness is more than 2 feet, the actual area of coverage will be reduced accordingly.

Nearshore placement is the most cost effective and reliable approach for heavy clay spoil, given the relatively short transportation delivery distance and the absence of other feasible beneficial use locations. While the resultant submerged barrier will afford limited protection for the recently restored West Beach, the Applicants anticipate that the LDNR's beneficial use requirement will be satisfied by making an appropriate volume-based contribution to the Coastal Resources Trust Fund, in accordance with LAC, Title 43, Part I, Section 723.H.

4.4 Other Beneficial Use Options Considered but Not Selected

In addition to nearshore placement off the West Beach and marsh restoration at the CPNWR, the Applicants considered other spoil disposal options, with the potential to beneficially use the dredged material produced by the Project. These included government-sponsored marsh creation/restoration projects, for which the Applicants applied the BUDM screening criterion that such sites be within a 15-mile pumping radius of the dredge material source (as shown on Figure 1), precluding consideration of prospective sites farther afield (USACE, 2010b). The Applicants also searched for potential marsh creation/restoration locations on private lands located within a 2-mile radius of the dredge material source (see Figure 12). This search area is consistent with the expected pumping distance associated with the proposed nearshore placement of dredged material off the West Beach.

Four government-sponsored marsh creation/restoration project sites were identified within the 15-mile radius: Sabine Refuge Marsh Creation (CS-28); Cameron-Creole Watershed Grand Bayou Marsh Creation (CS-54); Oyster Lake Marsh Creation (CS-79); and No Name Bayou Marsh Creation (CS-78). The first two sites (Sabine Refuge Marsh Creation [CS-28] and Cameron-Creole Watershed Grand Bayou Marsh Creation [CS-54]) were found to be incompatible with the Applicants' requirements, due to being substantially complete and lacking available storage capacity, or to the sponsor's inability to obtain land control. The latter two sites (Oyster Lake Marsh Creation [CS-79] and No Name Bayou Marsh Creation [CS-78]) were initially proposed as the most viable options for beneficially using dredged sediments to supplement, as necessary, any compensatory mitigation realized through wetland banking. However, these projects are currently funded for engineering and design through 2019, after which they will have to await additional funding for implementation.[23] Based on this schedule, the timing for implementation of these two projects, which are discussed in more detail in Sections 4.4.1 and 4.4.2, is incompatible with the proposed action.

Based on the search for potential marsh creation/restoration locations on private lands, the Applicants identified one area for review: an expanse of degraded marshland, consisting primarily of open water, located on the west side of the Calcasieu Ship Channel opposite the Terminal Site. This area is discussed in more detail in Section 4.4.3.

4.4.1 Oyster Lake Marsh Creation and Nourishment

The Oyster Lake Marsh Creation and Nourishment Project is listed under the federal CWPPRA Project Priority List 25 as Project CS-79 and was approved in January 2016.[24] The

[23] See CPRA Draft FY2019 Annual Plan, Table 3-2, at: http://coastal.la.gov/our-plan/annual-plan/.

[24] See description of Oyster Lake Marsh Creation and Nourishment project at: http://www.mvn.usace.army.mil/Portals/56/docs/environmental/cwppra/PPL/PPL%2025/REGION4FSandPwpts3.pdf, at pp.19-24, and

current CPRA Draft Annual Plan for Fiscal Year (FY) 2019 indicates that the project is approved for engineering and design funding through calendar year 2019. This marsh restoration area was identified in the 2012 and 2017 Coastal Master Plans as Mud Lake Marsh Creation (004.MC.04) and is adjacent to the Oyster Bayou Marsh Creation Project (CS-59). The Oyster Lake Marsh Creation and Nourishment Project proposes to beneficially use material dredged from an offshore borrow site, a source also utilized by CS-59, to create and nourish a total of 660 acres of saline marsh in the open water areas of Oyster Bayou, located west of the Terminal.

4.4.2 No Name Bayou Marsh Creation Project (CS-78)

The No Name Bayou Marsh Creation Project (CS-78) received Phase 1 approval for engineering and design under the CWPPRA in January 2015.[25] The current CPRA Draft Annual Plan for Fiscal Year (FY) 2019 indicates that the project is approved for engineering and design funding through calendar year 2019.[26] The project proposes to create and/or nourish 533 acres of saline marsh in an area of open water and fragmented marsh south of Calcasieu Lake, using sediment from upland confined disposal facilities along the Calcasieu River. The project boundary is approximately six pumping miles from the Project dredging footprint and crosses both private and federal (National Wildlife Refuge) property. This area was identified in the 2012 and 2017 Coastal Master Plans as a portion of the Calcasieu Ship Channel Marsh Creation (004.MC.23).

4.4.3 Private Lands

With respect to private lands, the Applicants identified one area for review: an expanse of degraded marshland, consisting primarily of open water (about 50 acres), located on the west side of the Calcasieu Ship Channel opposite the Terminal Site. This area lies northwest of State Highway 82 and about 1.4 miles from the proposed source of dredged material (see Figures 1 and 12). Based on this proximity, BUDM at the private lands site would not present the same technical challenges or incur the same prohibitive cost associated with transporting material almost seven miles to the CPNWR in volumes greater than the 720,000 cubic yards required to create/restore marsh for compensatory wetlands mitigation. However, even assuming the landowner was willing to accept material, the Applicants estimate that the private lands site could only accept about 262,000 cubic yards of dredged material, leaving about 4,018,000 cubic yards that would need to be placed elsewhere, primarily at the West Beach location. As such, the Applicants consider nearshore placement at the West Beach location to be the only viable disposal option for the portion of the dredged material not required for marsh creation/restoration at the CPNWR.

4.5 ESSENTIAL FISH HABITAT COMPENSATION

Approximately 83.3 acres of EFH adjacent to and within the Calcasieu Ship Channel will be modified through offshore dredging and construction of the Terminal's marine facilities. This includes 13.2 acres of shoreline tidal wetlands that will be permanently converted to estuarine water column and deep-water benthic habitat, 2.6 acres of shoreline tidal wetlands that will be filled for construction of the marine berm, and 67.5 acres of existing estuarine water column and

http://www.fws.gov/gisdownloads/R4/Louisiana%20ESO/Roy/PPL25%20Nominee%20FINAL%20information/PPL25%20Nominee%20Oyster%20Lake%20Marsh%20Creation%20FINAL%20Fact%20Sheet%20040115.docx.

[25] See CWPPRA funding vote, at pp. 1-4 http://www.mvn.usace.army.mil/Portals/56/docs/environmental/cwppra/TF%20Meeting%20Minutes/2015/MinutesTaskForce22Jan2015.pdf and report of CWPPRA Technical Committee at pp. 5 and 7-8, available at: http://www.mvn.usace.army.mil/Portals/56/docs/environmental/cwppra/TC%20Meeting%20Minutes/2015/MinutesTechComm11Dec2014.pdf.

[26] See CPRA Draft FY2019 Annual Plan, Table 3-2, at: http://coastal.la.gov/our-plan/annual-plan/.

deep-water benthic habitat that will be dredged but will constitute substantially the same EFH after dredging has been completed.

EFH impacts at the nearshore disposal area will be temporary only, with a change in water depth and benthic substrate profile relating to spoil deposition. Long-term habitation by EFH species will not be affected.

This CMP facilitates the creation/restoration of EFH in the form of high quality brackish marsh at the CPNWR and provides more than adequate ecological compensation for the modifications described herein.

5.0 SUMMARY

In summary, the Applicants are proposing a combination of mitigation banking and permittee-responsible marsh creation/restoration as the means of compensating for the Project's unavoidable permanent and extended temporary impacts on wetlands, waters, and mudflats. The banking will cover impacts to palustrine wetlands; the marsh restoration will cover impacts to estuarine wetlands, waters, and mudflats. The banking will take place primarily or exclusively at the SFCMB, operated by Delta Land Services and located about 20 miles north of the Terminal. The marsh creation/restoration will take place at the East Cove Unit of the CPNWR, managed by the FWS and located about four miles north of the Terminal.

During Terminal construction, sufficient dredged material from the Calcasieu Ship Channel will be transported to the CPNWR to create/restore the appropriate offset acreage of marsh. In addition to providing compensatory wetlands mitigation, this will constitute beneficial use of dredged material, as defined by the LDNR. The remainder of the dredged material will be placed in a nearshore area about one to two miles southwest of the Terminal. While this placement will afford limited protection for the recently restored West Beach, the Applicants anticipate that the LDNR's beneficial use requirement will be satisfied by making an appropriate volume-based contribution to the Coastal Resources Trust Fund, in accordance with LAC, Title 43, Part I, Section 723.H.

The proposed mitigation is consistent with the Louisiana Comprehensive Master Plan for a Sustainable Coast (CPRA, 2017) and will result in a positive impact on the ecological value of the Louisiana Coastal Zone. The proposed mitigation efforts will be undertaken in the same hydrologic basin as the Project-related impacts and will produce better than in-kind mitigation for these impacts.

This CMP complies with USACE and LDNR mitigation requirements and their regulatory bases. The Applicants' intent to purchase bank credits to offset permanent and extended temporary impacts on palustrine wetlands, in combination with permittee-responsible marsh creation/restoration at the CPNWR to offset permanent and extended temporary impacts on estuarine wetlands, mudflats, and waters, will result in no, or minimal, impact on the environment and in no "net loss of coastal ecological value." Similarly, this CMP will achieve the USACE's "fundamental objective" of using compensatory mitigation to offset environmental losses from unavoidable impacts on waters of the United States.

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ADDENDUM A – USACE MITIGATION PLAN REQUIREMENTS

1. **Objectives.** §332.4 (c)(2) A description of the resource type(s) and amount(s) that will be provided, the method of compensation (i.e., restoration, establishment, enhancement, and/or preservation). Also the manner in which the resource functions of the compensatory mitigation project will benefit the watershed, ecoregion, physiographic province, or other geographic area of interest.

   See Sections 4.1 and 4.2 of the CMP/BUDM Plan.

2. **Site Selection.** §332.4 (c)(3) A description of the factors considered during the site selection process. This should include watershed needs, on-site alternatives where applicable, and the practicability of accomplishing ecologically self-sustaining aquatic resource restoration, establishment, enhancement, and/or preservation at the chosen site. (See §332.3(d)).

   See Section 4.0 of the CMP/BUDM Plan.

3. **Site Protection Instrument**. §332.4 (c)(4) A description of the legal arrangements and instrument, including site ownership, that will be used to ensure the long-term protection of the compensatory mitigation project site (see §332.7(a)).

   The marsh creation/restoration site is located within the East Cove Unit of the CPNWR, which is federal land managed by the U.S. Fish and Wildlife Service (FWS). Based on the specific goal of marsh restoration at the East Cove Unit, as presented in the Comprehensive Conservation Plan for the Sabine NWR (2007) (the East Cove Unit was formerly part of the Sabine NWR), along with the underpinning mandate for habitat protection that is integral to the broader goals and objectives of NWR policy, the marsh creation/restoration area will constitute one segment of a wider expanse of marshland that will be subject to FWS oversight and habitat protection initiatives in perpetuity.

4. **Baseline Information**. §332.4 (c)(5) A description of the ecological characteristics of the proposed compensatory mitigation project site and, in the case of an application for a DA permit, the impact site. This may include descriptions of historic and existing plant communities, historic and existing hydrology, soil conditions, a map showing the locations of the impact and mitigation site(s) or the geographic coordinates for those site(s), and other site characteristics appropriate to the type of resource proposed as compensation. The baseline information should also include a delineation of jurisdictional waters/wetlands on the proposed compensatory mitigation site. A prospective permittee planning to secure credits from an approved mitigation bank or in-lieu fee program only needs to provide baseline information about the impact site, not the mitigation bank or in-lieu fee site.

   Baseline information regarding the impact sites (Terminal and Pipeline System) is provided Sections 1.3 and 3.0 of the CMP/BUDM Plan. Baseline information regarding the marsh restoration site is contained in Section 4.2, Figures 1, 3, 4, 5D, 6, and 12, and Attachment A (Geotechnical Report) of the CMP/BUDM Plan.

5. **Determination of Credits**. §332.4 (c)(6) A description of the number of credits to be provided, including a brief explanation of the rationale for this determination. (See §332.3(f).)

   i. For permittee-responsible mitigation, this should include an explanation of how the compensatory mitigation project will provide the required compensation to offset unavoidable impacts to aquatic resources resulting from the permitted activity.

ii. For permittees intending to secure credits from an approved mitigation bank or in-lieu fee program, it should include the number and resource type of credits to be secured and how these were determined.

See Sections 4.1 and 4.2 of the CMP/BUDM Plan.

6. **Mitigation Work Plan**. §332.4 (c)(7) Detailed written specifications and work descriptions for the compensatory mitigation project, including, but not limited to, the geographic boundaries; construction methods (to include the proposed grading plan including surface elevations and slopes), timing, and sequence; source(s) of water, including connections to existing waters and uplands; methods for establishing the desired plant community; plans to control invasive plant species; soil management; and erosion control measures.

As discussed in Section 4.2 and as illustrated in Figures 6 and 7 of the CMP/BUDM Plan, the Applicants will beneficially use approximately 720,000 cubic yards of dredged material to create/restore approximately 137.0 acres of brackish marsh at the East Cove Unit of the CPNWR. The 137.0 acres is divided into two adjacent cells (labeled Pond 1 and Pond 2 on Figure 6). Marsh creation/restoration will proceed sequentially as follows:

a) *The LDNR/OCM will be notified in writing within five days of initiating compensatory mitigation activities.*

b) *Prior to spoil deposition, the contractor will perform a topographic transect survey at locations specified in the design drawings, typically at 100-foot intervals. The two cells will be staked, with the target elevation (1.5 feet – 2 feet NAVD 88) marked on the stakes.*

c) *Earthen containment dikes will be constructed around the full perimeter of each of the two cells. The dike material will be excavated from the adjacent clay substrate within each cell as shown in Figure 7 of the CMP/BUDM Plan.*

d) *Following dike creation, spoil will be placed to a depth that will enable the target marsh elevation of 1.0 feet (± 0.3 feet) NAVD 88 to be achieved at the end of 5 years. Spoil will be pumped to the site through a large-diameter slurry pipeline that will enter the marsh restoration area from the south. The end segment of the pipeline will be flexible, allowing the outflow to be moved between the two cells and from one location to another within each cell to attain the initial desired spoil elevation. Soil placement will likely take place first in the west cell (Pond 1) and then the east cell (Pond 2), starting in the northernmost section of each cell and working southwards by successively shortening the pipeline.*

e) *To construct naturally-functioning intertidal marsh land, measures will be implemented to ensure the containment dikes allow tidal flow. As soon as spoil placement is completed, the dikes will be degraded to the extent possible without risking spoil loss, to minimize the need for returning to the restoration area with heavy equipment. The marsh creation/restoration area will be surveyed 30 days following the placement of fill material to ensure that the fill elevations are consistent with the design elevations. At that point, the containment dikes will be degraded to within 0.5 feet of the marsh fill level existing at the time. Also, 25-foot-wide gaps will be located at each proposed tidal creek and spaced every 500 feet along the containment dikes. These gaps will be cut as low as possible without releasing fill material. The gaps will be monitored during the first year following construction to ensure that they are degrading naturally. If the gaps do not show the necessary rate of natural*

degradation, they will be manually degraded to the lowest adjacent grade to ensure intertidal flow. This process will continue during subsequent monitoring events.

f) Conceptual cross sections of the deposition/mitigation sites are shown in Figure 7 of the CMP/BUDM Plan. As-built transect surveys will be conducted on nominal 100-foot intervals, compiled into a drawing set similar to the pre-construction design package, and issued to regulatory agencies to ensure compliance with permit conditions. In addition, the as-built cross sections will be compared with the original land surface to produce a final cut-fill volume analysis to determine the amount of dredged material used to construct the project.

g) One year after construction, the Applicants will conduct a transect survey on nominal 100-foot intervals and field inspection with the LDNR-OCM, USACE, FWS, and other agencies as appropriate, to confirm that the target elevation has been met. A second similar survey and inspection will be conducted in the third year after construction to confirm that the target elevation has been met and/or maintained.

h) Natural regeneration from in-situ root and seed stock will constitute the initial revegetation source for the mitigation site. The extent to which natural revegetation is successful will be determined after the first and third year of growth post-construction. For areas with less than 80 percent cover of non-invasive species in the third year, plantings will be undertaken to augment the existing vegetation cover.

i) If supplemental plantings are required to augment cover and/or species composition, the marsh restoration site will be planted with plugs of smooth cordgrass (Spartina alterniflora 'Vermilion') and four-inch container marshhay cordgrass (Spartina patens 'Gulf Coast'). Spacing will be determined by site conditions and existing cover at the time of planting but is generally proposed at six-foot centers with six feet between rows, constituting 1,210 plants per acre. These plantings will be conducted in areas where natural revegetation has not occurred. To ensure quality, the Applicants' bid packet will incorporate excerpted language (where appropriate) from the Louisiana Coastal Protection and Restoration Authority (CPRA) standard Technical Specifications language. The Spartina plantings will be obtained from a registered, licensed Louisiana nursery grower. The Applicants will provide the LDNR/OCM, USACE, and other applicable agencies with certification from the nursery that the plant materials are of a Louisiana ecotype species and have been acclimated to Louisiana climactic and habitable conditions for at least 90 days prior to planting.

j) The contractor will notify the designated LDNR/OCM inspector at least 10 days prior to the initiation of planting activities and provide subsequent notification no later than ten days after planting has been completed.

k) Within 30 days of the planting completion, a report will be submitted to the LDNR/OCM, USACE, and other applicable agencies to document the planting regime, including species, density, and locations.

7. **Maintenance Plan**. §332.4 (c)(8) A description and schedule of maintenance activities required to ensure the continued viability of the resource once initial construction is completed.

Site visits will be scheduled and conducted with the USACE, LDNR/OCM, and FWS in the first, third, fifth, tenth, and fifteenth years after placement of spoil material at the CPNWR. During these site visits, invasive species will be assessed and if present in unacceptable quantities, follow-up visits will be arranged to administer control measures, which may include but need not be limited

to direct removal and herbicide application. According to the Comprehensive Conservation Plan for the Sabine NWR (2007) salinity levels in the East Cove Unit are usually high enough to control most noxious plants. However, giant salvinia, which has been identified in Cameron Parish, can tolerate a salinity level of 8 parts per thousand or more, which is within the salinity range of the East Cove Unit.

8. **Performance Standards**. §332.4 (c)(9) Ecologically-based standards that will be used to determine whether the compensatory mitigation project is achieving its objectives. (See §332.5.)

   The successful reestablishment of vegetative cover with a community profile and areal density that accords with the criteria set forth under h) in the Mitigation Work Plan (see Item 6) will constitute the principal ecologically-based performance standard. Mitigation will be judged to have been successful in areas observed with 80 percent or greater vegetative cover of non-invasive species during the third year after construction. This same performance standard will apply in successive monitoring years (Years 5, 10, and 15).

9. **Monitoring Requirements**. §332.4 (c)(10) A description of parameters to be monitored for success in meeting document performance standards and if adaptive management is needed. A schedule for monitoring and reporting on monitoring results to the CEMVN must be included. (See §332.6.)

   Site visits will be scheduled and conducted with the USACE, LDNR/OCM, and FWS in the first, third, fifth, tenth, and fifteenth years after placement of spoil material at the CPNWR. Prior to each of these visits, the Applicants or their assignees will evaluate the extent to which the required elevation has been maintained across the marsh restoration area. The Applicants will conduct the 1- and 3-year monitoring by drone surveillance (percent cover) and ground-based sampling methodology (species composition/invasive species).

   For drone surveillance, ground GPS points and visual ground control points will be identified. The drone will be operated with a controlled altitude and picture overlap to ensure the desired sampling distance and resolution. Images will be uploaded along with ground collected GPS data to photogrammetry software for processing and generation of orthomosaic and various other data layers needed for documentation. The images will subsequently be included in the monitoring report(s) to the agencies.

   In addition to aerial reconnaissance, the ground-based sampling methodologies described below will be used as necessary to determine percent cover, species diversity, and species composition.

   ***Quadrat Sampling Methodology**. Permanent 10-foot x 10-foot vegetation sampling plots will be established as per standard quadrat vegetation sampling methodology. Sample locations will be selected using stratified random sampling methods. As community types typically change based on contours or other physiographic features, stratified random sampling will be used to help ensure all plant communities present are represented and to adequately capture habitat heterogeneity. The corners of each sample plot will be marked with rebar rods. Corner pipes will be flagged and GPS coordinates at the center of each sample location will be recorded. Data collection will include vegetation diversity, dominance, percent cover, and species diversity/composition.*

   ***Line Intercept Methodology.** Transect locations will be determined using a stratified random design in which different portions of the site will be targeted for sampling to ensure that the habitat complexity of the site is represented, although within these targeted zones, transects will*

be located randomly. Data will be collected along these transects and the start/end points of each transect will be photographed.

As described under h) in the Mitigation Work Plan (see Item 6), natural regeneration from in-situ root and seed stock will constitute the initial revegetation source for the mitigation site. The extent to which natural revegetation is successful will be determined after the first and third year of growth post-construction. For areas with less than 80 percent cover of non-invasive species in the third year, plantings will be undertaken to augment the existing vegetation cover.

Monitoring reports will be prepared in the first, third, fifth, tenth, and fifteenth year following the initial placement of spoil material during Project construction. Monitoring reports will be prepared for each site inspection. These reports will include narrative text, photographs, maps, and drawings to document:

- *Project status summary;*
- *general site observations;*
- *substrate elevation profile and trends;*
- *quantitative and qualitative descriptions of the restored marsh vegetation; and*
- *recommendations for adaptive management, if required.*

10. **Long-term Management Plan.** §332.4 (c)(11) A description of how the compensatory mitigation project will be managed after performance standards have been achieved to ensure the long-term sustainability of the resource, including long-term financing mechanisms and the party responsible for long-term management. (See §332.7(d).)

    The Applicants will assume responsibility for monitoring and adaptive management during the specified monitoring period (15 years), with site access and work coordinated with FWS staff at the CPNWR. Thereafter, assuming site performance standards have been met within this timeframe or, if that is not the case, alternative compensatory mitigation has been agreed instead, the Applicants mitigation responsibilities at the CPNWR will have been met in full. At that point, the responsibility for continued management of the marsh restoration area will rest wholly with the FWS.

11. **Adaptive Management Plan.** §332.4 (c)(12) A management strategy to address unforeseen changes in site conditions or other components of the compensatory mitigation project, including the party or parties responsible for implementing adaptive management measures. The adaptive management plan will guide decisions for revising compensatory mitigation plans and implementing measures to address both foreseeable and unforeseen circumstances that adversely affect compensatory mitigation success. (See §332.7(c).)

    The most likely situations in which adaptive management may be required are where the target ground elevation level and/or the success criteria for vegetation cover are not achieved within designated timeframe(s).

    According to the Coastal Protection and Restoration Authority's (CPRA's) recently released Marsh Creation Design Guidelines - Appendix D, a brackish marsh that is inundated between 10 percent and 65 percent of the time falls within the optimal inundation range. This project has been designed so that it is initially inundated 10 percent of the time and as the ground settles and sea level rises, the inundation time increases. If inundation occurs more than 65

percent of the time, supplemental material will be placed, as necessary, to address the exceedance.

The adaptive management plan for revegetation success is described under i) of the Mitigation Work Plan (see Item 6).

12. **Financial Assurances**. §332.4 (c)(13) A description of the type and amount of financial assurances to be provided as necessary to ensure a high level of confidence that the compensatory mitigation project will be successfully completed, in accordance with its performance standards (see §332.3(n)).

    The capital investment required for the Calcasieu Pass Terminal and TransCameron Pipeline Project (Project) approximates $4.5 billion, while the anticipated lifespan of the proposed facilities is at least 30 years. The Project's progression to facility development will be contingent on a Final Investment Decision, which will be made just prior to construction. At this point, financial assurances for developmental costs, including compensatory mitigation, will be realized and the Applicants would be able to consider bond agreements or other financial means, if necessary, to guarantee the long-term viability of the mitigation plan.

13. **Other Information.** §332.4 (c)(13) CEMVN may require additional information as necessary to determine the appropriateness, feasibility, practicability, and success of the compensatory mitigation project.

ADDENDUM B – LDNR MITIGATION PLAN REQUIREMENTS

1. A scope of work that provides:

    i. the wetland creation or habitat restoration activity that the applicant is proposing, for example: erosion control, marsh creation, shoreline protection, plantings, etc.;

    ii. information as to whether the proposed wetland creation or habitat restoration activity will result in the establishment of coastal plant communities; a description of the proposed construction activities;

The Applicants' Scope of Work is provided in Sections 4.1 and 4.2 of the CMP/BUDM Plan and Item 6 (Mitigation Work Plan) of Addendum A.

2. An explanation detailing why the proposed site requires wetland creation or habitat restoration and why this measure should be implemented, for example, the shoreline is retreating, the site is a prior converted wetland, existing degraded habitat, and the applicant is proposing this measure to create a wetland or restore a habitat, etc.;

    The Comprehensive Conservation Plan for the Sabine NWR (2007) describes high rates of marsh loss at the East Cove Unit of the CPNWR (the East Cove Unit was formerly part of the Sabine NWR), much of it attributed to saltwater intrusion and seismic surveys for oil and gas exploration. Various government- and privately-funded projects, including the Cameron Creole Watershed Project and the Cameron Creole/East Cove Unit Marsh Terrace Project, have been undertaken to create barriers to saltwater intrusion and restore vegetated marsh. The Applicants proposed marsh creation/restoration is consistent with the goals and objectives set forth for the East Cove Unit in the referenced Comprehensive Conservation Plan and is supported by CPNWR staff.

3. On-site habitat loss rates. Provide the average land loss rate (acres per year) and the shoreline erosion rate (linear feet per year);

    Based on U.S. Geological Survey data from 1985 to 2009 within the extended project boundary for Cameron-Creole Watershed Project at the CPNWR, land loss is estimated to be 1.33 percent or 600 acres per year. (See Factsheet for Cameron-Creole Watershed Grand Bayou Marsh Creation [CS-54] - Louisiana Coastal Wetlands Conservation and Restoration Task Force [2011])

    Based on the PPL17 Project Nominee Final Fact Sheet for the East Cove Marsh Creation Project (February 22, 2007), developed by the FWS and USACE, interior shoreline erosion rates are "minimal".

4. The exact limits/location (latitude and longitude) of the proposed habitat restoration site, center coordinate (GCS NAD 83), plan view plats and the exact coordinates on the plan view plats for all boundary corners must be provided;

    Figure 6 of the CMP/BUDM Plan provides the necessary coordinates.

5. A list of landowner(s) and addresses for the proposed wetland creation or habitat restoration site;

The sole landowner for the marsh creation/restoration site is:

U.S. Fish and Wildlife Service
Cameron Prairie National Wildlife Refuge
1428 Highway 27
Bell City, Louisiana 70630-9618

6. A list of the extent of the proposed work, total acreage benefited, and total linear feet benefited;

   Quantitative details of the proposed marsh restoration area are provided in Section 4.2, and Figures 6 and 7, of the CMP/BUDM Plan.

7. The existing site condition. Provide a detailed description of the condition of the site; describe the soils; drainage patterns/hydrology; list all existing manmade structures on the site, etc.;

   The marsh creation/restoration site is located in the western portion of the East Cove Unit of the CPNWR. The landscape is characterized by areas of saline/brackish marsh interspersed with areas of shallow open water where vegetation has been lost and substrate material eroded through time. The average site elevation is 0.8 feet NAVD 88. The East Cove Unit is separated from Calcasieu Lake by the Cameron Creole Watershed Project Levee and from private land to the south by the North Cameron Protection Levee. The flow of high salinity water into the East Cove Unit from Calcasieu Lake is regulated by a series of control structures along the Cameron Creole Watershed Project Levee.

   Based on field observations the brackish/saline marsh community at the East Cove Unit is dominated by Spartina patens and Spartina alterniflora.

   A list of the proposed resulting wetland creation or habitat type(s), for example, forested wetland, fresh/intermediate marsh, or brackish/salt marsh;

   The marsh creation/restoration will result in the establishment of 137.0 acres of new brackish marsh.

8. A long-term protection and maintenance plan (marsh creation/restoration sites must be maintained for 20 years, forested wetland sites must be maintained for 50 years), plan for re-establishing wetland vegetation if initial planting fails, plan for invasive species management, and also a plan for all maintenance and or management activities (include all timber stand improvement activities);

The Applicant's long-term protection and maintenance plan for the prescribed timeframe (15 years), including invasive species management, is provided under Item 7 of Addendum A. The Applicants' adaptive management plan for revegetation success is described under i) of the Mitigation Work Plan (see Item 6) in Addendum A.

9. A planting plan (if applicable) shall include:

   a) the type and number of trees per acre that will be planted;

   b) the size of the seedlings that will be planted and the type of container;

c) the type and number of marsh grass transplants that will be planted;

d) the size of the marsh grass transplants that will be planted and the type of container;

e) the total number of acres that will be planted; and

f) the expected survival rate of all plants after two years;

The Applicant's planting plan is described under h) through l) of the Mitigation Work Plan (see Item 6 of Addendum A).

10. and provide the following submittal information:

a) the party responsible for the submittal;

b) the name of the applicant and/or landowner(s);

c) the domiciliary address and phone number of the applicant and/or landowner(s); (d). the name and phone number of the agent or contact if different from applicant; and

d) the mailing address of the applicant and/or landowner(s) if different from the domiciliary address.

Current contact information for the Applicants and their agent is provided on the standard form that was submitted with each JPA. The landowner contact information for the marsh restoration site is provided under Item 5 of this addendum.

Figures

Venture Global Property
Construction Support Facility
Proposed East Lateral Pipeline
Northeast Access Road
Potential Beneficial Use Sites
Hydraulic Dredge Pipeline
USFWS National Wildlife Refuges
Dredge Footprint

1:190,080

0 1.5 3 Miles

N

Figure 1
Project Area and Potential Mitigation Sites
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana

CALCASIEU PASS

TransCameron PIPELINE

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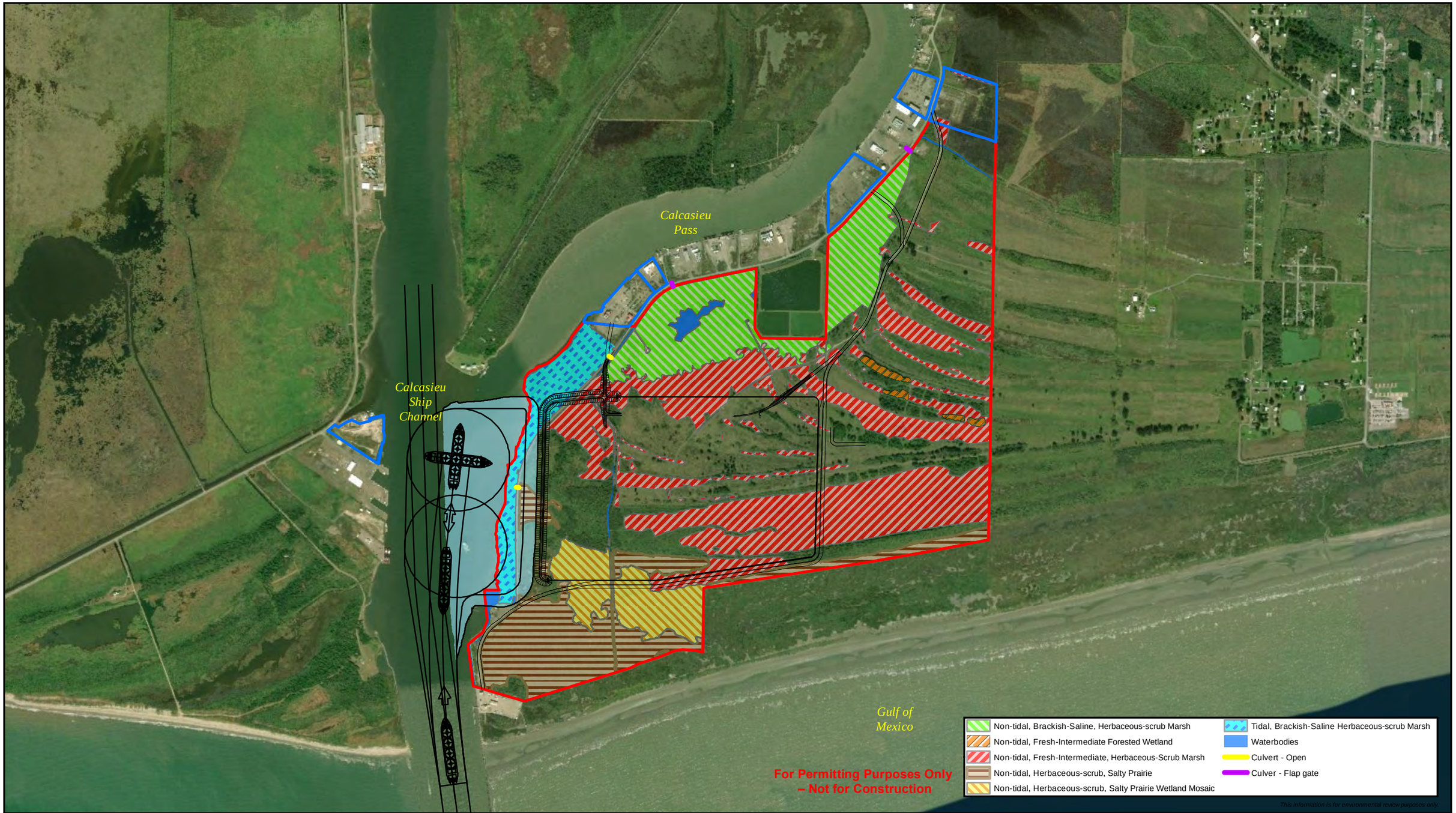

Figure 2
Terminal Layout and Wetland Community Types
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana

CALCASIEU PASS

TransCameron PIPELINE

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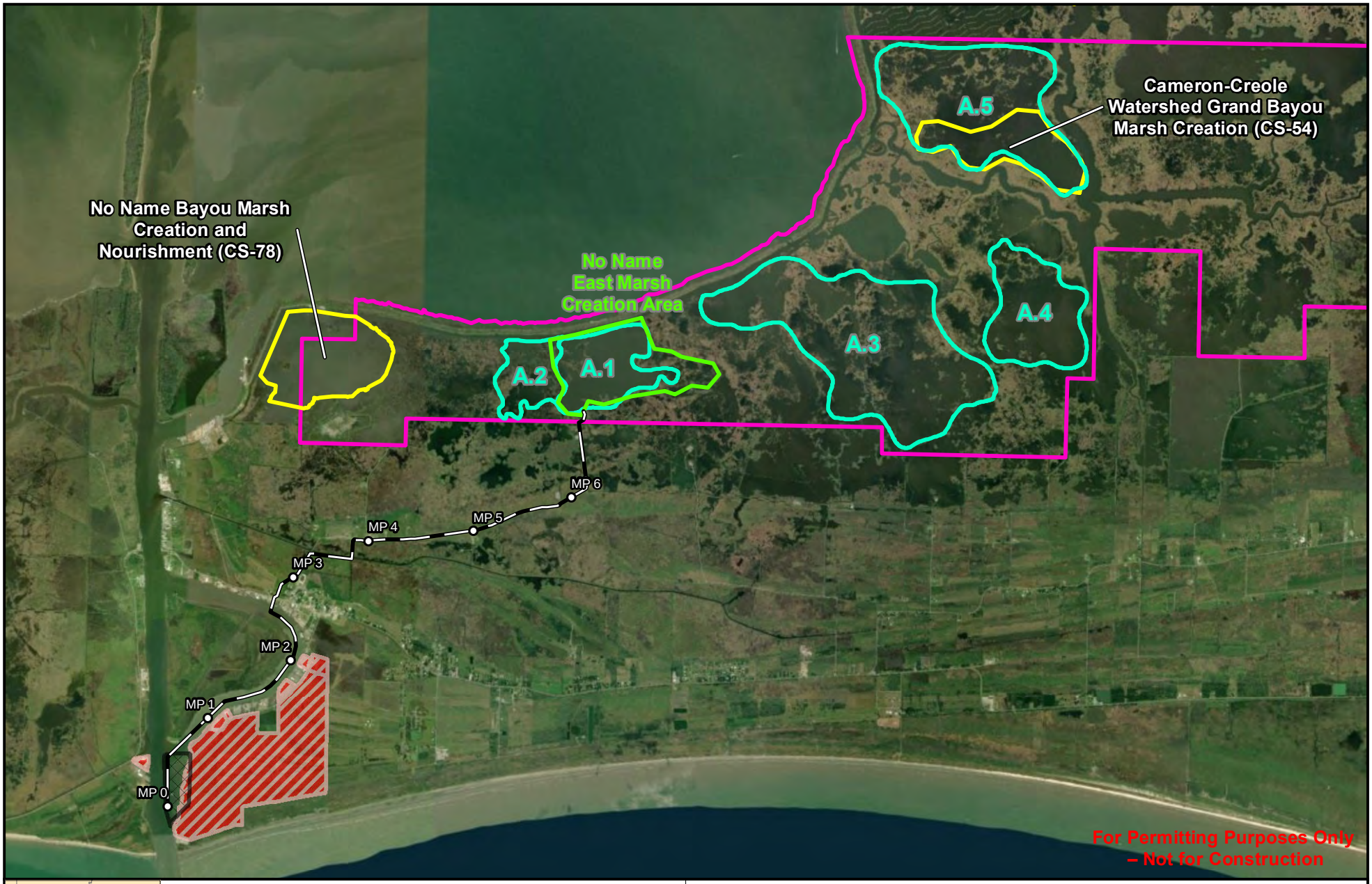

Figure 3
Potential Beneficial Use Areas within the Cameron Prairie National Wildlife Refuge – East Cove Unit
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana

CALCASIEU PASS

TransCameron PIPELINE

FILE: M:\Clients\V-X\VGL\CalcasieuPass_ArcGIS_JPA_CalcasieuPass_CMP_Fig3.mxd | REVISED: 08/31/2018 | SCALE: 1:80,414 when printed at 8.5x11

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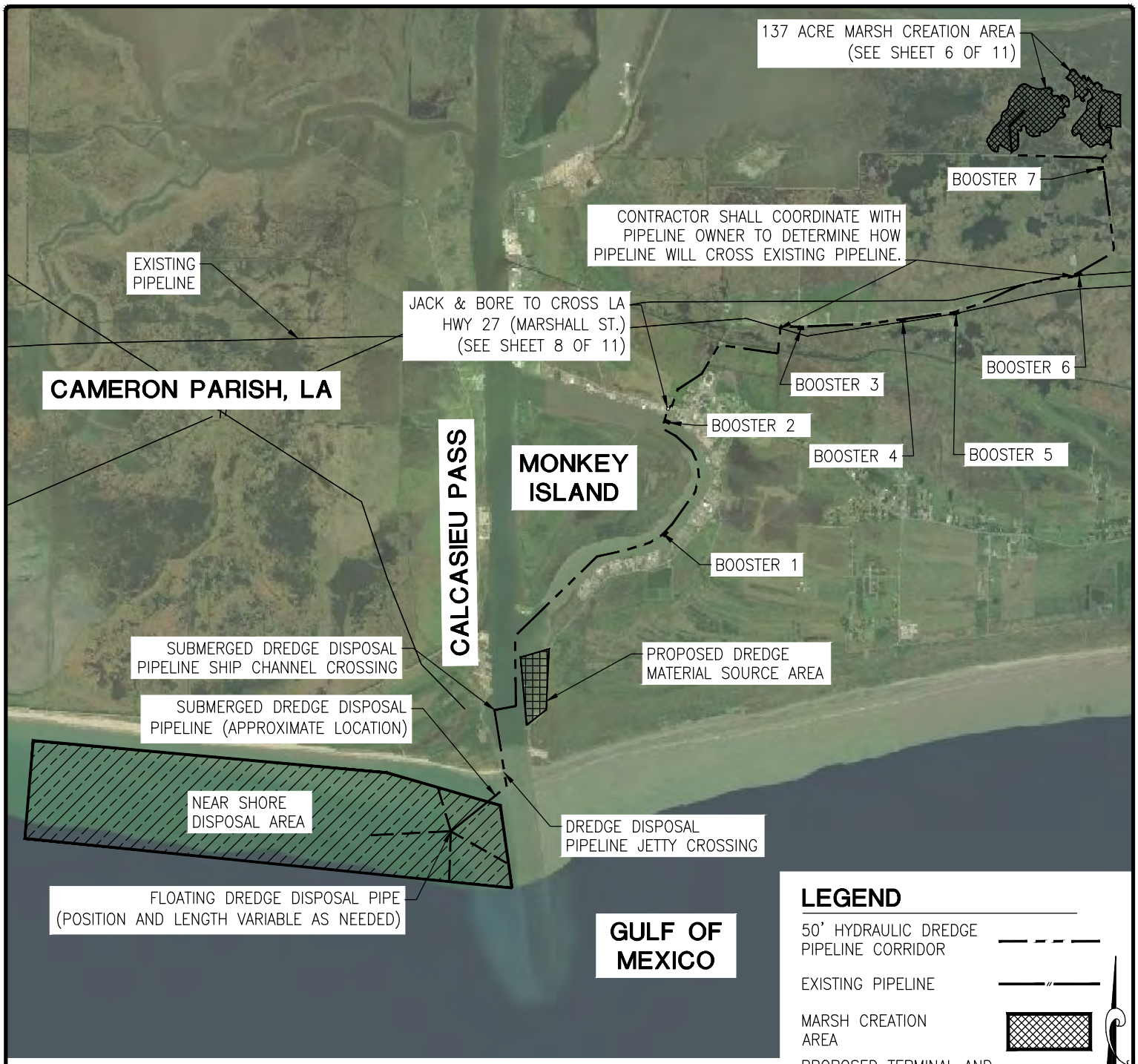

DREDGED MATERIAL PLACEMENT OVERVIEW MAP

SCALE: 1" = 5000'

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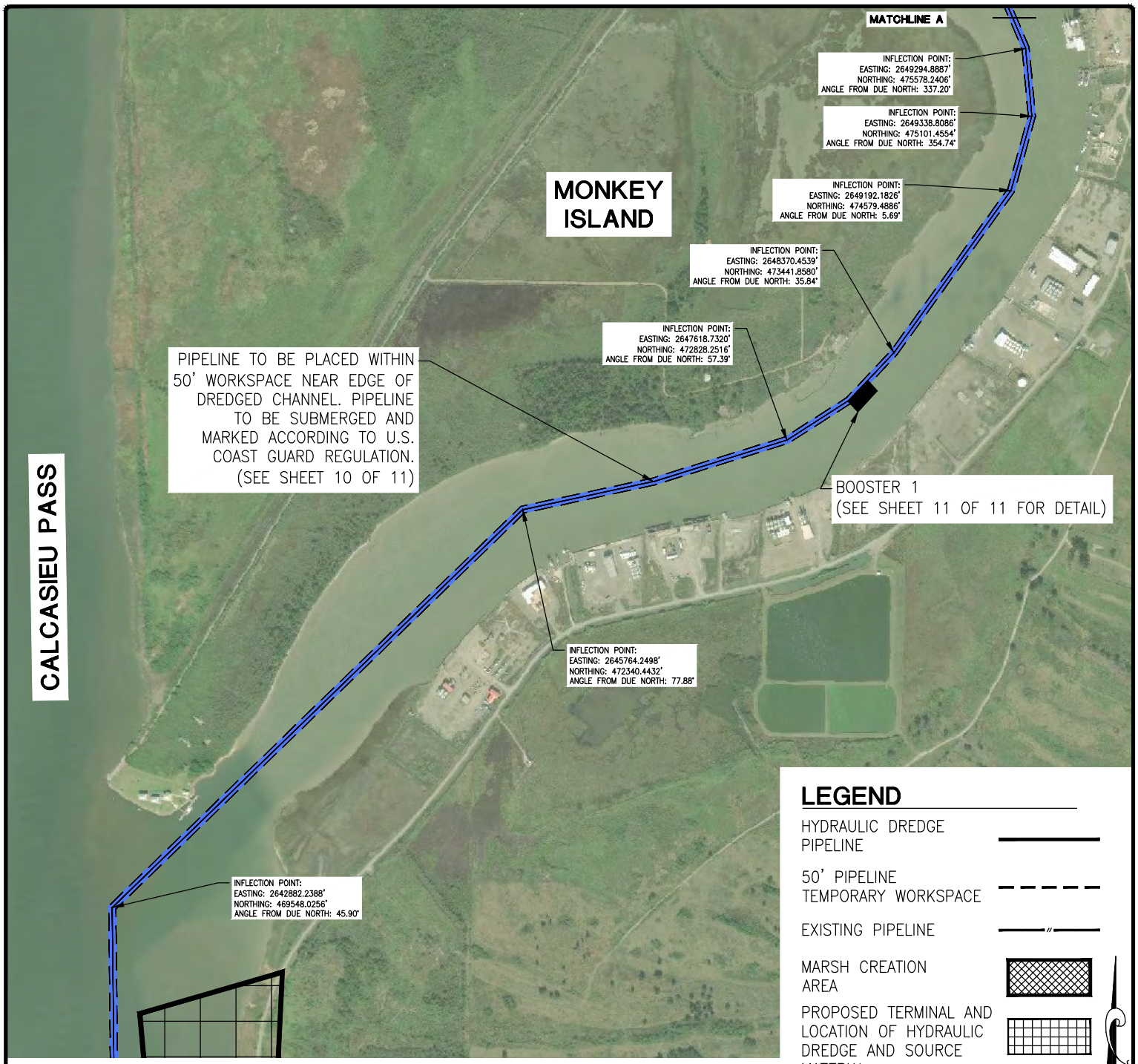
FIGURE 4
DREDGED MATERIAL PLACEMENT OVERVIEW MAP
VENTURE GLOBAL CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT
DATE: 6-30-2017
MODIFIED DATE: 8-27-2018



HYDRAULIC DREDGE PIPELINE ROUTE LAYOUT

SCALE: 1" = 1000'

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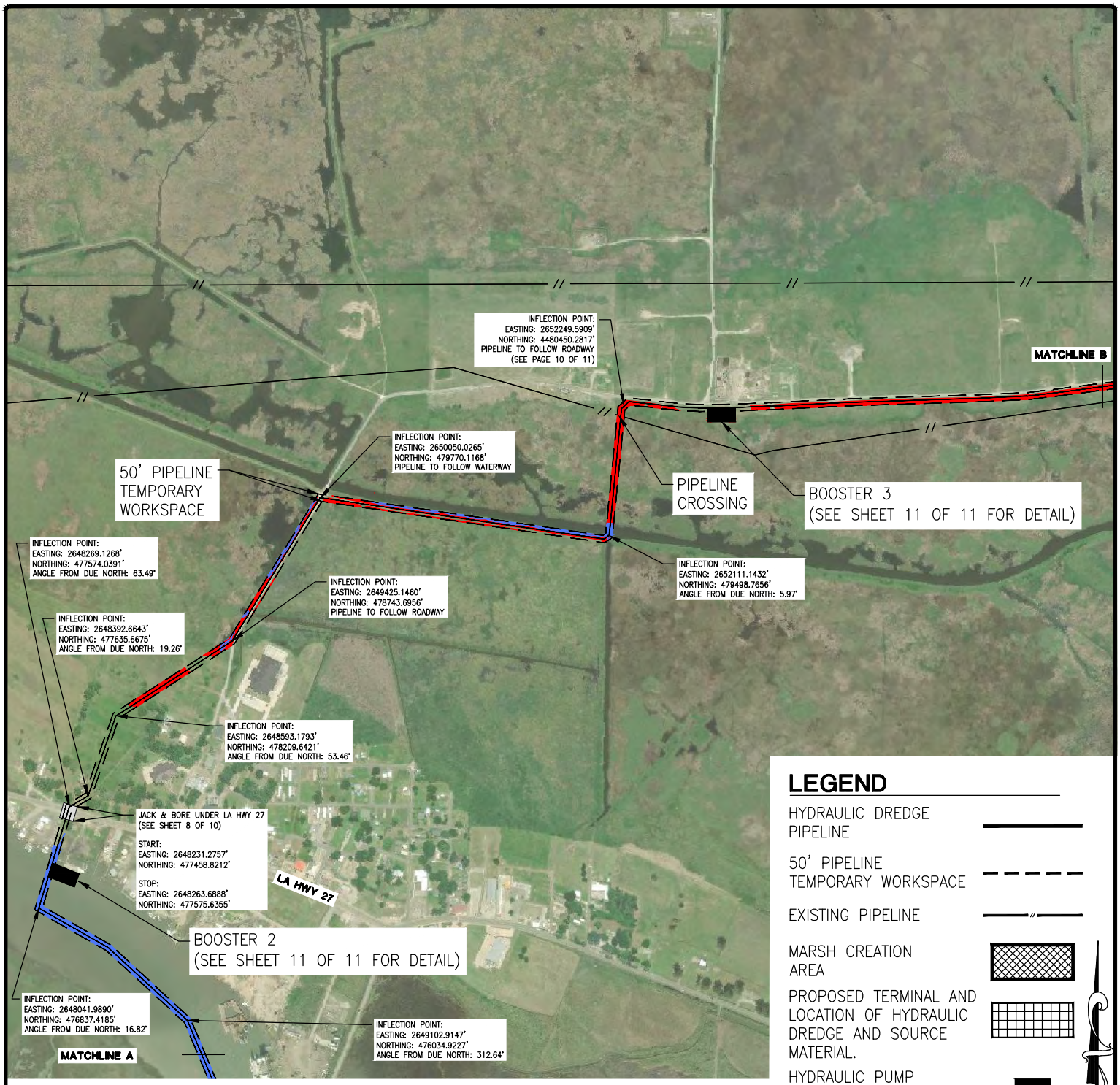
FIGURE 5A
HYDRAULIC DREDGE PIPELINE ROUTE LAYOUT
VENTURE GLOBAL CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT

DATE: 6-30-2017
MODIFIED DATE: 8-27-2018



HYDRAULIC DREDGE PIPELINE ROUTE LAYOUT

SCALE: 1" = 1000'

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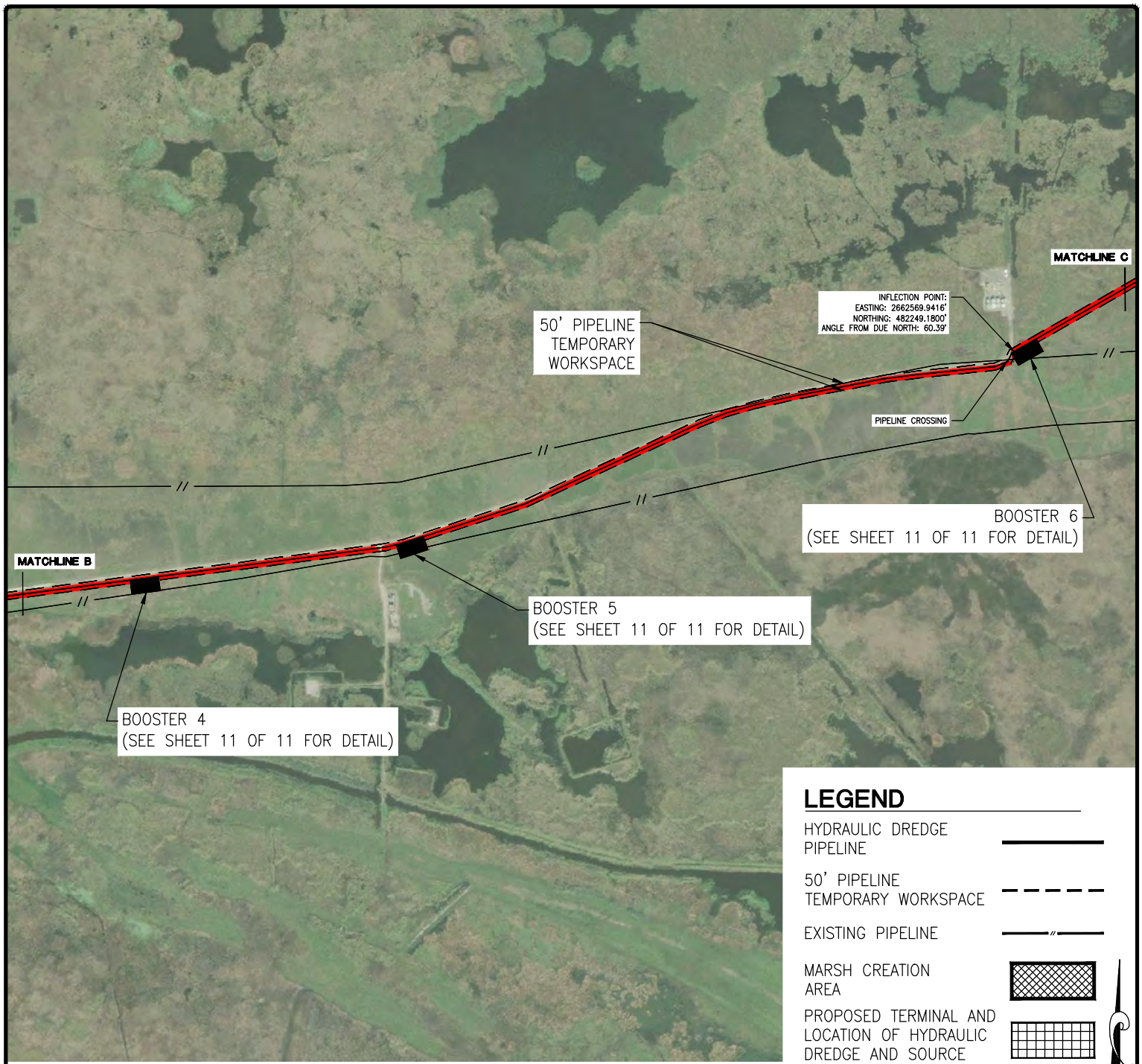
FIGURE 5B
HYDRAULIC DREDGE PIPELINE ROUTE LAYOUT
VENTURE GLOBAL CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT

DATE: 6-30-2017
MODIFIED DATE: 8-27-2018



LEGEND

- HYDRAULIC DREDGE PIPELINE
- 50' PIPELINE TEMPORARY WORKSPACE
- EXISTING PIPELINE
- MARSH CREATION AREA
- PROPOSED TERMINAL AND LOCATION OF HYDRAULIC DREDGE AND SOURCE MATERIAL.
- HYDRAULIC PUMP BOOSTER STATION
- WATERBODY
- WETLANDS

HYDRAULIC DREDGE PIPELINE ROUTE LAYOUT

SCALE: 1" = 1000'

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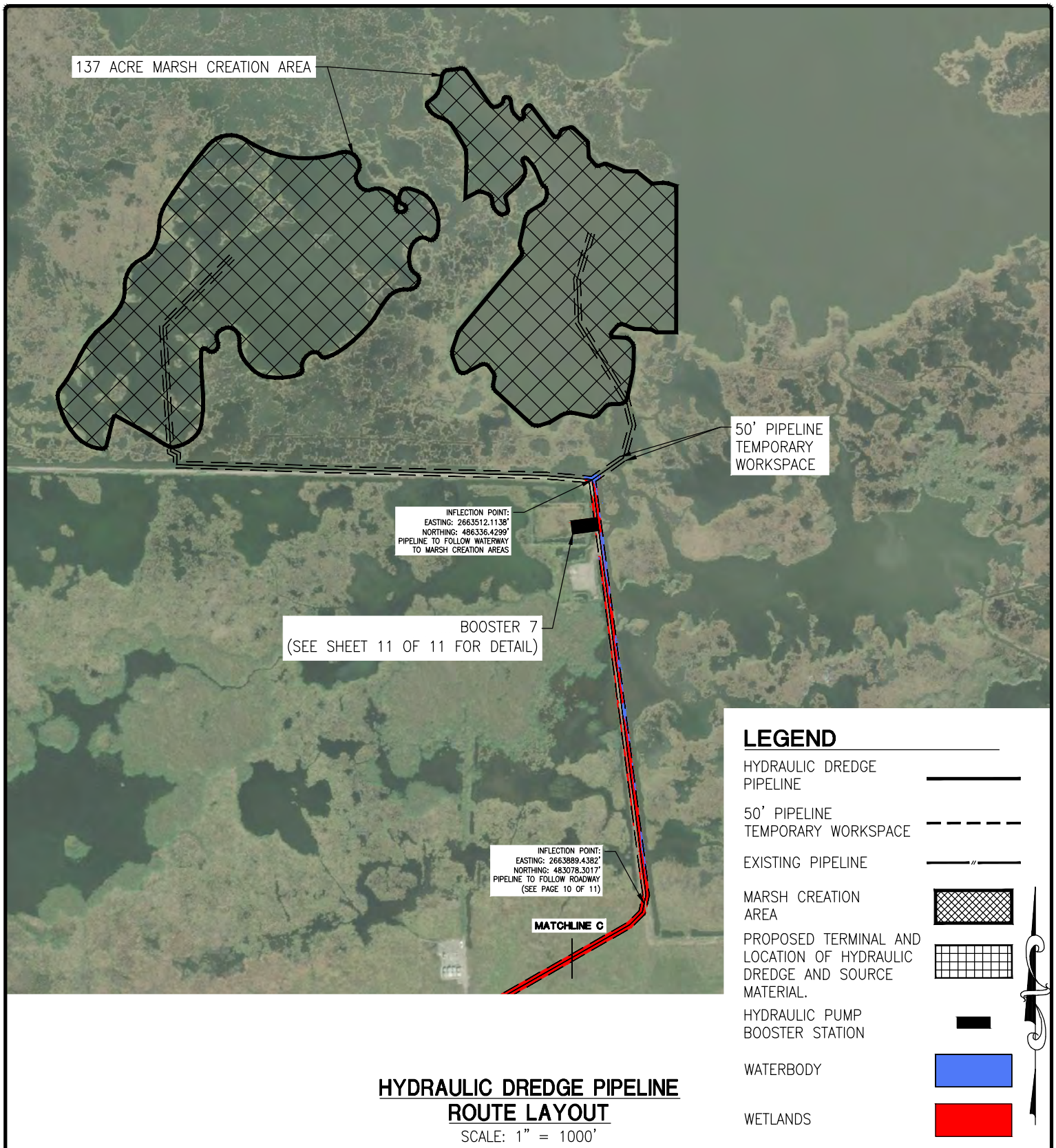
FIGURE 5C
HYDRAULIC DREDGE PIPELINE ROUTE LAYOUT
VENTURE GLOBAL CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT
DATE: 6-30-2017
MODIFIED DATE: 8-27-2018



HYDRAULIC DREDGE PIPELINE ROUTE LAYOUT

SCALE: 1" = 1000'

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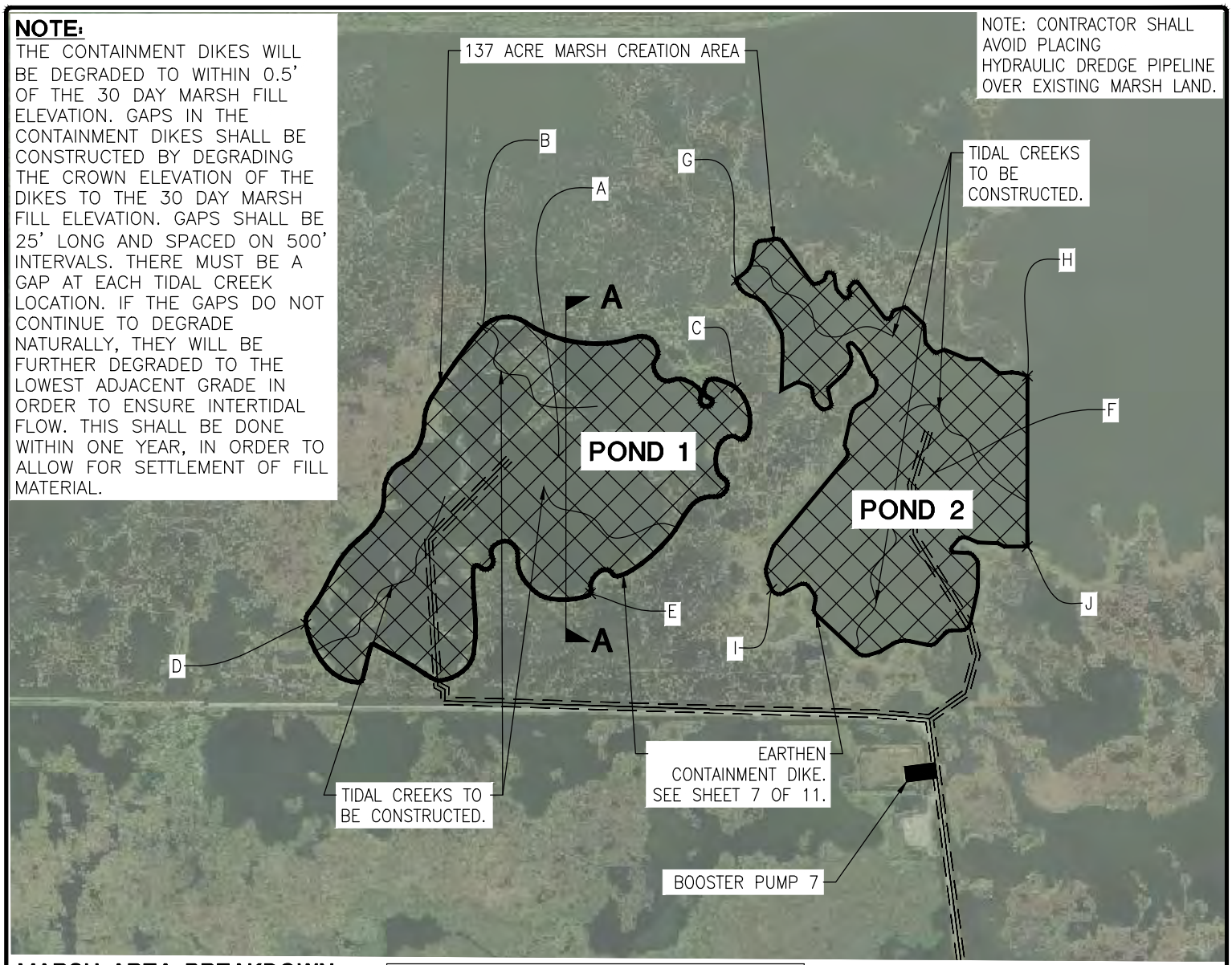
FIGURE 5D
HYDRAULIC DREDGE PIPELINE ROUTE LAYOUT
VENTURE GLOBAL CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT

DATE: 6-30-2017
MODIFIED DATE: 8-27-2018

NOTE:
THE CONTAINMENT DIKES WILL BE DEGRADED TO WITHIN 0.5' OF THE 30 DAY MARSH FILL ELEVATION. GAPS IN THE CONTAINMENT DIKES SHALL BE CONSTRUCTED BY DEGRADING THE CROWN ELEVATION OF THE DIKES TO THE 30 DAY MARSH FILL ELEVATION. GAPS SHALL BE 25' LONG AND SPACED ON 500' INTERVALS. THERE MUST BE A GAP AT EACH TIDAL CREEK LOCATION. IF THE GAPS DO NOT CONTINUE TO DEGRADE NATURALLY, THEY WILL BE FURTHER DEGRADED TO THE LOWEST ADJACENT GRADE IN ORDER TO ENSURE INTERTIDAL FLOW. THIS SHALL BE DONE WITHIN ONE YEAR, IN ORDER TO ALLOW FOR SETTLEMENT OF FILL MATERIAL.



MARSH AREA BREAKDOWN

EXISTING MARSH WITHIN CONTAINMENT DIKE= 8.3 ACRES

NEW MARSH AREA WITHIN CONTAINMENT DIKE=137.0 ACRES

TOTAL AREA=145.3 ACRES

LOCATION TABLE

POINT	LATITUDE	LONGITUDE
A	N 29° 49' 38.63"	W 93° 17' 16.66"
B	N 29° 49' 46.81"	W 93° 17' 22.43"
C	N 29° 49' 43.23"	W 93° 17' 03.68"
D	N 29° 49' 27.58"	W 93° 17' 35.04"
E	N 29° 49' 29.86"	W 93° 17' 14.12"
F	N 29° 49' 37.99"	W 93° 16' 48.95"
G	N 29° 49' 50.13"	W 93° 17' 03.78"
H	N 29° 49' 44.31"	W 93° 16' 42.22"
I	N 29° 49' 30.34"	W 93° 17' 00.79"
J	N 29° 49' 33.35"	W 93° 16' 42.02"

LEGEND

HYDRAULIC DREDGE PIPELINE

50' PIPELINE TEMPORARY WORKSPACE

MARSH CREATION AREA

HYDRAULIC PUMP BOOSTER STATION

MARSH CREATION AREA

SCALE: 1" =1000'

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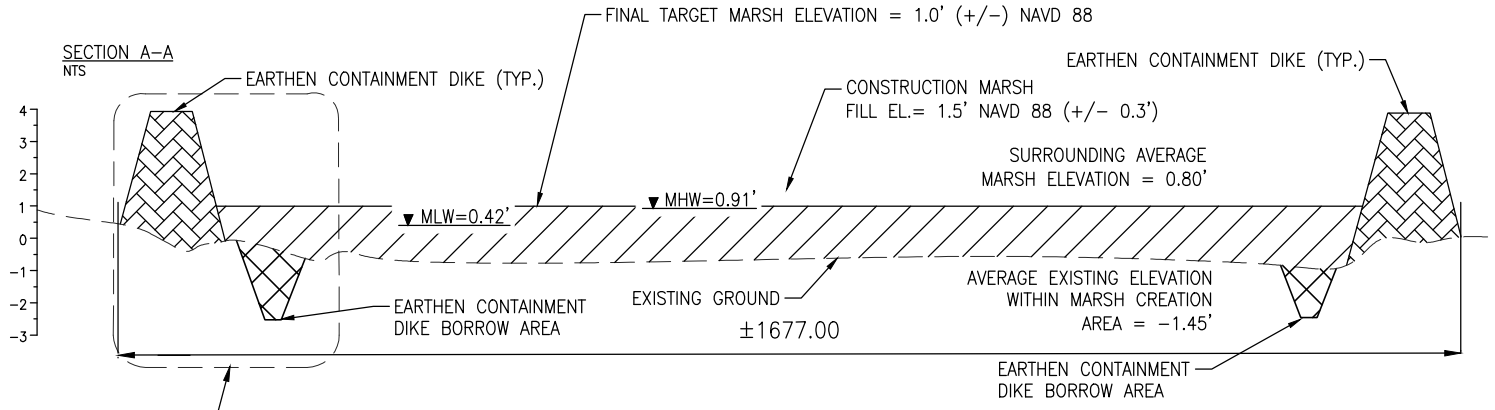
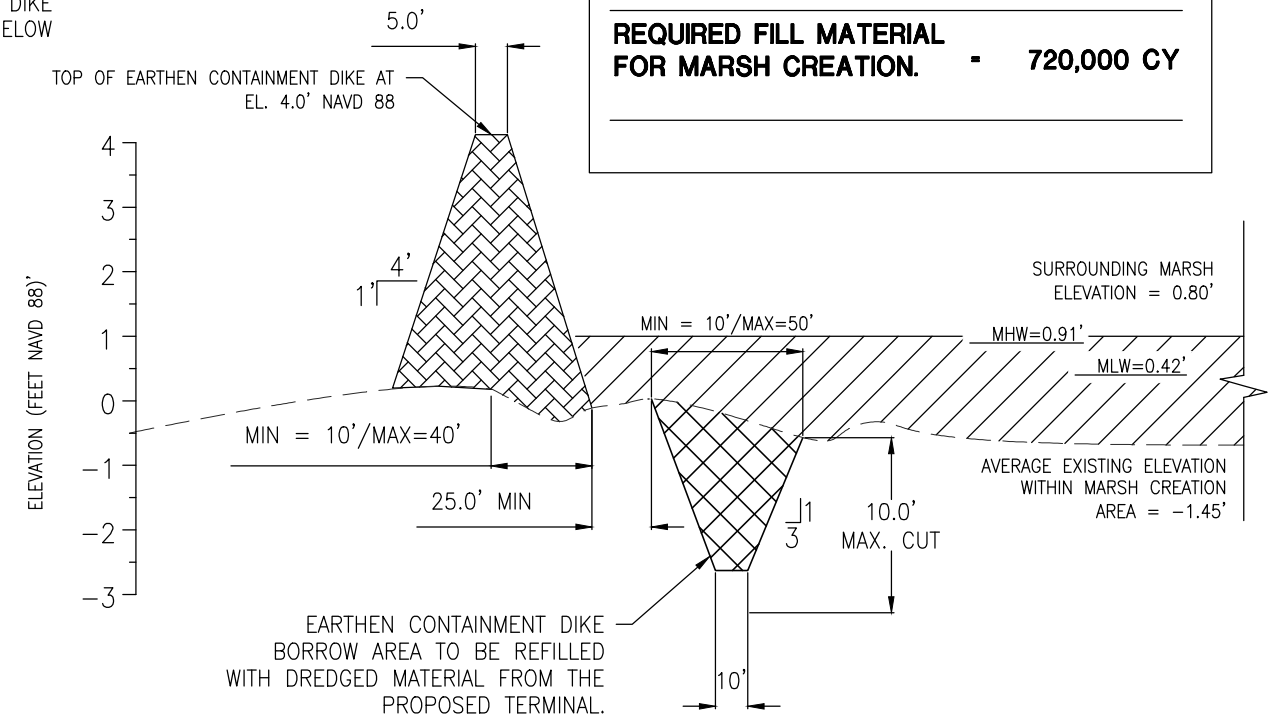
FIGURE 6
MARSH CREATION AREA
VENTURE GLOBAL CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT
DATE: 6-30-2017
MODIFIED DATE: 8-27-2018



NEW MARSH CREATED	-	**137 ACRES**
REQUIRED FILL MATERIAL FOR MARSH CREATION.	-	**720,000 CY**



EARTHEN CONTAINMENT DIKE

EARTHEN CONTAINMENT DIKE BORROW AREA

MARSH CREATION FILL

EXISTING GROUND

EARTHEN CONTAINMENT DIKE DETAIL

SCALE= N.T.S.

• BOTTOM WIDTH OF CONTAINMENT DIKE AND TOP WIDTH OF BORROW AREA VARY WITH WATER DEPTH AND FINAL TARGET ELEVATION

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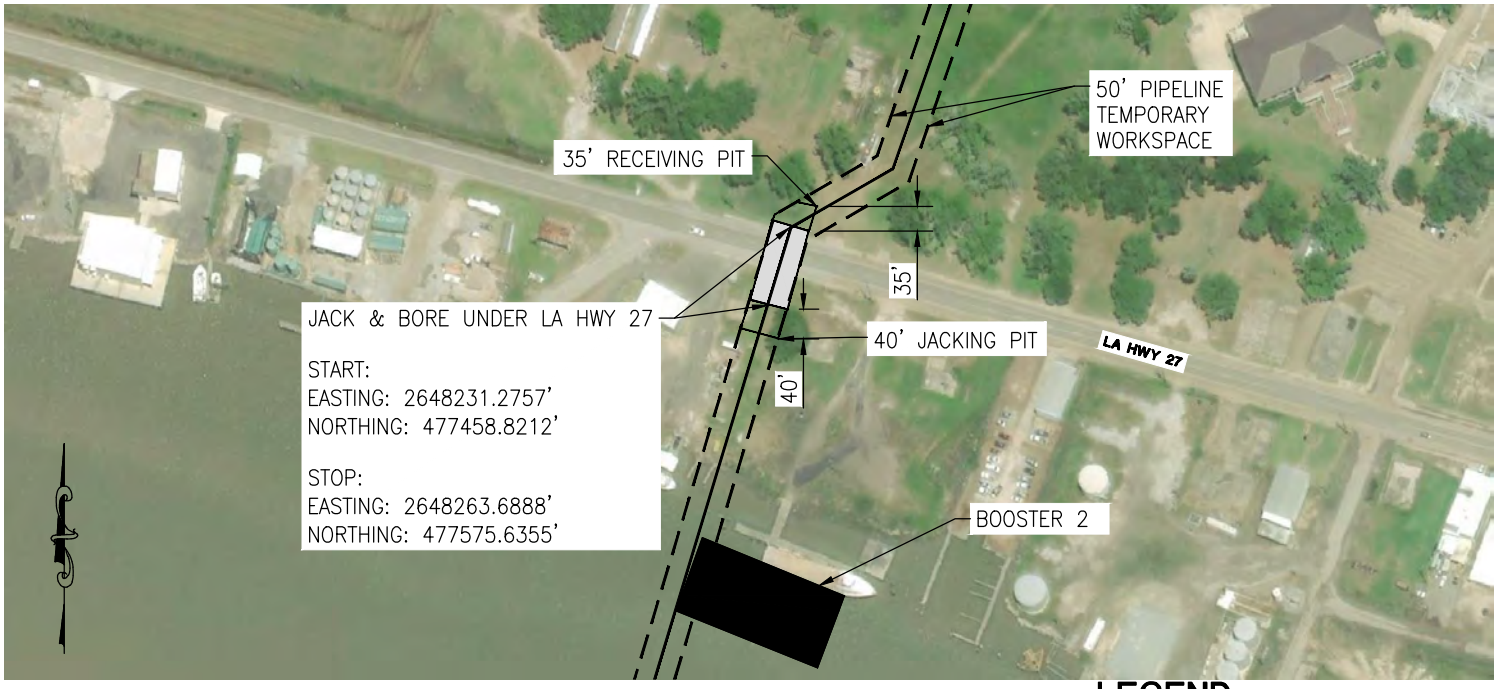
FIGURE 7
MARSH CREATION SECTIONS
VENTURE GLOBAL CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT

DATE: 6–30–2017
MODIFIED DATE: 8–27–2018



PLAN VIEW
JACK & BORE

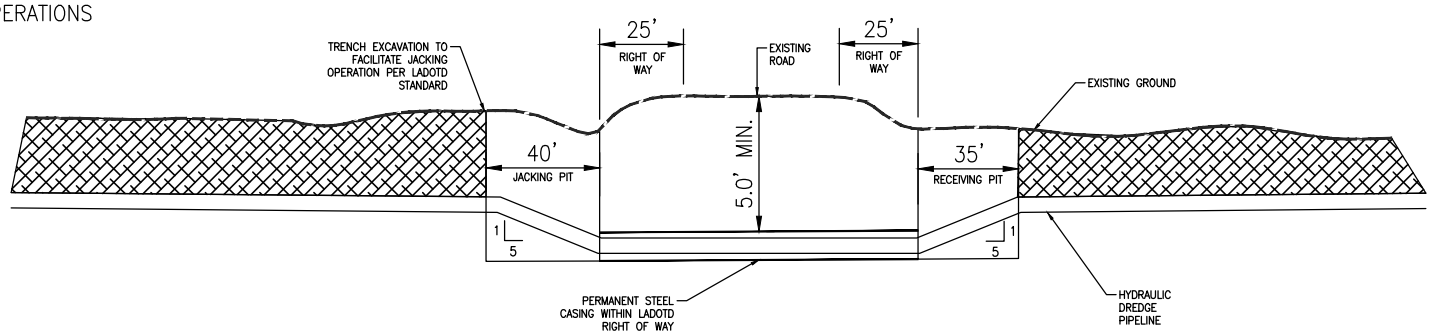
SCALE IN FEET

250 125 0 250

LEGEND

- HYDRAULIC DREDGE PIPELINE
- 50' PIPELINE TEMPORARY WORKSPACE
- HYDRAULIC PUMP BOOSTER STATION
- JACK & BORE

NOTE:
JACK & BORE PITS TO CONFORM TO DOTD PERMIT. NO WETLANDS IMPACTS FROM JACK & BORE OPERATIONS



PROFILE VIEW
TYPICAL JACK & BORE SECTION
(NTS)

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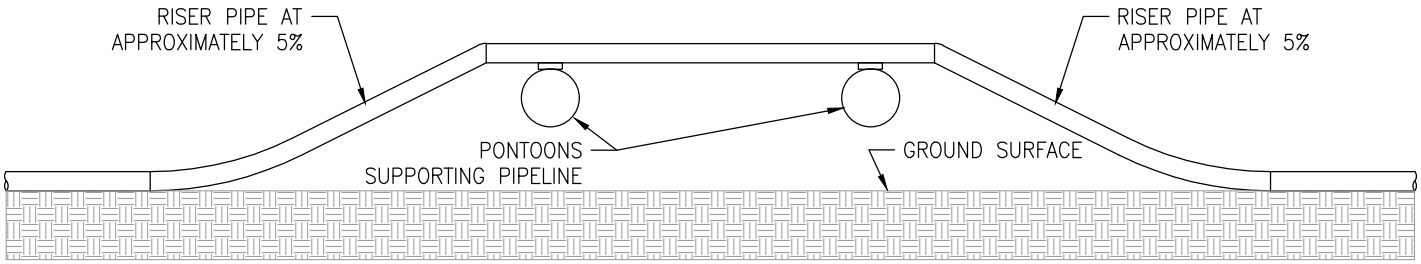
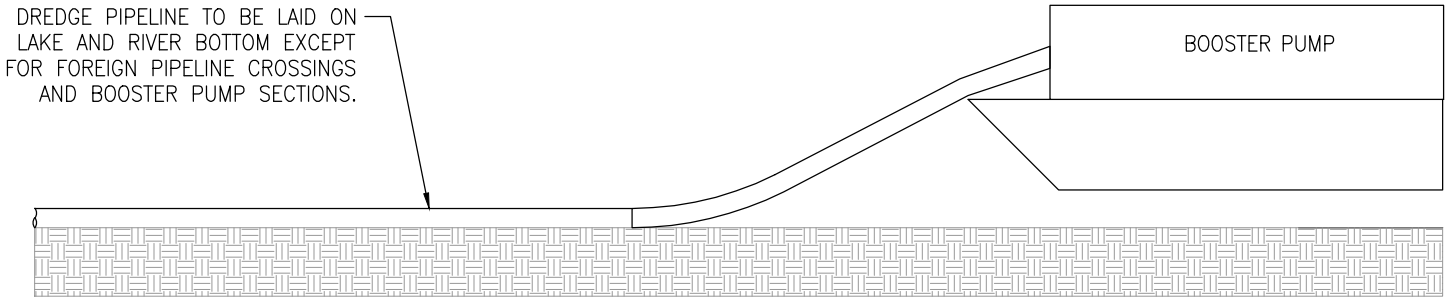
FIGURE 8
JACK & BORE DETAILS
VENTURE GLOBAL CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT
DATE: 6-30-2017
MODIFIED DATE: 8-27-2018

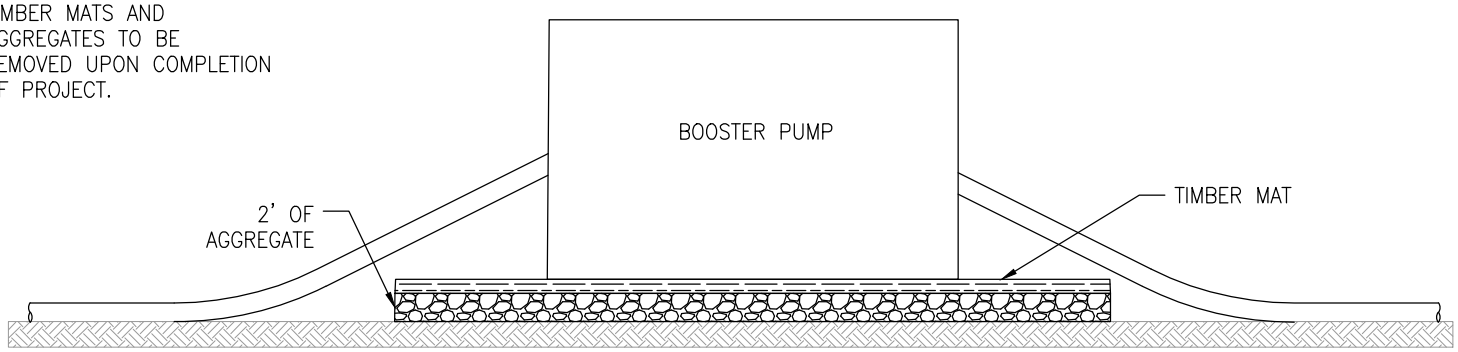


FLOATING PIPELINE TYPICAL SECTION



SUBMERGED DREDGE PIPELINE AND BARGE TYPICAL SECTION

NOTE:
TIMBER MATS AND AGGREGATES TO BE REMOVED UPON COMPLETION OF PROJECT.



LAND BASED BOOSTER PUMP TYPICAL SECTION

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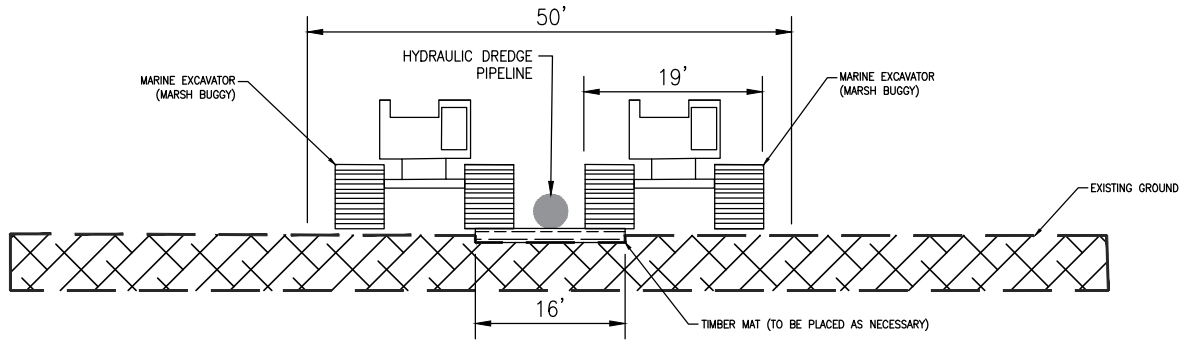
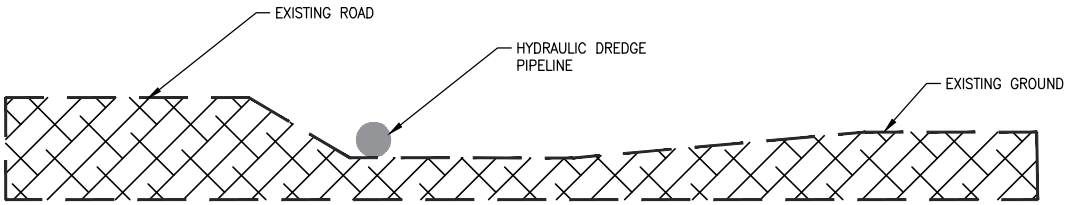
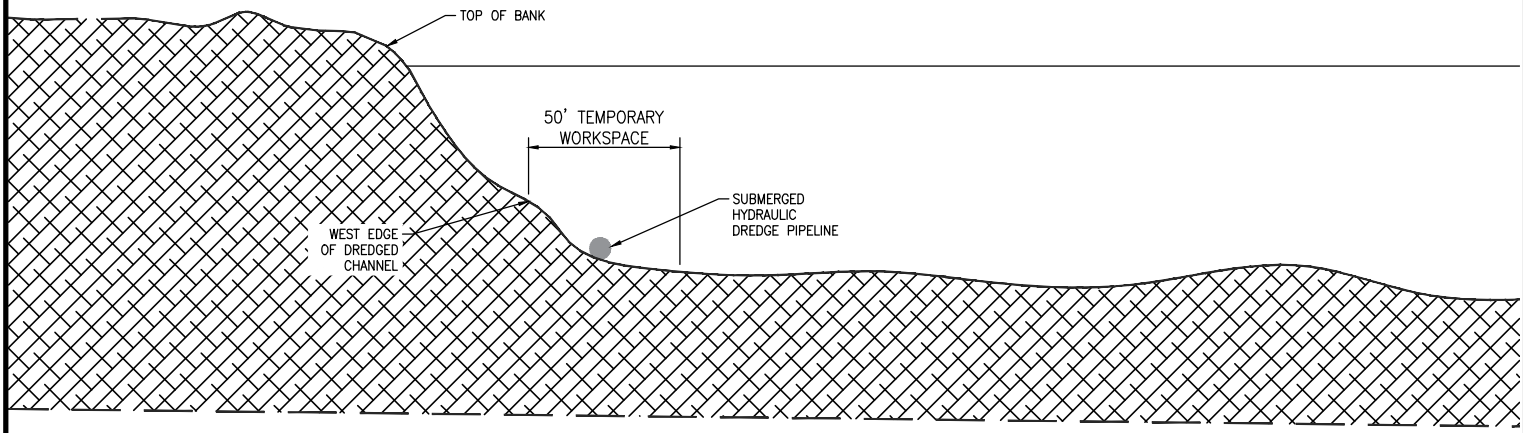
FIGURE 9
HYDRAULIC DREDGE PIPELINE DETAILS
VENTURE GLOBAL CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT
DATE: 6-30-2017
MODIFIED DATE: 8-27-2018



50' TEMPORARY WORKSPACE TYPICAL SECTION N.T.S



ROADSIDE PIPELINE CORRIDOR TYPICAL SECTION N.T.S



SUBMERGED HYDRAULIC DREDGE PIPELINE TYPICAL SECTION N.T.S

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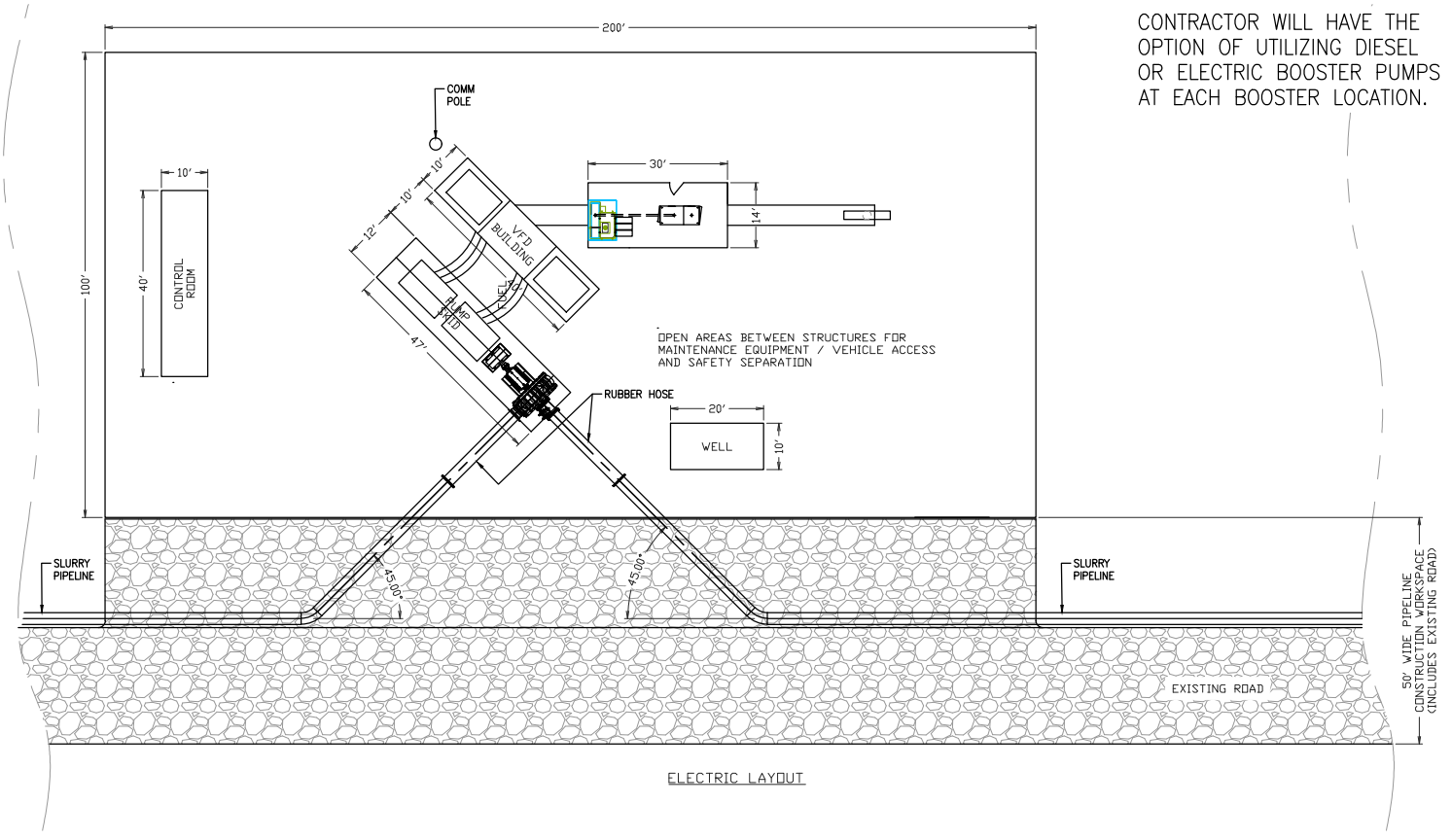
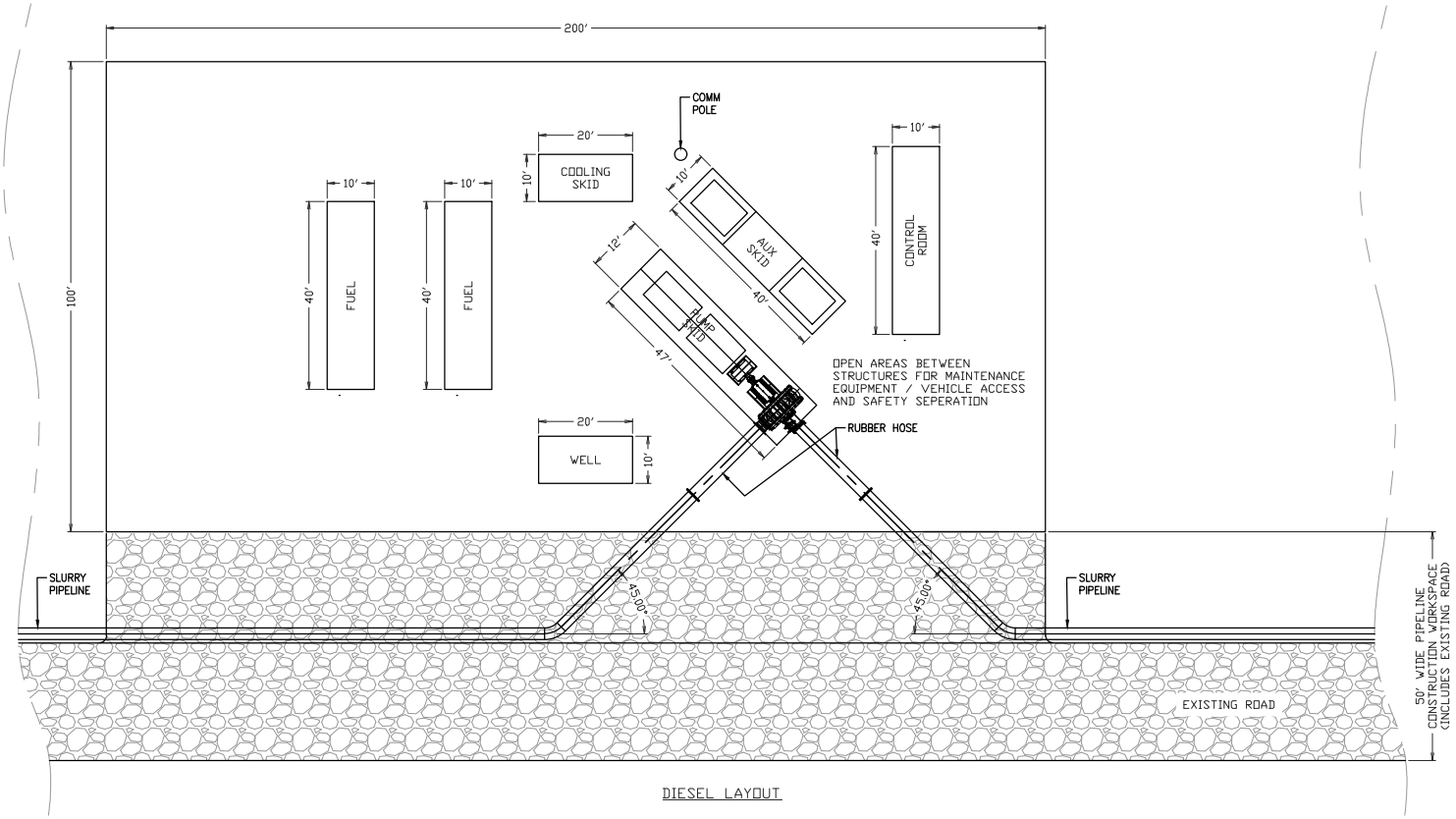
FIGURE 10
HYDRAULIC DREDGE PIPELINE CORRIDOR DETAILS
VENTURE GLOBAL CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT
DATE: 6-30-2017
MODIFIED DATE: 8-27-2018

CONTRACTOR WILL HAVE THE OPTION OF UTILIZING DIESEL OR ELECTRIC BOOSTER PUMPS AT EACH BOOSTER LOCATION.



ELECTRIC LAYOUT



DIESEL LAYOUT

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FIGURE 11
BOOSTER PUMP SITE PLANS
VENTURE GLOBAL CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT

DATE: 6-30-2017
MODIFIED DATE: 8-27-2018

Figure 12
Beneficial Use of Dredged Materials Alternatives Analysis
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana

CALCASIEU PASS

TransCameron PIPELINE

FILE: M:\Clients\V-X\VGL\CalcasieuPass_ArcGIS_JPA_CalcasieuPass_CMP_Fig12.mxd | REVISED: 08/31/2018 | SCALE: 1:52,000 when printed at 11x17

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APPENDIX F

LIST OF WATERBODIES AT THE TERMINAL FACILITY AND CROSSED BY PIPELINE

APPENDIX F
LIST OF WATERBODIES AT THE TERMINAL FACILITY AND CROSSED BY PIPELINE

TABLE F-1

CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT
WATERBODIES AT THE TERMINAL FACILITIES

Terminal Facility	Waterbody ID	Waterbody Type	Waterbody Regime	Impact Type	Area (Acres)
VENTURE GLOBAL PROPERTY					
Terminal Site	OW052	Ponded/Borrow Pit	Semi-permanently Flooded	Permanent	0.02
Terminal Site	OW053	Ponded/Borrow Pit	Semi-permanently Flooded	Permanent	0.04
Terminal Site	OW055	Ponded/Borrow Pit	Seasonally Flooded	Permanent	0.00
Terminal Site	WB001	Ditch	Perennial	Permanent	1.10
Terminal Site	WB002	Ditch	Intermittent	Permanent	0.00
Terminal Site	WB045	Ditch	Perennial	Permanent	0.08
Northeast Access Road	WBB01	Canal	Intermittent	Permanent	0.04
Berm TWS	OW053	Ponded/Borrow Pit	Semi-permanently Flooded	Temporary	0.00
Berm TWS	WB001	Ditch	Perennial	Temporary	0.04
Berm TWS	WB045	Ditch	Perennial	Temporary	0.04
Berm TWS	WB045	Ditch	Perennial	Temporary	0.05
Land Removed by Excavation	CMC001	Calcasieu River Ship Channel	Perennial	Permanent	1.06
Land Removed by Excavation	CMC003	Calcasieu River Ship Channel	Perennial	Permanent	0.00
Land Removed by Excavation	OW001	Ponded/Borrow Pit	Permanently Flooded	Permanent	0.11
Land Removed by Excavation	OW003	Ponded/Borrow Pit	Permanently Flooded	Permanent	0.03
Land Avoided (Not Disturbed)	CMC001	Calcasieu River Ship Channel	Perennial	No Impact	0.39
Land Avoided (Not Disturbed)	CMC002	Calcasieu River Ship Channel	Perennial	No Impact	0.34
Land Avoided (Not Disturbed)	CMC004	Calcasieu River Ship Channel	Perennial	No Impact	0.00
Land Avoided (Not Disturbed)	CMC005	Calcasieu River Ship Channel	Perennial	No Impact	0.49
Land Avoided (Not Disturbed)	OW001	Ponded/Borrow Pit	Permanently Flooded	No Impact	0.00
Land Avoided (Not Disturbed)	OW002	Ponded/Borrow Pit	Permanently Flooded	No Impact	0.09
Land Avoided (Not Disturbed)	OW054	Ponded/Borrow Pit	Semi-permanently Flooded	No Impact	0.05
Land Avoided (Not Disturbed)	OW055	Ponded/Borrow Pit	Seasonally Flooded	No Impact	0.01
Land Avoided (Not Disturbed)	OW056	Ponded/Borrow Pit	Perennial	No Impact	3.53
Land Avoided (Not Disturbed)	WB001	Ditch	Perennial	No Impact	0.40
Land Avoided (Not Disturbed)	WB002	Ditch	Intermittent	No Impact	0.02
Land Avoided (Not Disturbed)	WB045	Ditch	Perennial	No Impact	1.03

APPENDIX F
LIST OF WATERBODIES AT THE TERMINAL FACILITY AND CROSSED BY PIPELINE (cont'd)

TABLE F-1

CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT
WATERBODIES AT THE TERMINAL FACILITIES

Terminal Facility	Waterbody ID	Waterbody Type	Waterbody Regime	Impact Type	Area (Acres)
Land Avoided (Not Disturbed)	WB045	Ditch	Perennial	No Impact	0.01
Land Avoided (Not Disturbed)	WBB01	Canal	Intermittent	No Impact	0.18
Land Avoided (Not Disturbed)	WBB01	Canal	Intermittent	No Impact	0.34
Land Avoided (Not Disturbed)	CMC001	Calcasieu River Ship Channel	Perennial	No Impact	0.39
Land Avoided (Not Disturbed)	CMC002	Calcasieu River Ship Channel	Perennial	No Impact	0.34
Land Avoided (Not Disturbed)	CMC004	Calcasieu River Ship Channel	Perennial	No Impact	0.00
Land Avoided (Not Disturbed)	CMC005	Calcasieu River Ship Channel	Perennial	No Impact	0.49
Land Avoided (Not Disturbed)	OW001	Ponded/Borrow Pit	Permanently Flooded	No Impact	0.00
CONSTRUCTION SUPPORT FACILITIES					*none*

APPENDIX F
LIST OF WATERBODIES AT THE TERMINAL FACILITY AND CROSSED BY PIPELINE (cont'd)

TABLE F-2

CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT WATERBODIES AT THE PIPELINE

Approx. Milepost	Waterbody ID	Waterbody Type	Waterbody Regime	Facility Type	Workspace Type	Impact Type	Crossing Length at Centerline (feet)	Area (acres)
0.1	WB500dw	Canal	Perennial	Temporary Access Road	TAR 2	Temporary	0	0.00
0.2	WB032	Ditch	Perennial	Permanent Easement	HDD	No Impact – HDD	151	0.19
0.3	OW044	Borrow Area	Permanently Flooded	Permanent Easement	HDD	No Impact – HDD	155	0.17
0.8	WB031	Stream	Perennial	Permanent Easement	HDD	No Impact – HDD	90	0.11
1.9	OW043	Borrow Area	Permanently	Permanent Easement	Open-cut	Temporary	27	0.03
1.9	OW043	Borrow Area	Permanently Flooded	Temporary Workspace	Open-cut	Temporary	0	0.04
2.9	OW042	Borrow Area	Permanently Flooded	Temporary Workspace	Open-cut	Temporary	0	0.03
2.9	OW042	Borrow Area	Permanently Flooded	ATWS	Foreign Pipeline Crossing/ Push Site	Temporary	0	0.05
2.9	OW042	Borrow Area	Permanently Flooded	Permanent Easement	Open-cut	Temporary	24	0.03
7.0	WB030	Stream	Perennial	Permanent Easement	Open-cut	Temporary	33	0.04
7.0	WB030	Stream	Perennial	Temporary Workspace	Open-cut	Temporary	0	0.05
7.1	OW039	Borrow Area	Permanently Flooded	Temporary Workspace	Open-cut	Temporary	0	0.04
7.1	OW039	Borrow Area	Permanently Flooded	Permanent Easement	Open-cut	Temporary	34	0.04
7.8	WB033	Canal	Perennial	Permanent Easement	Open-cut	Temporary	23	0.03
7.8	WB033	Canal	Perennial	Temporary Workspace	Open-cut	Temporary	0	0.03
7.8	WB033	Canal	Perennial	ATWS	HDD Pipe String	Temporary	0	0.03
8.1	WB029	Ditch	Intermittent	Permanent Easement	HDD	No Impact – HDD	5	0.01
8.1	WB028	Ditch	Perennial	Permanent Easement	HDD	No Impact – HDD	8	0.01
8.1	WB058dw	Ditch	Perennial	Temporary Access Road	TAR 11	Temporary	0	0.00
8.1	WB058dw	Ditch	Perennial	Permanent Access Road	PAR 11	Permanent	0	0.00
8.1	WB058dw	Ditch	Perennial	Temporary Access Road	TAR 11	Temporary	0	0.00
8.6	WB027	Ditch	Intermittent	Permanent Easement	HDD	No Impact – HDD	7	0.01
8.6	WB026	Canal	Perennial	Permanent Easement	HDD	No Impact – HDD	73	0.08

TABLE F-2

CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT WATERBODIES AT THE PIPELINE

Approx. Milepost	Waterbody ID	Waterbody Type	Waterbody Regime	Facility Type	Workspace Type	Impact Type	Crossing Length at Centerline (feet)	Area (acres)
9.2	WB025	Ditch	Perennial	Permanent Easement	HDD	No Impact – HDD	29	0.03
9.3	OW037	Stock Pond	Permanently Flooded	Permanent Easement	HDD	No Impact – HDD	131	0.15
9.3	WB024	Ditch	Intermittent	Permanent Easement	HDD	No Impact – HDD	27	0.03
9.4	WB507dw	Ditch	Intermittent	Temporary Access Road	TAR 12	Temporary	0	0.00
9.9	OW036	Stock Pond	Permanently Flooded	Permanent Easement	HDD	No Impact – HDD	245	0.28
9.9	WB023	Ditch	Perennial	Permanent Easement	HDD	No Impact – HDD	5	0.01
9.9	WB022	Ditch	Perennial	Permanent Easement	HDD	No Impact – HDD	10	0.01
9.9	WB022	Ditch	Perennial	Permanent Easement	TAR 13	Temporary	0	0.00
10.2	WB021	Canal	Perennial	Temporary Workspace	Open-cut	Temporary	0	0.04
10.2	WB021	Canal	Perennial	Permanent Easement	Open-cut	Temporary	27	0.03
12.5	WB020	Ditch	Perennial	Temporary Workspace	Open-cut	Temporary	0	0.03
12.5	WB020	Ditch	Perennial	Permanent Easement	Open-cut	Temporary	21	0.02
12.9	OW034	Estuarine Pond	Permanently Flooded	Temporary Workspace	Open-cut	Temporary	0	0.11
12.9	OW034	Estuarine Pond	Permanently Flooded	Permanent Easement	Open-cut	Temporary	14	0.04
13.0	WB506dw	Ditch	Intermittent	Contractor Yard	Contractor Laydown Yard	Temporary	0	0.02
13.2	WB019	Ditch	Intermittent	Temporary Workspace	Open-cut	Temporary	0	0.02
13.2	WB019	Ditch	Intermittent	Permanent Easement	Open-cut	Temporary	18	0.02
13.4	WB018	Ditch	Intermittent	Temporary Workspace	Open-cut	Temporary	0	0.02
13.4	WB018	Ditch	Intermittent	Permanent Easement	Open-cut	Temporary	18	0.02
13.5	WB017	Canal	Perennial	Temporary Workspace	Open-cut	Temporary	0	0.03
13.5	WB017	Canal	Perennial	Permanent Easement	Open-cut	Temporary	19	0.02
14.7	WB016	Ditch	Perennial	Permanent Easement	Open-cut	Temporary	6	0.01
14.7	WB016	Ditch	Perennial	Temporary Workspace	Open-cut	Temporary	0	0.01
14.8	WB015	Ditch	Perennial	Permanent Easement	Open-cut	Temporary	8	0.01
14.8	WB015	Ditch	Perennial	Temporary Workspace	Open-cut	Temporary	0	0.01
14.9	OW033	Stock Pond	Permanently Flooded	Permanent Easement	Open-cut	Temporary	0	0.03

APPENDIX F
LIST OF WATERBODIES AT THE TERMINAL FACILITY AND CROSSED BY PIPELINE (cont'd)

TABLE F-2

CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT WATERBODIES AT THE PIPELINE

Approx. Milepost	Waterbody ID	Waterbody Type	Waterbody Regime	Facility Type	Workspace Type	Impact Type	Crossing Length at Centerline (feet)	Area (acres)
14.9	OW052dw	Pond – Natural	Permanently Flooded	Temporary Workspace	Open-cut	Temporary	0	0.26
14.9	OW052dw	Pond – Natural	Permanently Flooded	Permanent Easement	Open-cut	Temporary	112	0.08
15.2	WB014	Ditch	Perennial	Temporary Workspace	Open-cut	Temporary	0	0.02
15.2	WB014	Ditch	Perennial	Permanent Easement	Open-cut	Temporary	11	0.01
15.2	WB014	Ditch	Perennial	ATWS	Open Water Crossing	Temporary	0	0.01
15.2	OW029	Estuarine Openwater	Permanently Flooded	ATWS	Open Water Crossing	Temporary	0	0.46
15.2	OW029	Estuarine Openwater	Permanently Flooded	Temporary Workspace	Open-cut	Temporary	0	1.84
15.2	OW030	Estuarine Pond	Permanently Flooded	Permanent Easement	Open-cut	Temporary	62	0.07
15.2	OW030	Estuarine Pond	Permanently Flooded	Temporary Workspace	Open-cut	Temporary	0	0.01
15.3	OW029	Estuarine Openwater	Permanently Flooded	Permanent Easement	Open-cut	Temporary	899	1.05
15.5	OW029	Estuarine Openwater	Permanently Flooded	ATWS	Open Water Crossing	Temporary	0	0.03
15.5	OW029	Estuarine Openwater	Permanently Flooded	Temporary Workspace	Open-cut	Temporary	0	0.02
15.5	OW027	Estuarine Openwater	Permanently Flooded	ATWS	Open Water Crossing	Temporary	0	0.40
15.5	OW027	Estuarine Openwater	Permanently Flooded	Temporary Workspace	Open-cut	Temporary	0	1.41
15.6	OW027	Estuarine Openwater	Permanently Flooded	Permanent Easement	Open-cut	Temporary	428	0.76
15.7	OW026	Estuarine Openwater	Permanently Flooded	ATWS	Open Water Crossing	Temporary	0	0.02
15.7	OW026	Estuarine Openwater	Permanently Flooded	Temporary Workspace	Open-cut	Temporary	0	0.07
15.8	OW026	Estuarine Openwater	Permanently Flooded	Permanent Easement	Open-cut	Temporary	33	0.06
15.8	OW025	Estuarine Openwater	Permanently Flooded	ATWS	Open Water Crossing	Temporary	0	0.01
16.0	WB012	Estuarine Channel	Perennial	Permanent Easement	Open-cut	Temporary	34	0.04
16.0	WB012	Estuarine Channel	Perennial	Temporary Workspace	Open-cut	Temporary	0	0.05
16.3	OW024	Estuarine Openwater	Permanently Flooded	ATWS	Open Water Crossing	Temporary	0	0.04
16.3	OW024	Estuarine Openwater	Permanently Flooded	Temporary Workspace	Open-cut	Temporary	0	0.12
16.3	OW024	Estuarine Openwater	Permanently Flooded	Permanent Easement	Open-cut	Temporary	69	0.09
16.4	OW023	Estuarine Openwater	Permanently Flooded	ATWS	Open Water Crossing	Temporary	0	0.01
16.4	OW023	Estuarine Openwater	Permanently Flooded	Temporary Workspace	Open-cut	Temporary	0	0.00
16.4	WB011	Estuarine Channel	Perennial	ATWS	Open Water Crossing	Temporary	0	0.02
16.4	WB011	Estuarine Channel	Perennial	Temporary Workspace	Open-cut	Temporary	0	0.06
16.4	WB011	Estuarine Channel	Perennial	Permanent Easement	Open-cut	Temporary	38	0.04
16.4	OW022	Estuarine Openwater	Permanently Flooded	ATWS	Open Water Crossing	Temporary	0	0.31
16.4	OW022	Estuarine Openwater	Permanently Flooded	Temporary Workspace	Open-cut	Temporary	0	0.93
16.5	OW022	Estuarine Openwater	Permanently Flooded	Permanent Easement	Open-cut	Temporary	495	0.61

TABLE F-2

CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT WATERBODIES AT THE PIPELINE

Approx. Milepost	Waterbody ID	Waterbody Type	Waterbody Regime	Facility Type	Workspace Type	Impact Type	Crossing Length at Centerline (feet)	Area (acres)
16.6	OW021	Estuarine Openwater	Permanently Flooded	Temporary Workspace	Open-cut	Temporary	0	4.90
16.6	OW021	Estuarine Openwater	Permanently Flooded	ATWS	Open Water Crossing	Temporary	0	0.81
17.1	OW021	Estuarine Openwater	Permanently Flooded	ATWS	Foreign Pipeline Crossing	Temporary	0	1.25
17.2	OW021	Estuarine Openwater	Permanently Flooded	Permanent Easement	Open-cut	Temporary	766	3.95
17.2	OW021	Estuarine Openwater	Permanently Flooded	ATWS	Open Water Crossing	Temporary	0	0.24
17.3	OW021	Estuarine Openwater	Permanently Flooded	ATWS	Foreign Pipeline Crossing	Temporary	0	0.02
17.4	OW020	Borrow Area	Permanently Flooded	ATWS	Open Water Crossing	Temporary	0	0.01
17.4	OW020	Borrow Area	Permanently Flooded	Temporary Workspace	Open-cut	Temporary	0	0.05
17.4	OW020	Borrow Area	Permanently Flooded	Permanent Easement	Open-cut	Temporary	52	0.06
17.4	OW019	Estuarine Openwater	Permanently Flooded	ATWS	Open Water Crossing	Temporary	0	0.16
17.4	OW019	Estuarine Openwater	Permanently Flooded	Temporary Workspace	Open-cut	Temporary	0	0.59
17.4	OW019	Estuarine Openwater	Permanently Flooded	Permanent Easement	Open-cut	Temporary	374	0.43
17.5	OW018	Estuarine Openwater	Permanently Flooded	ATWS	Open Water Crossing	Temporary	0	0.19
17.5	OW018	Estuarine Openwater	Permanently Flooded	Temporary Workspace	Open-cut	Temporary	0	0.93
17.5	OW018	Estuarine Openwater	Permanently Flooded	Permanent Easement	Open-cut	Temporary	614	0.75
17.7	OW017	Estuarine Openwater	Permanently Flooded	ATWS	Foreign Pipeline Crossing	Temporary	0	0.09
17.8	OW017	Estuarine Openwater	Permanently Flooded	Permanent Easement	Open-cut	Temporary	51	0.06
17.8	OW017	Estuarine Openwater	Permanently Flooded	Temporary Workspace	Open-cut	Temporary	0	0.03
17.8	OW016	Estuarine Openwater	Permanently Flooded	ATWS	Foreign Pipeline Crossing	Temporary	0	0.07
17.8	OW016	Estuarine Openwater	Permanently Flooded	Temporary Workspace	Open-cut	Temporary	0	0.06
17.8	OW016	Estuarine Openwater	Permanently Flooded	ATWS	Foreign Pipeline Crossing	Temporary	0	0.22
17.8	OW016	Estuarine Openwater	Permanently Flooded	Permanent Easement	Open-cut	Temporary	39	0.06
17.8	OW016	Estuarine Openwater	Permanently Flooded	Permanent Easement	Open-cut	Temporary	132	0.56
17.8	OW016	Estuarine Openwater	Permanently Flooded	Temporary Workspace	Open-cut	Temporary	0	0.35
17.8	OW016	Estuarine Openwater	Permanently Flooded	ATWS	Foreign Pipeline Crossing	Temporary	0	0.27
17.9	OW015	Borrow Area	Permanently Flooded	Temporary Workspace	Open-cut	Temporary	0	0.05
17.9	OW015	Borrow Area	Permanently Flooded	Permanent Easement	Open-cut	Temporary	199	0.16
18.0	OW014	Borrow Area	Permanently Flooded	Temporary Workspace	Open-cut	Temporary	0	0.06

APPENDIX F
LIST OF WATERBODIES AT THE TERMINAL FACILITY AND CROSSED BY PIPELINE (cont'd)

TABLE F-2

CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT WATERBODIES AT THE PIPELINE

Approx. Milepost	Waterbody ID	Waterbody Type	Waterbody Regime	Facility Type	Workspace Type	Impact Type	Crossing Length at Centerline (feet)	Area (acres)
18.1	OW013	Borrow Area	Permanently Flooded	Permanent Easement	Open-cut	Temporary	95	0.15
18.1	OW013	Borrow Area	Permanently Flooded	Temporary Workspace	Open-cut	Temporary	0	0.34
18.2	OW010	Borrow Area	Permanently Flooded	Temporary Workspace	Open-cut	Temporary	0	0.29
18.4	OW008	Borrow Area	Permanently Flooded	Temporary Workspace	Open-cut	Temporary	0	0.09
18.6	OW006	Estuarine Pond	Permanently Flooded	Temporary Workspace	Open-cut	Temporary	0	0.21
18.6	OW006	Estuarine Pond	Permanently Flooded	Permanent Easement	Open-cut	Temporary	57	0.04
20.3	OW005	Estuarine Openwater	Permanently Flooded	Permanent Easement	Open-cut	Temporary	385	0.40
20.3	OW005	Estuarine Openwater	Permanently Flooded	Temporary Workspace	Open-cut	Temporary	0	0.53
20.5	WB010	Canal	Perennial	Permanent Easement	Open-cut	Temporary	76	0.09
20.5	WB010	Canal	Perennial	Temporary Workspace	Open-cut	Temporary	0	0.11
21.4	WB009	Canal	Perennial	Permanent Easement	HDD	No Impact – HDD	36	0.04
21.9	WB501d	Ditch	Perennial	Temporary Access Road	TAR 22	Temporary	0	0.01
22.1	WB008	Canal	Perennial	Permanent Easement	Open-cut	Temporary	30	0.03
22.1	WB008	Canal	Perennial	Temporary Workspace	Open-cut	Temporary	0	0.04

[a] Waterbody IDs with "dw" were previously desktop digitized then later field verified/surveyed; those ending with "d" are desktop digitized.

[b] Features at the Crossing Length at Centerline (feet) column with "0" means not crossed by centerline.

[c] Features at the Area (acres) column equal less than 0.01 acres, which rounds to 0.00 acres.

ATWS = additional temporary workspace; HDD = horizontal directional drill; PAR = permanent access road; TAR = temporary access road

APPENDIX G

LIST OF WETLANDS AT TERMINAL FACILITY AND CROSSED BY PIPELINE

APPENDIX G
LIST OF WETLANDS AT TERMINAL FACILITY AND CROSSED BY PIPELINE

TABLE G-1

Calcasieu Pass Terminal and TransCameron Pipeline Project
Wetlands at the Terminal Facilities

Terminal Facility	Wetland ID	Wetland Type [a]	Impact Type	Area (acres) [b]
PROPERTY BOUNDARY				
Terminal Site	WA004	PEM	Permanent	0.01
Terminal Site	WA006	PEM	Permanent	0.16
Terminal Site	WA006	PSS	Permanent	0.21
Terminal Site	WA008	PEM	Permanent	0.05
Terminal Site	WA009	PEM	Permanent	0.41
Terminal Site	WA010	PEM	Permanent	0.32
Terminal Site	WA011	PEM	Permanent	0.16
Terminal Site	WA012	PEM	Permanent	0.05
Terminal Site	WA013	PEM	Permanent	0.43
Terminal Site	WA015	PEM	Permanent	0.61
Terminal Site	WA016	PEM	Permanent	0.32
Terminal Site	WA016	PSS	Permanent	0.22
Terminal Site	WA016	PEM	Permanent	0.25
Terminal Site	WA016	PSS	Permanent	0.02
Terminal Site	WA017	PEM	Permanent	0.96
Terminal Site	WA017	PEM	Permanent	0.05
Terminal Site	WA018	PEM	Permanent	0.09
Terminal Site	WA018	PEM	Permanent	0.37
Terminal Site	WA019	PEM	Permanent	0.13
Terminal Site	WA020	PEM	Permanent	0.27
Terminal Site	WA021	PEM	Permanent	0.57
Terminal Site	WL001	E2EM	Permanent	0.18
Terminal Site	WL002e4_ext	E2EM	Permanent	0.12
Terminal Site	WL002e4_ext	E2EM	Permanent	0.00
Terminal Site	WL002e4_ext	E2EM	Permanent	1.88
Terminal Site	WL002e4_ext	E2EM	Permanent	0.33
Terminal Site	WL002e4_ext	E2EM	Permanent	0.07
Terminal Site	WL002m1_ext	Mudflat	Permanent	0.30
Terminal Site	WL002s3_ext	E2SS	Permanent	0.01
Terminal Site	WL002s3_ext	E2SS	Permanent	0.05
Terminal Site	WL002s4	E2SS	Permanent	0.19
Terminal Site	WL002s4	E2SS	Permanent	0.17

APPENDIX G
LIST OF WETLANDS AT TERMINAL FACILITY AND CROSSED BY PIPELINE (cont'd)

TABLE G-1

Calcasieu Pass Terminal and TransCameron Pipeline Project
Wetlands at the Terminal Facilities

Terminal Facility	Wetland ID	Wetland Type [a]	Impact Type	Area (acres) [b]
Terminal Site	WL002s6	E2SS	Permanent	0.22
Terminal Site	WL002s6	E2SS	Permanent	0.04
Terminal Site	WL004	E2EM	Permanent	0.63
Terminal Site	WL004	E2EM	Permanent	1.39
Terminal Site	WL005	E2EM-Mosaic	Permanent	0.55
Terminal Site	WL005	E2EM-Mosaic	Permanent	4.59
Terminal Site	WL005	E2EM-Mosaic	Permanent	0.81
Terminal Site	WL005	E2EM-Mosaic	Permanent	1.22
Terminal Site	WL006	E2EM	Permanent	0.20
Terminal Site	WL006	E2EM	Permanent	0.08
Terminal Site	WL007e	E2EM	Permanent	6.53
Terminal Site	WL007e	E2EM	Permanent	0.19
Terminal Site	WL007p	E2EM	Permanent	0.56
Terminal Site	WL007s	PSS	Permanent	1.79
Terminal Site	WL007s	PSS	Permanent	5.84
Terminal Site	WL008	E2SS	Permanent	0.03
Terminal Site	WL009e	PEM	Permanent	14.08
Terminal Site	WL009e	PEM	Permanent	0.09
Terminal Site	WL009e2	PEM	Permanent	12.42
Terminal Site	WL009e2	PEM	Permanent	0.68
Terminal Site	WL009e2	PEM	Permanent	0.00
Terminal Site	WL009s	PSS	Permanent	10.15
Terminal Site	WL009s	PSS	Permanent	1.71
Terminal Site	WL009s	PSS	Permanent	0.00
Terminal Site	WL010	E2EM	Permanent	0.26
Terminal Site	WL010	E2EM	Permanent	0.62
Terminal Site	WL047e	PEM	Permanent	17.61
Terminal Site	WL047e	PEM	Permanent	6.94
Terminal Site	WL047e2	E2EM	Permanent	0.63
Terminal Site	WL047e2	E2EM	Permanent	0.01
Terminal Site	WL047e3	PEM	Permanent	1.21
Terminal Site	WL047e3	PEM	Permanent	1.19
Terminal Site	WL047e3	PEM	Permanent	0.04

APPENDIX G
LIST OF WETLANDS AT TERMINAL FACILITY AND CROSSED BY PIPELINE (cont'd)

TABLE G-1

Calcasieu Pass Terminal and TransCameron Pipeline Project
Wetlands at the Terminal Facilities

Terminal Facility	Wetland ID	Wetland Type [a]	Impact Type	Area (acres) [b]
Terminal Site	WL047e3	PEM	Permanent	0.04
Terminal Site	WL047s1	PSS	Permanent	0.42
Terminal Site	WL047s1	PSS	Permanent	0.06
Terminal Site	WL047s2	PSS	Permanent	0.80
Terminal Site	WL047s2	PSS	Permanent	0.07
Terminal Site	WL047s4	PSS	Permanent	5.07
Terminal Site	WL047s4	PSS	Permanent	0.11
Northeast Access Road	WA014	PEM	Permanent	0.14
Northeast Access Road	WA015	PEM	Permanent	0.38
Northeast Access Road	WL001e	PEM	Permanent	0.28
Northeast Access Road	WL001e	PEM	Permanent	0.09
Northeast Access Road	WL002e	PEM	Permanent	0.08
Northeast Access Road	WL002e	PEM	Permanent	0.00
Northeast Access Road	WL003e	E2EM	Permanent	0.03
Northeast Access Road	WL003e2	PEM	Permanent	0.09
Northeast Access Road	WL003e3	PEM	Permanent	0.04
Northeast Access Road	WL003e4	PEM	Permanent	0.26
Northeast Access Road	WL005s	PSS	Permanent	0.03
Northeast Access Road	WL007e	PEM	Permanent	0.54
Southwest Service Road	WA015	PEM	Permanent	0.15
Southwest Service Road	WL001	E2EM	Permanent	0.26
Southwest Service Road	WL001	E2EM	Permanent	0.07
Southwest Service Road	WL005	E2EM-Mosaic	Permanent	0.09
Southwest Service Road	WL007e	PEM	Permanent	0.03
Southwest Service Road	WL007e8	PEM	Permanent	0.14
Martin Access Road	WL003e	E2EM	Temporary	0.73
Martin Access Road	WL003e2	PEM	Temporary	0.07
DeHyCo Access Road	WL002e4_ext	E2EM	Temporary	0.03
DeHyCo Access Road	WL002e4_ext	E2EM	Temporary	0.00
DeHyCo Access Road	WL002e4_ext	E2EM	Temporary	0.00
DeHyCo Access Road	WL002s6	E2SS	Temporary	0.02
DeHyCo Access Road	WL002s6	E2SS	Temporary	0.00
DeHyCo Access Road	WL002s6	E2SS	Temporary	0.00

APPENDIX G
LIST OF WETLANDS AT TERMINAL FACILITY AND CROSSED BY PIPELINE (cont'd)

TABLE G-1

Calcasieu Pass Terminal and TransCameron Pipeline Project
Wetlands at the Terminal Facilities

Terminal Facility	Wetland ID	Wetland Type [a]	Impact Type	Area (acres) [b]
DeHyCo Access Road	WL002s6	E2SS	Temporary	0.00
Floodwall TWS	WA015	PEM	Temporary	0.15
Floodwall TWS	WA016	PEM	Temporary	0.03
Floodwall TWS	WA018	PEM	Temporary	0.07
Floodwall TWS	WL001	E2EM	Temporary	0.12
Floodwall TWS	WL002e4_ext	E2EM	Temporary	0.11
Floodwall TWS	WL002e4_ext	E2EM	Temporary	0.64
Floodwall TWS	WL002m1_ext	Mudflat	Temporary	0.02
Floodwall TWS	WL002s6	E2SS	Temporary	0.06
Floodwall TWS	WL005	E2EM-Mosaic	Temporary	0.33
Floodwall TWS	WL005	E2EM-Mosaic	Temporary	0.28
Floodwall TWS	WL005	E2EM-Mosaic	Temporary	0.01
Floodwall TWS	WL006	E2EM	Temporary	0.03
Floodwall TWS	WL007e2	E2EM	Temporary	0.27
Floodwall TWS	WL007e8	PEM	Temporary	0.00
Floodwall TWS	WL007s	PSS	Temporary	2.01
Floodwall TWS	WL009e	PEM	Temporary	0.03
Floodwall TWS	WL009e	PEM	Temporary	0.02
Floodwall TWS	WL009e2	PEM	Temporary	0.12
Floodwall TWS	WL009s	PSS	Temporary	0.31
Floodwall TWS	WL010s	PSS	Temporary	0.02
Floodwall TWS	WL011e	PEM	Temporary	0.38
Floodwall TWS	WL047e	PEM	Temporary	0.36
Floodwall TWS	WL047e	PEM	Temporary	0.83
Floodwall TWS	WL047e	PEM	Temporary	0.07
Floodwall TWS	WL047e2	E2EM	Temporary	0.22
Floodwall TWS	WL047e2	E2EM	Temporary	0.00
Floodwall TWS	WL047e2	E2EM	Temporary	0.50
Floodwall TWS	WL047e3	PEM	Temporary	0.02
Eastern TWS	WL003e4	PEM	Temporary	10.33
Eastern TWS	WL005e	PEM	Temporary	1.44
Eastern TWS	WL005s	PSS	Temporary	2.02
Eastern TWS	WL007e	PEM	Temporary	1.20

APPENDIX G
LIST OF WETLANDS AT TERMINAL FACILITY AND CROSSED BY PIPELINE (cont'd)

TABLE G-1

Calcasieu Pass Terminal and TransCameron Pipeline Project
Wetlands at the Terminal Facilities

Terminal Facility	Wetland ID	Wetland Type [a]	Impact Type	Area (acres) [b]
Eastern TWS	WL007e	PEM	Temporary	0.00
Eastern TWS	WL007e2	PEM	Temporary	0.15
Eastern TWS	WL007e3	PEM	Temporary	0.01
Eastern TWS	WL007e4	PEM	Temporary	0.03
Eastern TWS	WL007e4	PEM	Temporary	0.00
Eastern TWS	WL007e6	PEM	Temporary	0.06
Eastern TWS	WL007e6	PEM	Temporary	0.00
Eastern TWS	WL007e8	PEM	Temporary	6.91
Eastern TWS	WL007f	PFO	Temporary	1.78
Eastern TWS	WL007f2	PFO	Temporary	0.75
Eastern TWS	WL007s	PSS	Temporary	0.17
Eastern TWS	WL007s2	PSS	Temporary	0.06
Eastern TWS	WL007s3	PSS	Temporary	0.03
Eastern TWS	WL007s4	PSS	Temporary	0.01
Eastern TWS	WL007s4	PSS	Temporary	0.00
Eastern TWS	WL007s5	PSS	Temporary	0.48
Eastern TWS	WL007s5	PSS	Temporary	0.00
Eastern TWS	WL007s6	PSS	Temporary	0.18
Eastern TWS	WL007s6	PSS	Temporary	0.00
Eastern TWS	WL008s	PSS	Temporary	0.06
Northeastern TWS	WL001e	PEM	Temporary	0.01
Northwestern TWS	WL002e4_ext	E2EM	Temporary	0.00
Northwestern TWS	WL002e5	E2EM	Temporary	0.00
Southwest TWS	WL001	E2EM	Temporary	0.33
Southwest TWS	WL001	E2EM	Temporary	0.34
Southwest TWS	WL002e3	E2EM	Temporary	0.01
Pipeline System within Property Boundary	WL003e4	PEM	Temporary	0.23
Pipeline System within Property Boundary	WL005e	PEM	Temporary	0.40
Pipeline System within Property Boundary	WL007e5	PEM	Temporary	0.02
Pipeline System within Property Boundary	WL007e8	PEM	Temporary	0.99
Pipeline System within Property Boundary	WL007f3	PFO	Temporary	0.04
Pipeline System within Property Boundary	WL007s4	PSS	Temporary	0.09
Pipeline System within Property Boundary	WL007s8	PSS	Temporary	0.33

APPENDIX G
LIST OF WETLANDS AT TERMINAL FACILITY AND CROSSED BY PIPELINE (cont'd)

TABLE G-1

Calcasieu Pass Terminal and TransCameron Pipeline Project
Wetlands at the Terminal Facilities

Terminal Facility	Wetland ID	Wetland Type [a]	Impact Type	Area (acres) [b]
Marine Facilities	WL001	E2EM	Permanent	0.10
Marine Facilities	WL002e1	E2EM	Permanent	1.64
Marine Facilities	WL002e2	E2EM	Permanent	0.81
Marine Facilities	WL002e3	E2EM	Permanent	1.15
Marine Facilities	WL002e4	E2EM	Permanent	0.58
Marine Facilities	WL002e4	E2EM	Permanent	0.43
Marine Facilities	WL002e4	E2EM	Permanent	0.02
Marine Facilities	WL002e4	E2EM	Permanent	0.00
Marine Facilities	WL002e4	E2EM	Permanent	0.00
Marine Facilities	WL002e4_ext	E2EM	Permanent	0.02
Marine Facilities	WL002e4_ext	E2EM	Permanent	1.49
Marine Facilities	WL002e4_ext	E2EM	Permanent	0.00
Marine Facilities	WL002e4_ext	E2EM	Permanent	0.00
Marine Facilities	WL002m1	Mudflat	Permanent	0.32
Marine Facilities	WL002m1	Mudflat	Permanent	0.00
Marine Facilities	WL002m1_ext	Mudflat	Permanent	0.14
Marine Facilities	WL002m1_ext	Mudflat	Permanent	0.00
Marine Facilities	WL002m2	Mudflat	Permanent	0.18
Marine Facilities	WL002p1	E2EM	Permanent	0.26
Marine Facilities	WL002p2	E2EM	Permanent	0.19
Marine Facilities	WL002s1	E2SS	Permanent	2.16
Marine Facilities	WL002s1	E2SS	Permanent	2.02
Marine Facilities	WL002s1	E2SS	Permanent	1.60
Marine Facilities	WL002s1	E2SS	Permanent	0.13
Marine Facilities	WL002s2	E2SS	Permanent	0.20
Marine Facilities	WL002s3	E2SS	Permanent	0.10
Marine Facilities	WL002s3_ext	E2SS	Permanent	0.06
Marine Facilities	WL002s3_ext	E2SS	Permanent	0.49
Marine Facilities	WL004	E2EM	Permanent	2.97
Land Avoided (Not Disturbed)	WA014	PEM	No Impact	0.00
Land Avoided (Not Disturbed)	WA014	PEM	No Impact	0.25
Land Avoided (Not Disturbed)	WA015	PEM	No Impact	1.24
Land Avoided (Not Disturbed)	WA015	PEM	No Impact	1.10

APPENDIX G
LIST OF WETLANDS AT TERMINAL FACILITY AND CROSSED BY PIPELINE (cont'd)

TABLE G-1

Calcasieu Pass Terminal and TransCameron Pipeline Project
Wetlands at the Terminal Facilities

Terminal Facility	Wetland ID	Wetland Type [a]	Impact Type	Area (acres) [b]
Land Avoided (Not Disturbed)	WA018	PEM	No Impact	1.21
Land Avoided (Not Disturbed)	WL001	E2EM	No Impact	47.65
Land Avoided (Not Disturbed)	WL001	E2EM	No Impact	11.06
Land Avoided (Not Disturbed)	WL001e	PEM	No Impact	0.52
Land Avoided (Not Disturbed)	WL002e	PEM	No Impact	0.02
Land Avoided (Not Disturbed)	WL002e4_ext	E2EM	No Impact	11.56
Land Avoided (Not Disturbed)	WL002e4_ext	E2EM	No Impact	0.05
Land Avoided (Not Disturbed)	WL002e5	E2EM	No Impact	3.19
Land Avoided (Not Disturbed)	WL002m1_ext	Mudflat	No Impact	0.00
Land Avoided (Not Disturbed)	WL002m3	Mudflat	No Impact	0.07
Land Avoided (Not Disturbed)	WL002s5	E2SS	No Impact	0.16
Land Avoided (Not Disturbed)	WL002s6	E2SS	No Impact	0.20
Land Avoided (Not Disturbed)	WL002s6	E2SS	No Impact	0.04
Land Avoided (Not Disturbed)	WL003	E2EM	No Impact	0.19
Land Avoided (Not Disturbed)	WL003e	E2EM	No Impact	3.67
Land Avoided (Not Disturbed)	WL003e	E2EM	No Impact	28.17
Land Avoided (Not Disturbed)	WL003e	E2EM	No Impact	0.00
Land Avoided (Not Disturbed)	WL003e	E2EM	No Impact	0.00
Land Avoided (Not Disturbed)	WL003e2	PEM	No Impact	0.08
Land Avoided (Not Disturbed)	WL003e2	PEM	No Impact	0.53
Land Avoided (Not Disturbed)	WL003e2	PEM	No Impact	0.11
Land Avoided (Not Disturbed)	WL003e3	PEM	No Impact	0.02
Land Avoided (Not Disturbed)	WL003e3	PEM	No Impact	0.31
Land Avoided (Not Disturbed)	WL003e3	PEM	No Impact	0.00
Land Avoided (Not Disturbed)	WL003e4	PEM	No Impact	1.84
Land Avoided (Not Disturbed)	WL003e4	PEM	No Impact	0.42
Land Avoided (Not Disturbed)	WL003e4	PEM	No Impact	0.00
Land Avoided (Not Disturbed)	WL004s	PSS	No Impact	1.11
Land Avoided (Not Disturbed)	WL005	E2EM-Mosaic	No Impact	19.97
Land Avoided (Not Disturbed)	WL005	E2EM-Mosaic	No Impact	6.14
Land Avoided (Not Disturbed)	WL005e	PEM	No Impact	1.68
Land Avoided (Not Disturbed)	WL005s	PSS	No Impact	0.30
Land Avoided (Not Disturbed)	WL006	E2EM	No Impact	0.18

APPENDIX G
LIST OF WETLANDS AT TERMINAL FACILITY AND CROSSED BY PIPELINE (cont'd)

TABLE G-1

Calcasieu Pass Terminal and TransCameron Pipeline Project
Wetlands at the Terminal Facilities

Terminal Facility	Wetland ID	Wetland Type [a]	Impact Type	Area (acres) [b]
Land Avoided (Not Disturbed)	WL006e	E2EM	No Impact	0.17
Land Avoided (Not Disturbed)	WL007e	PEM	No Impact	0.01
Land Avoided (Not Disturbed)	WL007e	PEM	No Impact	0.00
Land Avoided (Not Disturbed)	WL007e	PEM	No Impact	0.14
Land Avoided (Not Disturbed)	WL007e2	E2EM	No Impact	3.44
Land Avoided (Not Disturbed)	WL007e2	PEM	No Impact	0.02
Land Avoided (Not Disturbed)	WL007e3	PEM	No Impact	0.03
Land Avoided (Not Disturbed)	WL007e4	PEM	No Impact	0.05
Land Avoided (Not Disturbed)	WL007e5	PEM	No Impact	0.64
Land Avoided (Not Disturbed)	WL007e5	PEM	No Impact	0.00
Land Avoided (Not Disturbed)	WL007e7	PEM	No Impact	0.06
Land Avoided (Not Disturbed)	WL007e8	PEM	No Impact	9.75
Land Avoided (Not Disturbed)	WL007e8	PEM	No Impact	0.00
Land Avoided (Not Disturbed)	WL007e8	PEM	No Impact	0.00
Land Avoided (Not Disturbed)	WL007e8	PEM	No Impact	0.00
Land Avoided (Not Disturbed)	WL007f3	PFO	No Impact	0.48
Land Avoided (Not Disturbed)	WL007f3	PFO	No Impact	0.00
Land Avoided (Not Disturbed)	WL007f4	PFO	No Impact	0.57
Land Avoided (Not Disturbed)	WL007s	PSS	No Impact	1.76
Land Avoided (Not Disturbed)	WL007s2	PSS	No Impact	0.03
Land Avoided (Not Disturbed)	WL007s3	PSS	No Impact	0.08
Land Avoided (Not Disturbed)	WL007s4	PSS	No Impact	0.18
Land Avoided (Not Disturbed)	WL007s4	PSS	No Impact	0.00
Land Avoided (Not Disturbed)	WL007s6	PSS	No Impact	0.15
Land Avoided (Not Disturbed)	WL007s7	PSS	No Impact	0.55
Land Avoided (Not Disturbed)	WL007s8	PSS	No Impact	0.86
Land Avoided (Not Disturbed)	WL007s8	PSS	No Impact	0.00
Land Avoided (Not Disturbed)	WL007s9	PSS	No Impact	0.56
Land Avoided (Not Disturbed)	WL007s9	PSS	No Impact	0.00
Land Avoided (Not Disturbed)	WL009e	PEM	No Impact	0.09
Land Avoided (Not Disturbed)	WL010s	PSS	No Impact	0.48
Land Avoided (Not Disturbed)	WL011e	PEM	No Impact	47.56
Land Avoided (Not Disturbed)	WL012e	E2EM	No Impact	8.03

APPENDIX G
LIST OF WETLANDS AT TERMINAL FACILITY AND CROSSED BY PIPELINE (cont'd)

TABLE G-1

Calcasieu Pass Terminal and TransCameron Pipeline Project
Wetlands at the Terminal Facilities

Terminal Facility	Wetland ID	Wetland Type [a]	Impact Type	Area (acres) [b]
Land Avoided (Not Disturbed)	WL047e	PEM	No Impact	18.05
Land Avoided (Not Disturbed)	WL047e	PEM	No Impact	0.22
Land Avoided (Not Disturbed)	WL047e2	E2EM	No Impact	41.95
Land Avoided (Not Disturbed)	WL047e2	E2EM	No Impact	0.18
Land Avoided (Not Disturbed)	WL047s3	E2SS	No Impact	12.20
CONSTRUCTION SUPPORT FACILITIES				
Liberty Support Facility	WETB17	PEM	Temporary	0.55
Liberty Support Facility	WL001e	PEM	Temporary	0.36

[a] E2EM – estuarine emergent; E2SS – estuarine scrub-shrub; PEM – palustrine emergent; PFO – palustrine forested; PSS – palustrine scrub-shrub.

[b] Multiple features listed in the Area (acres) column equal less than 0.01 acres, which rounds to 0.00 acres.

Note: TWS – temporary workspace

TABLE G-2

Calcasieu Pass Terminal and TransCameron Pipeline Project
Wetlands Crossed by the East Lateral Pipeline

Approx. Milepost In	Wetland ID	Wetland Type [a]	Facility Type	Workspace Type	Impact Type	Crossing Length at Centerline (feet) [b]	Area (acres) [c]
0.0	WL131de	E2EM	Permanent Access Road	PAR 1	Permanent	0	0.01
0.0	WL131ds	E2SS	Aboveground Facilities	Meter Station	Permanent	40	1.24
0.0	WL131ds	E2SS	Temporary Workspace	Open Cut	Temporary	0	0.30
0.0	WL131ds	E2SS	Permanent Easement	Open Cut	Temporary	282	0.32
0.0	WL131ds	E2SS	ATWS	Meter Station	Temporary	0	0.30
0.1	WL131de	E2EM	ATWS	Meter Station	Temporary	0	0.13
0.1	WL131de	E2EM	Permanent Easement	Open Cut	Temporary	101.9	0.12
0.1	WL131de	E2EM	Temporary Workspace	Open Cut	Temporary	0	0.13
0.1	WL042e	E2EM	ATWS	Meter Station	Temporary	0	0.09
0.1	WL042e	E2EM	Permanent Easement	Open Cut	Temporary	74.5	0.09
0.1	WL042e	E2EM	Temporary Workspace	Open Cut	Temporary	0	0.30
0.1	WL042e	E2EM	ATWS	HDD Exit	Temporary	0	0.15
0.1	WL063de	E2EM	ATWS	HDD Exit	Temporary	0	0.78
0.1	WL063de	E2EM	ATWS	HDD Pipe String	Temporary	0	0.08
0.1	WL063ds	E2SS	ATWS	HDD Pipe String	Temporary	0	1.25
0.1	WL063de	E2EM	ATWS	HDD Pipe String	Temporary	0	3.79
0.1	WL042e	E2EM	Permanent Easement	HDD	No Impact - HDD	338.5	0.38
0.1	WL500de	E2EM	Temporary Access Road	TAR 2	Temporary	0	0.30
0.3	WL041s	E2SS	Permanent Easement	HDD	No Impact - HDD	43.6	0.05
0.3	WL041e	E2EM	Permanent Easement	HDD	No Impact - HDD	914.5	1.03
0.5	WL041e	E2EM	ATWS	HDD Entry	Temporary	0	1.21
0.5	WL041e	E2EM	Temporary Workspace	HDD Section with Potental Impacts	Temporary	0	0.70
0.5	WL041e	E2EM	Permanent Easement	HDD Section with Potental Impacts	Temporary	492.5	0.56
0.5	WL106ds	E2SS	Temporary Access Road	TAR 3	Temporary	0	0.00
0.5	WL106de	E2EM	Temporary Access Road	TAR 3	Temporary	0	0.12
0.5	WL106ds	E2SS	Temporary Access Road	TAR 3	Temporary	0	0.00
0.6	WL041e	E2EM	Permanent Easement	HDD	No Impact - HDD	1,061	1.21
0.8	WL040s	E2SS	Permanent Easement	HDD	No Impact - HDD	30.7	0.04
0.8	WL040e	E2EM	Permanent Easement	HDD	No Impact - HDD	820.3	0.94
1.0	WL040e	E2EM	Permanent Easement	HDD Section with Potental Impacts	Temporary	157.1	0.18
1.0	WL040e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	6.52
1.0	WL040e	E2EM	ATWS	Push Site	Temporary	0	1.38
1.0	WL040e	E2EM	ATWS	HDD Exit	Temporary	0	0.19

TABLE G-2

Calcasieu Pass Terminal and TransCameron Pipeline Project
Wetlands Crossed by the East Lateral Pipeline

Approx. Milepost In	Wetland ID	Wetland Type [a]	Facility Type	Workspace Type	Impact Type	Crossing Length at Centerline (feet) [b]	Area (acres) [c]
1.0	WL104de	E2EM	ATWS	HDD Exit	Temporary	0	1.86
1.0	WET012	E2EM	Temporary Access Road	TAR 4	Temporary	0	0.04
1.0	WET012	E2EM	Temporary Access Road	TAR 4	Temporary	0	0.16
1.0	WL040e	E2EM	Permanent Easement	Push-Pull	Temporary	4,659.7	5.35
1.1	WL104de	E2EM	ATWS	HDD Pipe String	Temporary	0	4.11
1.3	WL104ds	E2SS	ATWS	HDD Pipe String	Temporary	0	0.45
1.4	WL104de	E2EM	ATWS	HDD Pipe String	Temporary	0	1.54
1.7	WL040e	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	1.61
1.7	WL040e	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	0.37
1.9	WL040e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	5.90
2.3	WL040e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.62
2.3	WL040e	E2EM	Permanent Easement	Push-Pull	Temporary	48.5	0.07
2.4	WL040e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.69
2.5	WL040e	E2EM	Permanent Easement	Push-Pull	Temporary	3.9	0.07
2.5	WL040e	E2EM	Permanent Easement	Push-Pull	Temporary	2,113.1	5.92
2.8	WL040e	E2EM	ATWS	Foreign Pipeline Crossing/ Push Site	Temporary	0	0.01
2.8	WL040e	E2EM	ATWS	Foreign Pipeline Crossing/ Push Site	Temporary	0	0.95
2.8	WL040e	E2EM	ATWS	Foreign Pipeline Crossing/ Push Site	Temporary	0	0.07
2.8	WET12	E2EM	Temporary Access Road	TAR 5	Temporary	0	0.16
2.8	WL040e	E2EM	Temporary Access Road	TAR 5	Temporary	0	0.00
2.8	WET12	E2EM	Temporary Access Road	TAR 5	Temporary	0	0.11
2.8	WL040e	E2EM	ATWS	Foreign Pipeline Crossing/ Push Site	Temporary	0	0.02
2.8	WL040e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.02
2.8	WL040e	E2EM	ATWS	Foreign Pipeline Crossing/ Push Site	Temporary	0	0.05
2.9	WL040e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	3.88
2.9	WL040e	E2EM	ATWS	Foreign Pipeline Crossing/ Push Site	Temporary	0	0.38
3.2	WL040e	E2EM	Permanent Easement	Push-Pull	Temporary	31	0.02
3.2	WL040e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.02
3.2	WL040e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.00
3.2	WL040e	E2EM	Permanent Easement	Push-Pull	Temporary	15.4	0.02
3.2	WL040e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.03
3.3	WL040e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.62
3.4	WL040e	E2EM	Permanent Easement	Push-Pull	Temporary	16.9	0.03

TABLE G-2

Calcasieu Pass Terminal and TransCameron Pipeline Project
Wetlands Crossed by the East Lateral Pipeline

Approx. Milepost In	Wetland ID	Wetland Type [a]	Facility Type	Workspace Type	Impact Type	Crossing Length at Centerline (feet) [b]	Area (acres) [c]
3.4	WL040e	E2EM	Permanent Easement	Push-Pull	Temporary	336.5	3.71
3.5	WL040e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.08
3.5	WL040e	E2EM	Permanent Easement	Push-Pull	Temporary	63.5	0.07
3.5	WL502de	E2EM	Temporary Access Road	TAR 6	Temporary	0	0.00
3.5	WL040e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	2.45
3.5	WL040e	E2EM	Permanent Easement	Push-Pull	Temporary	1,763.7	2.02
3.5	WL502de	E2EM	Temporary Access Road	TAR 6	Temporary	0	0.02
3.5	WL503de	E2EM	Temporary Access Road	TAR 6	Temporary	0	0.00
3.6	WL040e	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	0.50
3.6	WL040e	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	0.18
3.8	WL040e	E2EM	Permanent Easement	Push-Pull	Temporary	618.8	0.72
3.8	WL040e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.85
4.0	WL040e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	1.79
4.0	WL040e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.01
4.0	WL040e	E2EM	Permanent Easement	Push-Pull	Temporary	28.1	0.02
4.0	WL040e	E2EM	Permanent Easement	Push-Pull	Temporary	1,013.3	1.45
4.1	WL040e	E2EM	Permanent Easement	Push-Pull	Temporary	0	0.02
4.2	WL040e	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	0.12
4.2	WL040e	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	0.07
4.2	WL040e	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	0.05
4.2	WL509ds	E2SS	ATWS	Foreign Pipeline Crossing	Temporary	0	0.07
4.2	WL040e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.01
4.2	WL510de	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	0.06
4.2	WL039e	E2EM	Permanent Easement	Push-Pull	Temporary	1,296.1	1.49
4.2	WL039e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	1.78
4.2	WL039e	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	2.64
4.3	WL510de	E2EM	Temporary Access Road	TAR 7	Temporary	0	0.00
4.4	WL130de	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	0.38
4.5	WL039e	E2EM	Permanent Easement	Push-Pull	Temporary	2,032.8	2.34
4.5	WL039e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	2.71
4.6	WL039e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.06
4.8	WL039e	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	0.27
4.9	WL039e	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	0.07

TABLE G-2

Calcasieu Pass Terminal and TransCameron Pipeline Project
Wetlands Crossed by the East Lateral Pipeline

Approx. Milepost In	Wetland ID	Wetland Type [a]	Facility Type	Workspace Type	Impact Type	Crossing Length at Centerline (feet) [b]	Area (acres) [c]
4.9	WL039e	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	1.90
4.9	WL039e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	4.35
4.9	WL039e	E2EM	Permanent Easement	Push-Pull	Temporary	3,135.5	3.59
5.0	WL129de	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	0.53
5.5	WL039e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.07
5.5	WL039e	E2EM	Permanent Easement	Push-Pull	Temporary	57	0.07
5.5	WL039e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	3.08
5.7	WL038s	E2SS	Permanent Easement	Push-Pull	Temporary	205	0.24
5.7	WL038s	E2SS	Temporary Workspace	Push-Pull	Temporary	0	0.01
5.8	WL039s	E2SS	Temporary Workspace	Push-Pull	Temporary	0	0.82
5.9	WL039e	E2EM	Permanent Easement	Push-Pull	Temporary	205.2	1.74
5.9	WL039s	E2SS	Permanent Easement	Push-Pull	Temporary	721	1.48
6.0	WL057ds	E2SS	Temporary Workspace	Push-Pull	Temporary	0	0.43
6.1	WL057ds	E2SS	Permanent Easement	Push-Pull	Temporary	152.6	0.14
6.1	WL057de	E2EM	Permanent Easement	Push-Pull	Temporary	1,069.8	1.24
6.1	WL057de	E2EM	Temporary Workspace	Push-Pull	Temporary	0	1.38
6.4	WL038e	E2EM	Permanent Easement	Push-Pull	Temporary	168.6	0.22
6.4	WL038e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.11
6.4	WL056ds	E2SS	Temporary Workspace	Push-Pull	Temporary	0	1.49
6.4	WL056ds	E2SS	Permanent Easement	Push-Pull	Temporary	1,046.9	1.19
6.6	WL055de	E2EM	Temporary Workspace	Push-Pull	Temporary	0	1.36
6.6	WL055de	E2EM	Permanent Easement	Push-Pull	Temporary	984.9	1.09
6.7	WL055de	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	1.58
6.8	WL038e	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	0.32
6.8	WL038e	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	0.00
6.8	WL038e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.20
6.8	WL038e	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	0.05
6.8	WL038e	E2EM	Permanent Easement	Push-Pull	Temporary	130.5	0.15
6.8	WL038e	E2EM	Temporary Access Road	TAR 9	Temporary	0	0.03
6.8	WL038e	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	0.04
6.8	WET10	E2EM	Temporary Access Road	TAR 9	Temporary	0	0.23
6.8	WL038e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	1.59
6.9	WET10	E2EM	Temporary Access Road	TAR 9	Temporary	0	0.00

TABLE G-2

Calcasieu Pass Terminal and TransCameron Pipeline Project
Wetlands Crossed by the East Lateral Pipeline

Approx. Milepost In	Wetland ID	Wetland Type [a]	Facility Type	Workspace Type	Impact Type	Crossing Length at Centerline (feet) [b]	Area (acres) [c]
6.9	WET10	E2EM	Temporary Access Road	TAR 9	Temporary	0	0.03
6.9	WL038e	E2EM	Permanent Easement	Push-Pull	Temporary	101.7	0.12
6.9	WL038e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.05
6.9	WL038e	E2EM	Permanent Easement	Push-Pull	Temporary	537.5	1.29
7.0	WL038e	E2EM	ATWS	Waterbody Crossing	Temporary	0	0.06
7.0	WL038e	E2EM	Permanent Easement	Push-Pull	Temporary	341.4	0.39
7.0	WL038e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.46
7.1	WL038e	E2EM	ATWS	Waterbody Crossing	Temporary	0	0.06
7.1	WL038s	E2SS	Permanent Easement	Push-Pull	Temporary	48.8	0.05
7.1	WL038s	E2SS	Temporary Workspace	Push-Pull	Temporary	0	0.07
7.1	WL038e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	3.58
7.3	WL038e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.04
7.3	WL038e	E2EM	Permanent Easement	Push-Pull	Temporary	12.7	0.01
7.3	WL038e	E2EM	Permanent Easement	Push-Pull	Temporary	1,751.6	3.00
7.4	WL038e	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	0.35
7.4	WL038e	E2EM	ATWS	HDD Pipe String	Temporary	0	2.31
7.6	WL038e	E2EM	Permanent Easement	Push-Pull	Temporary	869.4	1.00
7.6	WL038e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	1.21
7.6	WL038e	E2EM	ATWS	HDD Pipe String	Temporary	0	1.41
7.6	WL038e	E2EM	ATWS	HDD Pipe String	Temporary	0	0.35
7.6	WL038e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.00
7.8	WL038e	E2EM	Permanent Easement	Push-Pull	Temporary	451.9	0.52
7.8	WL038e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.62
7.8	WL038e	E2EM	ATWS	HDD Pipe String	Temporary	0	0.18
7.8	WL038e	E2EM	ATWS	HDD Exit	Temporary	0	0.61
7.8	WL038e	E2EM	ATWS	HDD Exit	Temporary	0	0.40
7.9	WL530de	E2EM	Temporary Access Road	TAR 10	Temporary	0	0.03
7.9	WL038e	E2EM	Permanent Easement	Push-Pull	Temporary	115.4	0.13
7.9	WL038e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.17
7.9	WL038e	E2EM	Permanent Easement	HDD Section with Potental Impacts	Temporary	9.4	0.01
7.9	WL038s	E2SS	ATWS	HDD Exit	Temporary	0	0.34
7.9	WL038s	E2SS	Temporary Workspace	Push-Pull	Temporary	0	0.24
7.9	WL038s	E2SS	Permanent Easement	HDD Section with Potental Impacts	Temporary	172.5	0.20

TABLE G-2

Calcasieu Pass Terminal and TransCameron Pipeline Project
Wetlands Crossed by the East Lateral Pipeline

Approx. Milepost In	Wetland ID	Wetland Type [a]	Facility Type	Workspace Type	Impact Type	Crossing Length at Centerline (feet) [b]	Area (acres) [c]
8.0	WL038s	E2SS	Permanent Easement	HDD	No Impact - HDD	148.9	0.17
8.0	WL038f	E2FO	Permanent Easement	HDD	No Impact - HDD	336.9	0.39
8.0	WL529de	PEM	Temporary Access Road	TAR 10	Temporary	0	0.01
8.1	WL037e	PEM	Permanent Easement	HDD	No Impact - HDD	106	0.12
8.2	WL037e	PEM	Permanent Easement	HDD	No Impact - HDD	156.4	0.19
8.2	WL037e	PEM	Permanent Easement	HDD	No Impact - HDD	441.9	0.50
8.2	WL102de	PEM	Temporary Access Road	TAR 11	Temporary	0	0.02
8.2	WL102de	PEM	Permanent Access Road	PAR 11	Permanent	0	0.07
8.2	WL102de	PEM	Temporary Access Road	TAR 11	Temporary	0	0.01
8.3	WL037e	PEM	Permanent Easement	HDD Section with Potental Impacts	Temporary	51.2	0.06
8.3	WL037e	PEM	ATWS	HDD Entry	Temporary	0	0.58
8.3	WL037e	PEM	Temporary Workspace	Open Cut	Temporary	0	0.97
8.3	WL037e	PEM	Permanent Easement	Open Cut	Temporary	18.7	0.02
8.3	WL037e	PEM	Aboveground Facilities	Main Line Block Valve Site	Permanent	50	0.06
8.3	WL037e	PEM	Permanent Easement	Open Cut	Temporary	498.1	0.55
8.3	WL101de	PEM	ATWS	HDD Pipe String	Temporary	0	1.26
8.3	WL101ds	PSS	ATWS	HDD Pipe String	Temporary	0	0.06
8.3	WL101de	PEM	ATWS	HDD Pipe String	Temporary	0	2.71
8.3	WL101ds	PSS	ATWS	HDD Pipe String	Temporary	0	0.09
8.3	WL101de	PEM	ATWS	HDD Pipe String	Temporary	0	3.97
8.3	WL053de	PEM	ATWS	HDD Pipe String	Temporary	0	0.15
8.3	WL037e	PEM	ATWS	HDD Pipe String	Temporary	0	0.36
8.4	WL037s	PSS	Temporary Workspace	Open Cut	Temporary	0	0.10
8.4	WL037s	PSS	Permanent Easement	Open Cut	Temporary	70	0.08
8.4	WL037e	PEM	Temporary Workspace	Open Cut	Temporary	0	1.06
8.4	WL037e	PEM	Permanent Easement	Open Cut	Temporary	769.7	0.88
8.5	WL037e	PEM	ATWS	HDD Exit	Temporary	0	0.57
8.5	WL037e	PEM	Permanent Easement	HDD	No Impact - HDD	420.9	0.48
8.6	WL037e	PEM	Permanent Easement	HDD	No Impact - HDD	22.1	0.03
8.7	WL036e	PEM	Permanent Easement	HDD	No Impact - HDD	1,144.9	1.31
8.9	WL036e	PEM	Permanent Easement	HDD	No Impact - HDD	41.4	0.05
8.9	WL036s	PSS	Permanent Easement	HDD	No Impact - HDD	49.6	0.06
8.9	WL036e	PEM	Permanent Easement	HDD	No Impact - HDD	1,710.5	1.96

TABLE G-2

Calcasieu Pass Terminal and TransCameron Pipeline Project
Wetlands Crossed by the East Lateral Pipeline

Approx. Milepost In	Wetland ID	Wetland Type [a]	Facility Type	Workspace Type	Impact Type	Crossing Length at Centerline (feet) [b]	Area (acres) [c]
9.3	WL036e	PEM	Permanent Easement	HDD	No Impact - HDD	235	0.45
9.3	WL036e	PEM	Permanent Easement	HDD	No Impact - HDD	358.3	0.41
9.4	WL036e	PEM	Permanent Easement	HDD	No Impact - HDD	25.4	0.03
9.4	WL128de	PEM	Temporary Access Road	TAR 12	Temporary	0	0.27
9.4	WL036e	PEM	Permanent Easement	HDD	No Impact - HDD	26.3	0.03
9.4	WL036e	PEM	ATWS	HDD Entry	Temporary	0	0.58
9.4	WL036e	PEM	ATWS	HDD Entry	Temporary	0	0.06
9.4	WL036e	PEM	Temporary Workspace	HDD Section with Potental Impacts	Temporary	0	0.39
9.4	WL036e	PEM	Permanent Easement	HDD Section with Potental Impacts	Temporary	280	0.32
9.5	WL036e	PEM	Temporary Access Road	TAR 12	Temporary	0	0.01
9.5	WL036e	PEM	Permanent Easement	HDD	No Impact - HDD	225.7	0.26
9.5	WL036e	PEM	Permanent Easement	HDD	No Impact - HDD	11.5	0.01
9.5	WL036s	PSS	Permanent Easement	HDD	No Impact - HDD	27.7	0.03
9.5	WL036e	PEM	Permanent Easement	HDD	No Impact - HDD	1,845.9	2.12
9.9	WL036e	PEM	Permanent Easement	HDD	No Impact - HDD	73.2	0.08
9.9	WL035e	PEM	Permanent Easement	HDD	No Impact - HDD	7.9	0.01
9.9	WL035e	PEM	Temporary Access Road	TAR 13	Temporary	0	0.00
9.9	WL035e	PEM	Permanent Easement	HDD	No Impact - HDD	325.2	0.29
10.0	WL035e	PEM	Temporary Access Road	TAR 13	Temporary	31.8	0.23
10.0	WL035e	PEM	Temporary Access Road	TAR 13	Temporary	0	0.08
10.0	WL035e	PEM	Permanent Easement	HDD	No Impact - HDD	198.2	0.12
10.0	WL035e	PEM	Permanent Easement	HDD Section with Potental Impacts	Temporary	86.9	0.10
10.0	WL035e	PEM	ATWS	HDD Exit	Temporary	0	1.19
10.0	WL035e	PEM	Temporary Workspace	Push-Pull	Temporary	0	0.88
10.1	WL035e	PEM	Permanent Easement	Push-Pull	Temporary	143.6	0.70
10.1	WL035e	PEM	ATWS	HDD Exit	Temporary	0	0.19
10.1	WL035e	PEM	Temporary Workspace	Push-Pull	Temporary	0	0.10
10.1	WL035e	PEM	Permanent Easement	Push-Pull	Temporary	33.2	0.02
10.2	WL035e	PEM	Temporary Workspace	Push-Pull	Temporary	0	1.12
10.2	WL035e	PEM	Permanent Easement	Push-Pull	Temporary	806.7	0.92
10.3	WL035e	PEM	Temporary Workspace	Push-Pull	Temporary	0	0.06
10.3	WL035e	PEM	Permanent Easement	Push-Pull	Temporary	77.8	0.09
10.3	WL035e	PEM	Temporary Workspace	Push-Pull	Temporary	0	1.40

TABLE G-2

Calcasieu Pass Terminal and TransCameron Pipeline Project
Wetlands Crossed by the East Lateral Pipeline

Approx. Milepost In	Wetland ID	Wetland Type [a]	Facility Type	Workspace Type	Impact Type	Crossing Length at Centerline (feet) [b]	Area (acres) [c]
10.4	WL035e	PEM	Permanent Easement	Push-Pull	Temporary	861	1.00
10.5	WL035s	PSS	Permanent Easement	Push-Pull	Temporary	858.8	0.99
10.5	WL035s	PSS	Temporary Workspace	Push-Pull	Temporary	0	0.99
10.6	WL035e	PEM	Temporary Workspace	Push-Pull	Temporary	0	0.97
10.7	WL035e	PEM	Permanent Easement	Push-Pull	Temporary	697.4	0.81
10.8	WL035s	PSS	Temporary Workspace	Push-Pull	Temporary	0	0.91
10.8	WL035s	PSS	Permanent Easement	Push-Pull	Temporary	650.8	0.74
10.9	WL034s	E2SS	Temporary Workspace	Push-Pull	Temporary	0	1.26
10.9	WL034s	E2SS	Permanent Easement	Push-Pull	Temporary	897.7	1.03
11.1	WL034e	E2EM	Permanent Easement	Push-Pull	Temporary	22.5	0.03
11.1	WL034e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.03
11.1	WL034s	E2SS	Permanent Easement	Push-Pull	Temporary	54.9	0.07
11.1	WL034s	E2SS	Temporary Workspace	Push-Pull	Temporary	0	0.06
11.1	WL034e	E2EM	Permanent Easement	Push-Pull	Temporary	45.4	0.05
11.1	WL034e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.10
11.1	WL034e	E2EM	Permanent Easement	Push-Pull	Temporary	0	0.00
11.1	WL034s	E2SS	Permanent Easement	Push-Pull	Temporary	0	0.00
11.1	WL034s	E2SS	Permanent Easement	Push-Pull	Temporary	947.3	1.10
11.1	WL034s	E2SS	Temporary Workspace	Push-Pull	Temporary	0	1.25
11.3	WL034e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.04
11.3	WL034e	E2EM	Permanent Easement	Push-Pull	Temporary	27.2	0.03
11.3	WL034s	E2SS	Temporary Workspace	Push-Pull	Temporary	0	0.50
11.3	WL034s	E2SS	Permanent Easement	Push-Pull	Temporary	323.4	0.34
11.4	WL034e	E2EM	Permanent Easement	Push-Pull	Temporary	1,770.4	2.38
11.4	WL034e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	2.46
11.7	WL034s	E2SS	Temporary Workspace	Push-Pull	Temporary	0	1.78
11.7	WL034s	E2SS	Permanent Easement	Push-Pull	Temporary	14.2	1.02
11.9	WL034e	E2EM	Permanent Easement	Push-Pull	Temporary	763.4	0.92
11.9	WL034e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.85
12.1	WL034e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.03
12.1	WL034e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.91
12.1	WL034e	E2EM	Permanent Easement	Push-Pull	Temporary	20	0.02
12.1	WL034e	E2EM	Permanent Easement	Push-Pull	Temporary	660.4	0.76

TABLE G-2

Calcasieu Pass Terminal and TransCameron Pipeline Project
Wetlands Crossed by the East Lateral Pipeline

Approx. Milepost In	Wetland ID	Wetland Type [a]	Facility Type	Workspace Type	Impact Type	Crossing Length at Centerline (feet) [b]	Area (acres) [c]
12.2	WL034e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	1.84
12.2	WL034e	E2EM	Permanent Easement	Push-Pull	Temporary	1,339.3	1.54
12.5	WL034e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	2.80
12.5	WL034e	E2EM	Permanent Easement	Push-Pull	Temporary	2,060	2.37
12.8	WET06	PEM	Contractor Yard	Contractor Laydown Yard	Temporary	0	0.12
12.9	WL034e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.42
12.9	WL034e	E2EM	Permanent Easement	Push-Pull	Temporary	271	0.27
12.9	WL573de	E2EM	Temporary Access Road	TAR 14	Temporary	0	0.01
12.9	WL527ds	E2SS	Temporary Access Road	TAR 14	Temporary	0	0.04
12.9	WL034e	E2EM	Permanent Easement	Push-Pull	Temporary	113	0.12
12.9	WL034e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.16
12.9	WL034e	E2EM	Permanent Easement	Push-Pull	Temporary	1,576.5	1.83
12.9	WL034e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	2.07
13.0	WL034e	E2EM	ATWS	Waterbody Crossing	Temporary	0	0.02
13.0	WL034e	E2EM	ATWS	Waterbody Crossing	Temporary	0	0.09
13.0	WL573de	E2EM	Contractor Yard	Contractor Laydown Yard	Temporary	0	0.03
13.2	WL034e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	1.16
13.2	WL034e	E2EM	Permanent Easement	Push-Pull	Temporary	845.2	0.97
13.4	WL034e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.62
13.4	WL034e	E2EM	Permanent Easement	Push-Pull	Temporary	447.2	0.51
13.5	WL034e	E2EM	ATWS	Waterbody Crossing	Temporary	0	0.06
13.5	WL033e	PEM	Temporary Workspace	Push-Pull	Temporary	0	5.07
13.5	WL033e	PEM	Permanent Easement	Push-Pull	Temporary	2,022.4	4.12
13.5	WL033e	PEM	ATWS	Waterbody Crossing	Temporary	0	0.06
13.9	WL033s	PSS	Temporary Workspace	Push-Pull	Temporary	0	0.10
13.9	WL033s	PSS	Permanent Easement	Push-Pull	Temporary	131.9	0.14
14.0	WL033s	PSS	Temporary Workspace	Push-Pull	Temporary	0	0.14
14.0	WL033s	PSS	Permanent Easement	Push-Pull	Temporary	144.6	0.16
14.0	WL033s	PSS	Permanent Easement	Push-Pull	Temporary	32.6	0.02
14.0	WL033s	PSS	Temporary Workspace	Push-Pull	Temporary	0	0.02
14.1	WL033e	PEM	ATWS	Foreign Pipeline Crossing	Temporary	0	1.36
14.1	WL033s	PSS	ATWS	Foreign Pipeline Crossing	Temporary	0	0.31
14.2	WL033de	PEM	ATWS	Foreign Pipeline Crossing	Temporary	0	0.38

TABLE G-2

Calcasieu Pass Terminal and TransCameron Pipeline Project
Wetlands Crossed by the East Lateral Pipeline

Approx. Milepost In	Wetland ID	Wetland Type [a]	Facility Type	Workspace Type	Impact Type	Crossing Length at Centerline (feet) [b]	Area (acres) [c]
14.2	WL033s	PSS	Temporary Workspace	Push-Pull	Temporary	0	0.74
14.3	WL033s	PSS	Permanent Easement	Push-Pull	Temporary	433.2	0.50
14.3	WL033e	PEM	Temporary Workspace	Push-Pull	Temporary	0	0.26
14.3	WL033e	PEM	Permanent Easement	Push-Pull	Temporary	150.1	0.15
14.4	WL033s	PSS	Permanent Easement	Push-Pull	Temporary	33.6	0.05
14.4	WL033s	PSS	Temporary Workspace	Push-Pull	Temporary	0	0.02
14.4	WL033e	PEM	Permanent Easement	Push-Pull	Temporary	1,862.1	2.13
14.4	WL033e	PEM	Temporary Workspace	Push-Pull	Temporary	0	2.44
14.4	WL033s	PSS	Temporary Workspace	Push-Pull	Temporary	0	0.04
14.8	WL032s	E2SS	Permanent Easement	Push-Pull	Temporary	212	0.24
14.8	WL032s	E2SS	Temporary Workspace	Push-Pull	Temporary	0	0.17
14.8	WL145ds	E2SS	Temporary Workspace	Push-Pull	Temporary	0	0.12
14.8	WL144de	E2EM	Permanent Easement	Push-Pull	Temporary	61.7	0.06
14.8	WL144de	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.15
14.8	WL032e	E2EM	Permanent Easement	Push-Pull	Temporary	159.9	0.31
14.8	WL032e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.00
14.8	WL143de	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.44
14.8	WL143de	E2EM	Permanent Easement	Push-Pull	Temporary	280.1	0.24
14.9	WL127de	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.61
14.9	WL127de	E2EM	Permanent Easement	Push-Pull	Temporary	378.5	0.54
15.0	WL126ds	E2SS	Temporary Workspace	Push-Pull	Temporary	0	0.27
15.0	WL126ds	E2SS	Permanent Easement	Push-Pull	Temporary	5.9	0.01
15.0	WL032s	E2SS	Permanent Easement	Push-Pull	Temporary	557.6	0.64
15.0	WL032s	E2SS	Temporary Workspace	Push-Pull	Temporary	0	0.68
15.1	WL032e	E2EM	Permanent Easement	Push-Pull	Temporary	407	0.47
15.1	WL032e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.47
15.1	WL032e	E2EM	ATWS	Waterbody Crossing	Temporary	0	0.58
15.1	WL032s	E2SS	ATWS	Waterbody Crossing	Temporary	0	0.00
15.2	WL032e	E2EM	ATWS	Open Water Crossing	Temporary	0	0.01
15.2	WL526de	E2EM	Temporary Access Road	TAR 15	Temporary	0	0.01
15.2	WL526ds	E2EM	Temporary Access Road	TAR 15	Temporary	0	0.02
15.2	WL527de	E2EM	Temporary Access Road	TAR 15	Temporary	0	0.02
15.2	WL032e	E2EM	Permanent Easement	Push-Pull	Temporary	13.8	0.02

TABLE G-2

Calcasieu Pass Terminal and TransCameron Pipeline Project
Wetlands Crossed by the East Lateral Pipeline

Approx. Milepost In	Wetland ID	Wetland Type [a]	Facility Type	Workspace Type	Impact Type	Crossing Length at Centerline (feet) [b]	Area (acres) [c]
15.2	WL032e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.02
15.2	WL032e	E2EM	ATWS	Open Water Crossing	Temporary	0	0.01
15.2	WL032e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.26
15.2	WL032e	E2EM	ATWS	Open Water Crossing	Temporary	0	0.03
15.2	WL525de	E2EM	Temporary Access Road	TAR 15	Temporary	0	0.02
15.3	WL032e	E2EM	Permanent Easement	Push-Pull	Temporary	105.9	0.71
15.5	WL032s	E2SS	ATWS	Open Water Crossing	Temporary	0	0.02
15.5	WL032s	E2SS	Temporary Workspace	Push-Pull	Temporary	0	0.04
15.5	WL525ds	E2SS	Temporary Access Road	TAR 15	Temporary	0	0.01
15.5	WL525ds	E2SS	Temporary Access Road	TAR 15	Temporary	0	0.00
15.5	WL031s	E2SS	ATWS	Open Water Crossing	Temporary	0	0.01
15.5	WL031s	E2SS	Temporary Workspace	Push-Pull	Temporary	0	0.03
15.5	WL032s	E2SS	Permanent Easement	Push-Pull	Temporary	8.8	0.01
15.5	WL031s	E2SS	Permanent Easement	Push-Pull	Temporary	18.8	0.02
15.5	WL524de	E2EM	Temporary Access Road	TAR 16	Temporary	0	0.09
15.6	WL031e	E2EM	Permanent Easement	Push-Pull	Temporary	423.2	0.50
15.6	WL031e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.18
15.7	WL523de	E2EM	Temporary Access Road	TAR 16	Temporary	0	0.02
15.7	WL031s	E2SS	Temporary Workspace	Push-Pull	Temporary	0	0.05
15.7	WL031s	E2SS	ATWS	Open Water Crossing	Temporary	0	0.01
15.7	WL031e	E2EM	Permanent Easement	Push-Pull	Temporary	22.8	0.03
15.7	WL031e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.00
15.7	WL031s	E2SS	Permanent Easement	Push-Pull	Temporary	18.3	0.05
15.7	WL031e	E2EM	ATWS	Open Water Crossing	Temporary	0	0.05
15.7	WL031e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.20
15.7	WL031e	E2EM	Permanent Easement	Push-Pull	Temporary	139.6	0.16
15.8	WL523ds	E2SS	Temporary Access Road	TAR 16	Temporary	0	0.00
15.8	WL524ds	E2SS	Temporary Access Road	TAR 16	Temporary	0	0.01
15.8	WL523de	E2EM	Temporary Access Road	TAR 16	Temporary	0	0.00
15.8	WL524de	E2EM	Temporary Access Road	TAR 16	Temporary	0	0.00
15.8	WL031e	E2EM	Permanent Easement	Push-Pull	Temporary	16.1	0.02
15.8	WL031e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.02
15.8	WL031e	E2EM	ATWS	Open Water Crossing	Temporary	0	0.00

TABLE G-2

Calcasieu Pass Terminal and TransCameron Pipeline Project
Wetlands Crossed by the East Lateral Pipeline

Approx. Milepost In	Wetland ID	Wetland Type [a]	Facility Type	Workspace Type	Impact Type	Crossing Length at Centerline (feet) [b]	Area (acres) [c]
15.8	WL030e	E2EM	Permanent Easement	Push-Pull	Temporary	1,220.4	1.40
15.8	WL030e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	1.68
15.8	WL030e	E2EM	ATWS	Open Water Crossing	Temporary	0	0.27
16.0	WL030e	E2EM	Permanent Easement	Push-Pull	Temporary	376.3	0.44
16.0	WL030e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.50
16.1	WL030e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	1.29
16.1	WL030e	E2EM	Permanent Easement	Push-Pull	Temporary	936.2	1.06
16.2	WL030e	E2EM	ATWS	Open Water Crossing	Temporary	0	0.05
16.3	WL030e	E2EM	Permanent Easement	Push-Pull	Temporary	560.7	0.64
16.3	WL030e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.76
16.3	WL030e	E2EM	ATWS	Open Water Crossing	Temporary	0	0.17
16.4	WL029e	E2EM	Permanent Easement	Push-Pull	Temporary	15.8	0.02
16.4	WL029e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.02
16.4	WL029e	E2EM	ATWS	Open Water Crossing	Temporary	0	0.00
16.4	WL029e	E2EM	Permanent Easement	Push-Pull	Temporary	250.8	0.29
16.4	WL029e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.29
16.4	WL029e	E2EM	ATWS	Open Water Crossing	Temporary	0	0.03
16.4	WL029e	E2EM	ATWS	Open Water Crossing	Temporary	0	0.00
16.5	WL029e	E2EM	Permanent Easement	Push-Pull	Temporary	204.2	0.23
16.5	WL029e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.21
16.5	WET02	E2EM	Temporary Access Road	TAR 17	Temporary	0	0.01
16.5	WL029e	E2EM	ATWS	Open Water Crossing	Temporary	0	0.03
16.5	WET03	E2EM	Temporary Access Road	TAR 17	Temporary	0	0.12
16.6	WL029s	E2SS	Permanent Easement	Push-Pull	Temporary	14.8	0.02
16.6	WL029s	E2SS	Temporary Workspace	Push-Pull	Temporary	0	0.02
16.6	WL029s	E2SS	ATWS	Open Water Crossing	Temporary	0	0.00
16.7	WET02	E2EM	Temporary Access Road	TAR 17	Temporary	0	0.00
16.8	WL029e	E2EM	Permanent Easement	Push-Pull	Temporary	0	0.04
16.8	WL520de	E2EM	Permanent Easement	Push-Pull	Temporary	0	0.00
16.8	WL520de	E2EM	Temporary Access Road	TAR 17	Temporary	0	0.05
16.8	WL029e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.00
16.8	WL029e	E2EM	Permanent Easement	Push-Pull	Temporary	65	0.15
16.9	WL029e	E2EM	Permanent Easement	Push-Pull	Temporary	0	0.01

TABLE G-2

Calcasieu Pass Terminal and TransCameron Pipeline Project
Wetlands Crossed by the East Lateral Pipeline

Approx. Milepost In	Wetland ID	Wetland Type [a]	Facility Type	Workspace Type	Impact Type	Crossing Length at Centerline (feet) [b]	Area (acres) [c]
17.0	WL029e	E2EM	Permanent Easement	Push-Pull	Temporary	151.9	0.18
17.0	WL029e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.05
17.1	WL029e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.56
17.1	WL029e	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	0.35
17.2	WL029e	E2EM	Permanent Easement	Push-Pull	Temporary	245.3	0.29
17.2	WL029e	E2EM	ATWS	Open Water Crossing	Temporary	0	0.09
17.2	WET02	E2EM	Temporary Access Road	TAR 18	Temporary	0	0.00
17.4	WL029s	E2SS	Temporary Workspace	Push-Pull	Temporary	0	0.13
17.4	WL029s	E2SS	Permanent Easement	Push-Pull	Temporary	112.1	0.13
17.4	WL029s	E2SS	ATWS	Open Water Crossing	Temporary	0	0.02
17.4	WL029e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.01
17.4	WL029e	E2EM	Permanent Easement	Push-Pull	Temporary	13.4	0.02
17.4	WL029e	E2EM	ATWS	Open Water Crossing	Temporary	0	0.06
17.4	WL029e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.25
17.4	WL029e	E2EM	ATWS	Open Water Crossing	Temporary	0	0.02
17.4	WL029e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.05
17.4	WL029e	E2EM	Permanent Easement	Push-Pull	Temporary	220.3	0.25
17.4	WL029e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.04
17.4	WL029e	E2EM	Permanent Easement	Push-Pull	Temporary	56.2	0.07
17.5	WL029e	E2EM	Permanent Easement	Push-Pull	Temporary	146.4	0.16
17.5	WL029e	E2EM	ATWS	Open Water Crossing	Temporary	0	0.04
17.5	WL029e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.18
17.6	WL029e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.11
17.6	WL029e	E2EM	ATWS	Open Water Crossing	Temporary	0	0.05
17.7	WL029e	E2EM	Permanent Easement	Push-Pull	Temporary	108.9	0.51
17.7	WL029e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.54
17.7	WL029e	E2EM	ATWS	Open Water Crossing	Temporary	0	0.07
17.7	WL029e	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	0.60
17.8	WL029e	E2EM	Permanent Easement	Push-Pull	Temporary	15.7	0.03
17.8	WL029e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.02
17.8	WL029e	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	0.04
17.8	WL029e	E2EM	Temporary Access Road	TAR 18	Temporary	0	0.00
17.8	WET02	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	0.03

TABLE G-2

Calcasieu Pass Terminal and TransCameron Pipeline Project
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Approx. Milepost In	Wetland ID	Wetland Type [a]	Facility Type	Workspace Type	Impact Type	Crossing Length at Centerline (feet) [b]	Area (acres) [c]
17.8	WL028e	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	0.02
17.8	WL028e	E2EM	Permanent Easement	Push-Pull	Temporary	20.2	0.02
17.8	WL028e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.02
17.8	WL028e	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	0.03
17.8	WL517de	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	0.14
17.8	WET01	E2EM	Temporary Access Road	TAR 18	Temporary	0	0.01
17.8	WL028e	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	0.01
17.8	WL028e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.35
17.8	WL028e	E2EM	Permanent Easement	Push-Pull	Temporary	76.8	0.14
17.8	WL028e	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	0.33
17.9	WL028e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.36
17.9	WL028e	E2EM	Permanent Easement	Push-Pull	Temporary	197.1	0.17
17.9	WL028e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.51
17.9	WL028e	E2EM	Permanent Easement	Push-Pull	Temporary	42.1	0.19
18.0	WL028e	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	0.31
18.0	WL027e	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	0.08
18.0	WL027e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.28
18.0	WL026s	E2SS	Permanent Easement	Push-Pull	Temporary	223.3	2.77
18.0	WL026s	E2SS	Temporary Workspace	Push-Pull	Temporary	0	2.44
18.1	WL026e	E2EM	Permanent Easement	Push-Pull	Temporary	76.6	0.19
18.5	WL026e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.08
18.5	WL026e	E2EM	Permanent Easement	Push-Pull	Temporary	59.6	0.07
18.5	WL026s	E2SS	Temporary Workspace	Push-Pull	Temporary	0	0.88
18.5	WL026s	E2SS	Permanent Easement	Push-Pull	Temporary	602.9	0.90
18.7	WL026e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.97
18.7	WL026e	E2EM	Permanent Easement	Push-Pull	Temporary	690.2	0.79
18.8	WL026e	E2EM	ATWS	HDD Exit	Temporary	0	0.14
18.8	WL026s	E2SS	ATWS	HDD Exit	Temporary	0	1.21
18.8	WL026s	E2SS	Temporary Workspace	Push-Pull	Temporary	0	0.71
18.8	WL026s	E2SS	Permanent Easement	Push-Pull	Temporary	448.4	0.51
18.9	WL026s	E2SS	Permanent Easement	HDD Section with Potental Impacts	Temporary	58.6	0.07
18.9	WL026s	E2SS	ATWS	HDD Exit	Temporary	0	0.02
18.9	WL026s	E2SS	Permanent Easement	HDD	No Impact - HDD	0	0.12

TABLE G-2

Calcasieu Pass Terminal and TransCameron Pipeline Project
Wetlands Crossed by the East Lateral Pipeline

Approx. Milepost In	Wetland ID	Wetland Type [a]	Facility Type	Workspace Type	Impact Type	Crossing Length at Centerline (feet) [b]	Area (acres) [c]
18.9	WL026s	E2SS	Permanent Easement	HDD	No Impact - HDD	201.9	0.11
18.9	WL026s	E2SS	Temporary Access Road	TAR 19	Temporary	0	0.08
18.9	WL026s	E2SS	Temporary Access Road	TAR 19	Temporary	32.8	0.26
19.0	WL026s	E2SS	Permanent Easement	HDD	No Impact - HDD	85.6	0.21
19.0	WL026s	E2SS	Permanent Easement	HDD	No Impact - HDD	230	0.13
19.0	WL026s	E2SS	Temporary Access Road	TAR 19	Temporary	0	0.08
19.0	WL026s	E2SS	Permanent Easement	HDD	No Impact - HDD	0	0.05
19.1	WL026s	E2SS	Temporary Access Road	TAR 19	Temporary	0	0.03
19.1	WL026s	E2SS	Permanent Easement	HDD	No Impact - HDD	0	0.01
19.1	WL025e	E2EM	Temporary Access Road	TAR 20	Temporary	0	0.02
19.1	WL025e	E2EM	Permanent Easement	HDD	No Impact - HDD	0	0.01
19.1	WL025e	E2EM	Permanent Easement	HDD	No Impact - HDD	599.4	0.32
19.1	WL025e	E2EM	Permanent Easement	HDD	No Impact - HDD	0	0.20
19.1	WL099d	E2EM	Temporary Access Road	TAR 19	Temporary	0	0.03
19.1	WL098d	E2EM	Temporary Access Road	TAR 19	Temporary	0	0.00
19.1	WL098d	E2EM	Temporary Access Road	TAR 19	Temporary	0	0.01
19.2	WL025e	E2EM	Temporary Access Road	TAR 20	Temporary	34	0.33
19.2	WL025e	E2EM	Temporary Access Road	TAR 20	Temporary	0	0.08
19.2	WL025e	E2EM	Permanent Easement	HDD	No Impact - HDD	198.8	0.10
19.2	WL025e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	2.41
19.2	WL025e	E2EM	Permanent Easement	HDD Section with Potental Impacts	Temporary	110.4	0.13
19.2	WL025e	E2EM	ATWS	HDD Entry	Temporary	0	0.57
19.3	WL025e	E2EM	Permanent Easement	Push-Pull	Temporary	836.2	2.31
19.3	WL025e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.00
19.3	WL121d	E2EM	Temporary Workspace	Push-Pull	Temporary	0	4.57
19.3	WL121d	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.00
19.4	WL025e	E2EM	Permanent Easement	Push-Pull	Temporary	0	0.00
19.4	WL121d	E2EM	Permanent Easement	Push-Pull	Temporary	0	0.00
19.4	WL121d	E2EM	Permanent Easement	Push-Pull	Temporary	2,927.6	3.26
19.5	WL098d	E2EM	Temporary Access Road	TAR 19	Temporary	0	0.01
19.7	WL098d	E2EM	Temporary Access Road	TAR 19	Temporary	0	0.00
19.8	WL121d	E2EM	ATWS	ATWS, Foreign Pipeline Crossing	Temporary	0	7.08
20.0	WL025e	E2EM	ATWS	ATWS, Foreign Pipeline Crossing	Temporary	0	1.40

TABLE G-2

Calcasieu Pass Terminal and TransCameron Pipeline Project
Wetlands Crossed by the East Lateral Pipeline

Approx. Milepost In	Wetland ID	Wetland Type [a]	Facility Type	Workspace Type	Impact Type	Crossing Length at Centerline (feet) [b]	Area (acres) [c]
20.0	WL025e	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	1.73
20.0	WL059d	E2EM	ATWS	Foreign Pipeline Crossing	Temporary	0	0.34
20.1	WL097d	E2EM	Temporary Access Road	TAR 19	Temporary	0	0.00
20.2	WL024e	E2EM	Temporary Access Road	TAR 19	Temporary	0	0.01
20.2	WL025e	E2EM	Permanent Easement	Push-Pull	Temporary	33.9	0.04
20.2	WL025e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.05
20.2	WL024e	E2EM	Permanent Easement	Push-Pull	Temporary	3.3	0.42
20.2	WL024e	E2EM	Permanent Easement	Push-Pull	Temporary	197.7	0.23
20.2	WL025e	E2EM	ATWS	ATWS, Foreign Pipeline Crossing	Temporary	0	0.04
20.2	WL024e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.46
20.2	WL024e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.27
20.2	WL121d	E2EM	ATWS	ATWS, Foreign Pipeline Crossing	Temporary	0	0.08
20.2	WL024e	E2EM	Temporary Access Road	TAR 19	Temporary	0	0.00
20.2	WL121d	E2EM	ATWS	ATWS, Foreign Pipeline Crossing	Temporary	0	0.00
20.3	WL024e	E2EM	ATWS	Waterbody Crossing	Temporary	0	0.17
20.4	WL108d	E2EM	Temporary Access Road	TAR 19	Temporary	0	0.00
20.4	WL024e	E2EM	Permanent Easement	Push-Pull	Temporary	537	0.65
20.4	WL024e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.76
20.4	WL024e	E2EM	ATWS	Waterbody Crossing	Temporary	0	0.17
20.4	wa005e	PEM	Temporary Access Road	TAR 19	Temporary	0	0.01
20.4	WL024e	E2EM	ATWS	Waterbody Crossing	Temporary	0	0.17
20.5	WL024s	E2SS	Permanent Easement	Push-Pull	Temporary	70.9	0.08
20.5	WL024s	E2SS	Temporary Workspace	Push-Pull	Temporary	0	0.07
20.5	WL024s	E2SS	Permanent Easement	Push-Pull	Temporary	67.8	0.08
20.5	WL024s	E2SS	Temporary Workspace	Push-Pull	Temporary	0	0.09
20.5	WL024e	E2EM	Permanent Easement	Push-Pull	Temporary	137	0.18
20.5	WL024e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.31
20.5	WL024e	E2EM	ATWS	Waterbody Crossing	Temporary	0	0.17
20.5	WL024s	E2SS	ATWS	Waterbody Crossing	Temporary	0	0.00
20.5	WL024e	E2EM	Permanent Easement	Push-Pull	Temporary	37.5	0.06
20.5	WL024s	E2SS	Permanent Easement	Push-Pull	Temporary	113	0.14
20.6	WL024s	E2SS	Temporary Workspace	Push-Pull	Temporary	0	0.13
20.6	WL024e	E2EM	Permanent Easement	Push-Pull	Temporary	314.6	0.36

TABLE G-2

Calcasieu Pass Terminal and TransCameron Pipeline Project
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Approx. Milepost In	Wetland ID	Wetland Type [a]	Facility Type	Workspace Type	Impact Type	Crossing Length at Centerline (feet) [b]	Area (acres) [c]
20.6	WL024e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.41
20.6	WL024s	E2SS	Temporary Workspace	Push-Pull	Temporary	0	0.15
20.6	WL024s	E2SS	Permanent Easement	Push-Pull	Temporary	108.8	0.12
20.6	WL024e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	2.00
20.7	WL024e	E2EM	Permanent Easement	Push-Pull	Temporary	1186	1.54
20.9	WL024e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.15
20.9	WL024e	E2EM	Permanent Easement	Push-Pull	Temporary	91.6	0.09
20.9	WL024e	E2EM	Permanent Easement	Push-Pull	Temporary	100.9	1.34
20.9	WL024e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	1.62
21.0	WL024e	E2EM	Permanent Easement	Push-Pull	Temporary	95.6	0.13
21.0	WL024e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.02
21.1	WL024e	E2EM	Permanent Easement	Push-Pull	Temporary	0	0.03
21.2	WL024e	E2EM	ATWS	HDD Exit	Temporary	0	0.04
21.2	WL024s	E2SS	ATWS	HDD Exit	Temporary	0	0.71
21.2	WL024s	E2SS	Temporary Workspace	Push-Pull	Temporary	0	0.33
21.2	WL024s	E2SS	Permanent Easement	Push-Pull	Temporary	220.9	0.26
21.2	WL024e	E2EM	Permanent Easement	Push-Pull	Temporary	58.5	0.07
21.2	WL024e	E2EM	Temporary Workspace	Push-Pull	Temporary	0	0.07
21.2	WL024e	E2EM	ATWS	HDD Exit	Temporary	0	0.09
21.2	WL514de	E2EM	ATWS	HDD Exit	Temporary	0	0.14
21.2	WL513de	E2EM	Temporary Access Road	TAR 21	Temporary	0	0.11
21.4	WL023s	PSS	Permanent Easement	HDD	No Impact - HDD	31.3	0.04
21.4	WL023s	PSS	Permanent Easement	HDD	No Impact - HDD	489.8	0.57
21.5	WL023e	PEM	Permanent Easement	HDD	No Impact - HDD	135.4	0.15
21.5	WL023s	PSS	Permanent Easement	HDD	No Impact - HDD	402.4	0.46
21.6	WL023s	PSS	Permanent Easement	HDD Section with Potental Impacts	Temporary	343.1	0.39
21.6	WL023s	PSS	Temporary Workspace	Open Cut	Temporary	0	0.91
21.6	WL023s	PSS	ATWS	HDD Entry	Temporary	0	0.27
21.6	WL023ds	PSS	ATWS	HDD Entry	Temporary	0	0.30
21.6	WL023s	PSS	Permanent Easement	Open Cut	Temporary	307.4	0.35
21.7	WL023ds	PSS	Temporary Access Road	TAR 22	Temporary	0	0.11
21.7	WL023de	PEM	Temporary Access Road	TAR 22	Temporary	0	0.04
21.7	WL023e	PEM	Permanent Easement	Open Cut	Temporary	459.1	0.53

TABLE G-2

Calcasieu Pass Terminal and TransCameron Pipeline Project
Wetlands Crossed by the East Lateral Pipeline

Approx. Milepost In	Wetland ID	Wetland Type [a]	Facility Type	Workspace Type	Impact Type	Crossing Length at Centerline (feet) [b]	Area (acres) [c]
21.7	WL023e	PEM	Temporary Workspace	Open Cut	Temporary	0	0.55
21.7	WL521de	E2EM	Temporary Access Road	TAR 22	Temporary	0	0.61
21.8	WL023s	PSS	Temporary Workspace	Open Cut	Temporary	0	1.73
21.8	WL023s	PSS	Permanent Easement	Open Cut	Temporary	1293.2	1.47
22.0	WL023e	PEM	Temporary Workspace	Open Cut	Temporary	0	0.38
22.0	WL023e	PEM	Permanent Easement	Open Cut	Temporary	165.5	0.20
22.0	WL023e	PEM	ATWS	Waterbody Crossing	Temporary	0	0.06
22.1	WL023e	PEM	Permanent Easement	Open Cut	Temporary	168	0.20
22.1	WL023e	PEM	Temporary Workspace	Open Cut	Temporary	0	0.19
22.1	WL023e	PEM	ATWS	Waterbody Crossing	Temporary	0	0.03
22.1	WL023s	PSS	Temporary Workspace	Open Cut	Temporary	0	0.21
22.1	WL023s	PSS	ATWS	Waterbody Crossing	Temporary	0	0.03
22.1	WL023s	PSS	Permanent Easement	Open Cut	Temporary	143.5	0.16
22.1	WL023e	PEM	Permanent Easement	Open Cut	Temporary	448.9	0.51
22.1	WL023e	PEM	Temporary Workspace	Open Cut	Temporary	0	0.64
22.2	WL023e	PEM	Permanent Easement	Open Cut	Temporary	344.4	0.39
22.2	WL023e	PEM	Temporary Workspace	Open Cut	Temporary	0	0.46
22.3	WL023s	PSS	Permanent Easement	Open Cut	Temporary	101	0.12
22.3	WL023s	PSS	Temporary Workspace	Open Cut	Temporary	0	0.15
22.3	WL022s	PSS	Permanent Easement	Open Cut	Temporary	327.2	0.37
22.3	WL022s	PSS	Temporary Workspace	Open Cut	Temporary	0	0.64
22.4	WL022e	PEM	Permanent Easement	Open Cut	Temporary	312.5	0.37
22.4	WL022e	PEM	Temporary Workspace	Open Cut	Temporary	0	0.24
22.4	WL022e	PEM	Permanent Easement	Open Cut	Temporary	126.6	0.17
22.4	WL022e	PEM	Temporary Workspace	Open Cut	Temporary	0	0.06
22.4	WL022e	PEM	Temporary Workspace	Open Cut	Impact Addressed in Terminal Document	0	0.03
22.5	WL022e	PEM	Permanent Easement	Open Cut	Impact Addressed in Terminal Document	27.1	0.03

TABLE G-2

Calcasieu Pass Terminal and TransCameron Pipeline Project
Wetlands Crossed by the East Lateral Pipeline

Approx. Milepost In	Wetland ID	Wetland Type [a]	Facility Type	Workspace Type	Impact Type	Crossing Length at Centerline (feet) [b]	Area (acres) [c]
22.5	WL022e	PEM	Permanent Easement	Open Cut	Impact Addressed in Terminal Document	696.2	0.80
22.5	WL022e	PEM	Temporary Workspace	Open Cut	Impact Addressed in Terminal Document	0	0.95
22.5	WL022e	PEM	Temporary Workspace	Open Cut	Impact Addressed in Terminal Document	0	0.00
22.6	WL021s	PSS	Permanent Easement	Open Cut	Impact Addressed in Terminal Document	324.3	0.39
22.6	WL021s	PSS	Temporary Workspace	Open Cut	Impact Addressed in Terminal Document	0	0.35
22.7	WL021s	PSS	ATWS	HDD Pipe String	Impact Addressed in Terminal Document	0	0.14
22.7	WL021s	PSS	ATWS	Tie-in Location	Impact Addressed in Terminal Document	0	0.14
22.7	WL021e	PEM	Temporary Workspace	Open Cut	Impact Addressed in Terminal Document	0	0.06
22.7	WL021e	PEM	Permanent Easement	Open Cut	Impact Addressed in Terminal Document	40.9	0.05
22.7	WL021s	PSS	Permanent Easement	Open Cut	Impact Addressed in Terminal Document	21.3	0.03
22.7	WL021s	PSS	Temporary Workspace	Open Cut	Impact Addressed in Terminal Document	0	0.00

[a] E2EM – estuarine emergent; E2SS – estuarine scrub-shrub; PEM – palustrine emergent; PSS – palustrine scrub-shrub.
[b] Features at the Crossing Length at Centerline (feet) column with "0" means not crossed by centerline.
[c] Some features in the Area (acres) column equal less than 0.01 acres, which rounds to 0.00 acres.

APPENDIX H

ESSENTIAL FISH HABITAT POTENTIALLY AFFECTED BY CONSTRUCTION AND OPERATIONS

APPENDIX H
ESSENTIAL FISH HABITAT POTENTIALLY AFFECTED BY CONSTRUCTION AND OPERATIONS

TABLE H-1

ESSENTIAL FISH HABITAT POTENTIALLY AFFECTED BY CONSTRUCTION AND OPERATION OF THE PROJECT

Wetland/ Waterbody ID	Approx. MP In	Approx. Crossing Length [a]	Wetland/Waterbody Type	Temporary Impacts (acres)	Permanent Impacts (acres)	Impact Type
TERMINAL FACILITY						
Calcasieu River Ship Channel	N/A	N/A	Perennial Tidal River	Approx. 268	69.72	Dredge and construction of in-water structures, hydroacoustic
Gulf of Mexico	N/A	N/A	Nearshore and Coastal Marine	Approx. 865	0	Hydroacoustic
OW001	N/A	N/A	Borrow pit	0.0	0.11	Converted to water by dredging/excavating
OW002	N/A	N/A	Borrow pit	0.0	0.02	Converted to water by dredging/excavating
OW003	N/A	N/A	Borrow pit	0.0	0.03	Converted to water by dredging/excavating
WL002e	N/A	N/A	Estuarine emergent marsh	0.0	8.15	Converted to water by dredging/excavating
WL002m	N/A	N/A	Mudflat	0.0	0.94	Converted to water by dredging/excavating
WL002p	N/A	N/A	Estuarine *Phragmites australis* marsh	0.0	0.45	Converted to water by dredging/excavating
WL002s	N/A	N/A	Estuarine scrub shrub	0.0	7.18	Converted to water by dredging/excavating
WL003	N/A	N/A	Estuarine emergent marsh	0.0	0.13	Converted to water by dredging/excavating
PIPELINE						
WL131d	0.0	424	Estuarine emergent marsh	2.95	1.24	Meter station, pipeline construction, and ATWS
WL042e	0.1	104	Estuarine emergent marsh	0.61	0.0	Pipeline construction and ATWS
WL063d	0.1	N/A	Estuarine emergent marsh	3.59	0.0	ATWS and access road
WL041e	0.5	478	Estuarine emergent marsh	2.40	0.0	Pipeline construction and ATWS
WL106d	0.5	N/A	Estuarine emergent marsh	0.12	0.0	Access road
WL126d	15.0	11	Estuarine emergent marsh	0.28	0.0	Pipeline construction
OW030	15.2	60	Estuarine pond	0.08	0.0	Pipeline construction
OW029	15.2	921	Estuarine openwater	3.40	0.0	Pipeline construction and ATWS
WL124d	15.2	N/A	Estuarine emergent marsh	0.06	0.0	Access road
WL125d	15.2	N/A	Estuarine emergent marsh	0.48	0.0	Access road
WL031s	15.5	56	Estuarine scrub shrub	0.17	0.0	Pipeline construction and ATWS
OW027	15.5	692	Estuarine openwater	2.57	0.0	Pipeline construction
WL031e	15.5	607	Estuarine emergent marsh	1.16	0.0	Pipeline construction and ATWS

TABLE H-1

ESSENTIAL FISH HABITAT POTENTIALLY AFFECTED BY CONSTRUCTION AND OPERATION OF THE PROJECT

Wetland/ Waterbody ID	Approx. MP In	Approx. Crossing Length [a]	Wetland/Waterbody Type	Temporary Impacts (acres)	Permanent Impacts (acres)	Impact Type
OW026	15.7	50	Estuarine openwater	0.15	0.0	Pipeline construction and ATWS
WL030e	15.8	3,093	Estuarine emergent marsh	8.26	0.0	Pipeline construction and ATWS
OW025	15.8	N/A	Estuarine openwater	0.01	0.0	ATWS
WB012	16.0	34	Perennial estuarine channel	0.09	0.0	Pipeline construction
OW024	16.3	69	Estuarine openwater	0.25	0.0	Pipeline construction and ATWS
OW023	16.4	N/A	Estuarine openwater	0.01	0.0	ATWS
WL029e	16.4	1,794	Estuarine emergent marsh	5.94	0.0	Pipeline construction and ATWS
WB011	16.4	37	Perennial estuarine channel	0.12	0.0	Pipeline construction and ATWS
OW022	16.4	539	Estuarine openwater	1.85	0.0	Pipeline construction and ATWS
OW021	16.6	3,574	Estuarine openwater	11.17	0.0	Pipeline construction and ATWS
WL029s	16.6	127	Estuarine scrub shrub	0.32	0.0	Pipeline construction and ATWS
WL123d	16.8	N/A	Estuarine emergent marsh	0.04	0.0	Access road
OW019	17.4	376	Estuarine openwater	1.18	0.0	Pipeline construction and ATWS
OW018	17.5	694	Estuarine openwater	1.87	0.0	Pipeline construction and ATWS
OW017	17.7	51	Estuarine openwater	0.18	0.0	Pipeline construction and ATWS
WL028e	17.8	634	Estuarine emergent marsh	2.47	0.0	Pipeline construction and ATWS
OW016	17.8	362	Estuarine openwater	1.59	0.0	Pipeline construction and ATWS
WL122d	17.8	N/A	Estuarine emergent marsh	0.14	0.0	ATWS
WL026e	18.0	827	Estuarine emergent marsh	2.24	0.0	Pipeline construction and ATWS
WL026s	18.0	3,717	Estuarine scrub shrub	9.71	0.0	Pipeline construction and ATWS
WL027e	18.0	N/A	Estuarine emergent marsh	0.37	0.0	ATWS
OW006	18.6	57	Estuarine pond	0.25	0.0	Pipeline construction
WL025e	19.1	2,092	Estuarine emergent marsh	8.87	0.0	Pipeline construction and ATWS

[a] Crossing length does not include areas crossed by horizontal directional drill.

ATWS = additional temporary workspace; MP = milepost; N/A = wetland does not cross centerline

APPENDIX I

RESULTS OF BEST AVAILABLE CONTROL TECHNOLOGY ANALYSIS

APPENDIX I
RESULTS OF BEST AVAILABLE CONTROL TECHNOLOGY ANALYSIS

TABLE I-1

CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT
PROPOSED BEST AVAILABLE CONTROL TECHNOLOGY LIMITS FOR THE TERMINAL SITE

Emissions Source	Pollutant	Proposed Emissions Control	Proposed Emission Limits for Each Individual Source (non-aggregated)		
Gas-fired Combined Cycle Turbines and Associated Duct Burners	NO_x	• Selective Catalytic Reduction (SCR) would be installed on the turbine system	2.50	ppmv at 15% O_2	Limit based on 24-hour block average during normal operations
		• Low NO_x burners would be installed on the turbine duct burners	16.8	lb/hr	Limit based on 1-hour average during duct burner and CC turbine operation
		• Dry Low-NO_x combustor design will be used on each turbine	118.9	lb/hr	Limit based on 2-hour average during cold start
		• Good combustion practices	103.1	lb/hr	Limit based on 1-hour average during warm start
			103.1	lb/hr	Limit based on 1-hour average during shutdown
	CO	• Catalytic Oxidation • Proper equipment design	5	ppmv at 15% O_2	Limit based on 24-hour block average during normal operations
		• Proper operation • Good combustion practices	17.6	lb/hr	Limit based on 1-hour average during duct burner and CC turbine operation
			28.4	lb/hr	Limit based on 2-hour average during cold start
			24.8	lb/hr	Limit based on 1-hour average during warm start
			24.8	lb/hr	Limit based on 1-hour average during shutdown
	$PM/PM_{10}/PM_{2.5}$	• Exclusive combustion of gaseous fuel	8.0000	lb/hr	Limit based on 1-hour average during normal operations
		• Good combustion practices including proper burner design	9.9	lb/hr	Limit based on 1-hour average duct burner and CC turbine operation
			8.0	lb/hr	Limit based on 2-hour average during cold start
			8.0	lb/hr	Limit based on 1-hour average during warm start
			8.0	lb/hr	Limit based on 1-hour average during shutdown
	SO_2	• Exclusive combustion of low sulfur fuels	4	ppmv H_2S	Based on annual average of H_2S content in fuel
		• Proper equipment design and operation	0.9	lb/hr	Limit based on 1-hour average duct burner and cc turbine operation
			0.4	lb/hr	Limit based in 2-hour average during cold start
			0.4	lb/hr	Limit based on 1-hour average during warm start
			0.4	lb/hr	Limit based on 1-hour average during shutdown
	VOC	• Catalytic Oxidation • Combustion of gaseous fuels	1.30	ppmv at 15% O_2	Limit based on 3-hour average during normal operations

APPENDIX I
RESULTS OF BEST AVAILABLE CONTROL TECHNOLOGY ANALYSIS (cont'd)

TABLE I-1

CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT
PROPOSED BEST AVAILABLE CONTROL TECHNOLOGY LIMITS FOR THE TERMINAL SITE

Emissions Source	Pollutant	Proposed Emissions Control	Proposed Emission Limits for Each Individual Source (non-aggregated)		
		• Combustor process design with proper operation • Good combustion practices	2.41	ppmv at 15% O_2	Limit based on 1-hour average duct burner and cc turbine operation
			3.93	lb/hr	Limit based on 1-hour average duct burner and cc turbine operation
			2.36	lb/hr	Limit based on 2-hour average during cold start
			2.24	lb/hr	Limit based on 1-hour average during warm start
			2.24	lb/hr	Limit based on 1-hour average during shutdown
	CO_2e	• Exclusively combust low carbon fuel gas • Good combustion practices • Proper O&M practices • Insulation would be properly implemented for surfaces above 120 °F	793,414	tpy	Based on annual total per turbine
Gas-fired Simple Cycle Turbines	NO_x	• Dry low-NO_x combustor design would be used on each turbine	15	ppmv at 15% O_2	Limit based on 30-day rolling average during normal operations
		• Good combustion practices	134.69	lb/hr	Limit based on 2-hour average during cold start
		• Combustion of natural gas	134.69	lb/hr	Limit based on 1-hour average during warm start
			134.69	lb/hr	Limit based on 1-hour average during shutdown
	CO	• Combustor process design • Proper operation	25	ppmv at 15% O_2	Limit based on 30-day rolling average during normal operations
		• Good combustion practices	32.1	lb/hr	Limit based on 2-hour average during cold start
			32.1	lb/hr	Limit based on 1-hour average during warm start
			32.1	lb/hr	Limit based on 1-hour average during shutdown
	$PM/PM_{10}/PM_{2.5}$	• Exclusive combustion of natural gas	8.0	lb/hr	Limit based on 3-hour average during normal operations
		• Good combustion practices including proper burner design	8.0	lb/hr	Limit based on 2-hour average during cold start
			8.0	lb/hr	Limit based on 1-hour average during warm start
			8.0	lb/hr	Limit based on 1-hour average during shutdown
	SO_2	• Exclusive combustion of low sulfur interstate pipeline quality natural gas	4	ppmv H_2S	Based on annual average of H_2S content in fuel
		• Proper equipment design and operation	0.4	lb/hr	Limit based on 2-hour average during cold start
			0.4	lb/hr	Limit based on 1-hour average during warm start

APPENDIX I
RESULTS OF BEST AVAILABLE CONTROL TECHNOLOGY ANALYSIS (cont'd)

TABLE I-1

CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT
PROPOSED BEST AVAILABLE CONTROL TECHNOLOGY LIMITS FOR THE TERMINAL SITE

Emissions Source	Pollutant	Proposed Emissions Control	Proposed Emission Limits for Each Individual Source (non-aggregated)		
			0.4	lb/hr	Limit based on 1-hour average during shutdown
	VOC	• Combustor process design • Proper operation	1.63	ppmv at 15% O_2	Limit based on 3-hour average during normal operations
		• Good combustion practices	2.5	lb/hr	Limit based on 2-hour average during cold start
		• Combustion of natural gas	2.5	lb/hr	Limit based on 1-hour average during warm start
			2.5	lb/hr	Limit based on 1-hour average during shutdown
	CO_2e	• Exclusively combust low carbon fuel gas • Good combustion practices • Proper O&M practices • Insulation would be properly implemented for surfaces above 120 °F	602,021	tpy	Based on annual total per turbine
Hot Oil Heaters	NO_x	• Ultra low NO_x burners • Good combustion practices	0.04	lb/MMBtu	Based on 3-hour average
	CO	• Exclusive combustion of fuel gas • Good combustion practices	0.08	lb/MMBtu	Based on 3-hour average
	$PM/PM_{10}/PM_{2.5}$	• Exclusive combustion of fuel gas • Good combustion practices including proper burner design	0.0075	lb/MMBtu	Based on 3-hour average
	SO_2	• Exclusive combustion of fuel gas with a sulfur content not greater than in pipeline quality natural gas • Proper engineering practices	0.0006	lb/MMBtu	Based on 3-hour average
	VOC	• Proper equipment design • Proper operation • Good combustion practices • Exclusive combustion of fuel gas	0.0054	lb/MMBtu	Based on 3-hour average
	CO_2e	• Exclusive combustion of low-carbon fuel gas • Good combustion practices • Good O&M practices • Proper implementation of insulation for surfaces above 120 °F	59,076	tpy	Based on annual total
Acid Gas Thermal Oxidizer	NO_x	• Low NO_x burners • Good combustion practices	0.144	lb/MMBtu	Based on 3-hour average
	CO	• Proper equipment design • Proper operation • Good combustion practices	0.086	lb/MMBtu	Based on 3-hour average
	$PM/PM_{10}/PM_{2.5}$	• Exclusive combustion of fuel gas • Good combustion practices	0.0078	lb/MMBtu	Based on 3-hour average
	SO_2	• Proper equipment design	0.10	lb/MMBtu	Based on 3-hour average
		• Proper operation • Good combustion practices • Monitoring the sulfur content at the facility inlet	76	tpy	Based on 12-month rolling total

APPENDIX I
RESULTS OF BEST AVAILABLE CONTROL TECHNOLOGY ANALYSIS (cont'd)

TABLE I-1

CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT
PROPOSED BEST AVAILABLE CONTROL TECHNOLOGY LIMITS FOR THE TERMINAL SITE

Emissions Source	Pollutant	Proposed Emissions Control	Proposed Emission Limits for Each Individual Source (non-aggregated)		
	VOC	• Proper equipment design • Proper operation • Good combustion practices • Exclusive combustion of fuel gas	0.006	lb/MMBtu	Based on 3-hour average
	CO_2e	• Exclusive combustion of low-carbon fuel gas • Good combustion practices • Good O&M practices • Insulation would be implemented for surfaces above 120 °F	768,337	tpy	Based on annual total
Large (>560 kW) Emergency Engines	NO_x	• Good combustion and operating practices • Compliance with 40 CFR Part 60 Subpart IIII • Limiting normal operations to 100 hours per year • An ignition timing retard would be installed on each engine	5.61	g/kW-hr	
	CO	• Good combustion and operating practices • Compliance with 40 CFR Part 60 Subpart IIII • Limiting normal operations to 100 hours per year	3.5	g/kW-hr	
	$PM/PM_{10}/PM_{2.5}$	• Good combustion and operating practices • Compliance with 40 CFR Part 60 Subpart IIII • Limiting normal operations to 100 hours per year	0.20	g/kW-hr	
	SO_2	• Ultra-low sulfur diesel fuel with sulfur content of 15 ppmv not to be exceeded (40 CFR Part 60 Subpart IIII) • Compliance with 40 CFR Part 60 Subpart IIII • Limiting normal operations to 100 hours per year	1.2E-05	lb/hp-hr	
	VOC	• Good combustion and operating practices • Compliance with 40 CFR Part 60 Subpart IIII • Limiting normal operations to 100 hours per year	0.79	g/kW-hr	
	CO_2e	• Good combustion practices • Good O&M practices • Insulation would be implemented for surfaces above 120 °F • Limiting normal operations to 100 hours per year	1,481	tpy	Based on annual total

APPENDIX I
RESULTS OF BEST AVAILABLE CONTROL TECHNOLOGY ANALYSIS (cont'd)

TABLE I-1

CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT
PROPOSED BEST AVAILABLE CONTROL TECHNOLOGY LIMITS FOR THE TERMINAL SITE

Emissions Source	Pollutant	Proposed Emissions Control	Proposed Emission Limits for Each Individual Source (non-aggregated)		
Firewater Pumps	NO_x	• Good combustion and operating practices • Compliance with 40 CFR Part 60 Subpart IIII • Limiting normal operations to 50 hours per year • An ignition timing retard would be installed on each pump	3.06	g/hp-hr	
	CO	• Good combustion and operating practices • Compliance with 40 CFR Part 60 Subpart IIII • Limiting normal operations to 50 hours per year	3.70	g/hp-hr	
	$PM/PM_{10}/PM_{2.5}$	• Good combustion and operating practices • Compliance with 40 CFR Part 60 Subpart IIII • Limiting normal operations to 50 hours per year	0.30	g/hp-hr	
	SO_2	• Compliance with 40 CFR Part 60 Subpart IIII • Limiting normal operations to 50 hours per year	0.04	lb/gal	
	VOC	• Good combustion and operating practices • Compliance with 40 CFR Part 60 Subpart IIII • Limiting normal operations to 50 hours per year	0.44	g/hp-hr	
	CO_2e	• Good combustion practices • Good O&M practices • Insulation would be implemented for surfaces above 120 °F • Limiting normal operations to 50 hours per year	44.82	tpy	Based on annual total
Equipment Leaks	VOC	• Proper piping design • The provisions of LAC 33:III.2111 would be followed	5.0	tpy	Based on annual total
	CO_2e	• Proper piping design	3,129	tpy	Based on annual total
Cold Flare Pilot	NO_x	• Proper equipment design • Proper operation • Good combustion practices	0.068	lb/MMBtu	When flare is operating
	CO	• Proper equipment design • Proper operation • Good combustion practices	0.370	lb/MMBtu	When flare is operating
	$PM/PM_{10}/PM_{2.5}$	• Proper equipment design • Proper operation • Good combustion practices	0.0074	lb/MMBtu	When flare is operating

APPENDIX I
RESULTS OF BEST AVAILABLE CONTROL TECHNOLOGY ANALYSIS (cont'd)

TABLE I-1

CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT
PROPOSED BEST AVAILABLE CONTROL TECHNOLOGY LIMITS FOR THE TERMINAL SITE

Emissions Source	Pollutant	Proposed Emissions Control	Proposed Emission Limits for Each Individual Source (non-aggregated)		
	SO_2	• Proper equipment design and operation • Combustion of low sulfur gas in pilot • Good combustion practices	4	ppmv	When flare is operating
	VOC	• Good combustion practices	0.006	lb/hr	When flare is operating
	CO_2e	• Good management practices and proper flare design	187	tpy	Based on annual total
Warm Flare Pilot	NO_x	• Proper equipment design • Proper operation • Good combustion practices	0.068	lb/MMBtu	When flare is operating
	CO	• Proper equipment design • Proper operation • Good combustion practices	0.370	lb/MMBtu	When flare is operating
	$PM/PM_{10}/PM_{2.5}$	• Proper equipment design • Proper operation • Good combustion practices	0.0074	lb/MMBtu	When flare is operating
	SO_2	• Proper equipment design and operation • Combustion of low sulfur gas in pilot • Good combustion practices	4	ppmv	When flare is operating
	VOC	• Good combustion practices	0.006	lb/hr	When flare is operating
	CO_2e	• Good management practices and proper flare design	187	tpy	Based on annual total
LP Vent Pilot	NO_x	• Proper equipment design • Proper operation • Good combustion practices	0.068	lb/MMBtu	When flare is operating
	CO	• Proper equipment design • Proper operation • Good combustion practices	0.370	lb/MMBtu	When flare is operating
	$PM/PM_{10}/PM_{2.5}$	• Proper equipment design • Proper operation • Good combustion practices	0.0074	lb/MMBtu	When flare is operating
	SO_2	• Proper equipment design and operation • Combustion of low sulfur gas in pilot • Good combustion practices	4	ppmv	When flare is operating
	VOC	• Good combustion practices	0.006	lb/hr	When flare is operating
	CO_2e	• Good management practices and proper flare design	187	tpy	Based on annual total
Marine Flare Pilot	NO_x	• Proper equipment design • Proper operation • Good combustion practices	0.068	lb/MMBtu	When flare is operating
	CO	• Proper equipment design • Proper operation • Good combustion practices	0.370	lb/MMBtu	When flare is operating
	$PM/PM_{10}/PM_{2.5}$	• Proper equipment design • Proper operation • Good combustion practices	0.0074	lb/MMBtu	When flare is operating

APPENDIX I
RESULTS OF BEST AVAILABLE CONTROL TECHNOLOGY ANALYSIS (cont'd)

TABLE I-1

CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT
PROPOSED BEST AVAILABLE CONTROL TECHNOLOGY LIMITS FOR THE TERMINAL SITE

Emissions Source	Pollutant	Proposed Emissions Control	Proposed Emission Limits for Each Individual Source (non-aggregated)		
	SO_2	• Proper equipment design and operation • Combustion of low sulfur gas in pilot • Good combustion practices	4	ppmv	When flare is operating
	VOC	• Good combustion practices	0.006	lb/hr	When flare is operating
	CO_2e	• Good management practices and proper flare design	187	tpy	Based on annual total
Cold Flare MSS (includes purge)	NO_x	• Proper equipment design • Proper operation • Good combustion practices	240.6	lb/hr	Maintenance/start up/shutdown operations
	CO	• Proper equipment design • Proper operation • Good combustion practices	1,308.9	lb/hr	Maintenance/start up/shutdown operations
	$PM/PM_{10}/PM_{2.5}$	• Proper equipment design • Proper operation • Good combustion practices	26.3	lb/hr	Maintenance/start up/shutdown operations
	SO_2	• Proper equipment design and operation • Combustion of low sulfur gas in pilot • Good combustion practices	2.3	lb/hr	Maintenance/start up/shutdown operations
	VOC	• Good combustion practices	72.2	lb/hr	Maintenance/start up/shutdown operations
	CO_2e	• Good management practices and proper flare design	14,010	tpy	Based on annual total
Warm Flare MSS (includes purge)	NO_x	• Proper equipment design • Proper operation • Good combustion practices	363.0	lb/hr	Maintenance/start up/shutdown operations
	CO	• Proper equipment design • Proper operation • Good combustion practices	1,975.0	lb/hr	Maintenance/start up/shutdown operations
	$PM/PM_{10}/PM_{2.5}$	• Proper equipment design • Proper operation • Good combustion practices	39.7	lb/hr	Maintenance/start up/shutdown operations
	SO_2	• Proper equipment design • Proper operation • Good combustion practices	3.5	lb/hr	Maintenance/start up/shutdown operations
	VOC	• Good combustion practices	72.2	lb/hr	Maintenance/start up/shutdown operations
	CO_2e	• Good management practices and proper flare design	14,497	tpy	Based on annual total
LP Flare MMS (includes purge)	NO_x	• Proper equipment design • Proper operation • Good combustion practices	13.8	lb/hr	Maintenance/start up/shutdown operations
	CO	• Proper equipment design • Proper operation • Good combustion practices	75.1	lb/hr	Maintenance/start up/shutdown operations
	$PM/PM_{10}/PM_{2.5}$	• Proper equipment design • Proper operation • Good combustion practices	1.5	lb/hr	Maintenance/start up/shutdown operations

APPENDIX I
RESULTS OF BEST AVAILABLE CONTROL TECHNOLOGY ANALYSIS (cont'd)

TABLE I-1

CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT
PROPOSED BEST AVAILABLE CONTROL TECHNOLOGY LIMITS FOR THE TERMINAL SITE

Emissions Source	Pollutant	Proposed Emissions Control	Proposed Emission Limits for Each Individual Source (non-aggregated)		
	SO_2	• Proper equipment design • Proper operation • Good combustion practices	0.1	lb/hr	Maintenance/start up/shutdown operations
	VOC	• Good combustion practices	72.2	lb/hr	Maintenance/start up/shutdown operations
	CO_2e	• Good management practices and proper flare design	13,063	tpy	Based on annual total
Marine Loading Flare (gassing up operations)	NO_x	• Proper equipment design • Proper operation • Good combustion practices • Marine gas recovery for loading return gas with methane content 80% or greater	19.3	lb/hr	Gassing up operations
	CO	• Proper equipment design • Proper operation • Good combustion practices • Marine gas recovery for loading return gas with methane content 80% or greater	104.9	lb/hr	Gassing up operations
	$PM/PM_{10}/PM_{2.5}$	• Proper equipment design • Proper operation • Good combustion practices • Marine gas recovery for loading return gas with methane content 80% or greater	2.1	lb/hr	Gassing up operations
	SO_2	• Proper equipment design • Proper operation • Good combustion practices • Marine gas recovery for loading return gas with methane content 80% or greater	0.2	lb/hr	Gassing up operations
	VOC	• Good combustion practices • Marine gas recovery for loading return gas with methane content 80% or greater	0.1	lb/hr	Gassing up operations
	CO_2e	• Good management practices and proper flare design • Marine gas recovery for loading return gas with methane content 80% or greater	1,107	tpy	Based on annual total
Pipeline Pigging	VOC	• Limit number of pipeline pigging activities to one per year • Flare	0.00024	tpy	Based on annual total
	CO_2e	• Limit number of pipeline pigging activities to one per year	0.07	tpy	Based on annual total
Batch Concrete Operations	PM/PM_{10}	• Any present storage silos and/or weigh hoppers would use cartridge filters	0.01	gr/dscf	Applicable to point source (storage silos and weigh hoppers with cartridge filters)
		• Aggregate supplier to provide onsite delivery of aggregate that is pre-washed	109.41	tpy PM	Based on annual total

TABLE I-1

CALCASIEU PASS TERMINAL AND TRANSCAMERON PIPELINE PROJECT
PROPOSED BEST AVAILABLE CONTROL TECHNOLOGY LIMITS FOR THE TERMINAL SITE

Emissions Source	Pollutant	Proposed Emissions Control	Proposed Emission Limits for Each Individual Source (non-aggregated)		
		• Water sprays on all aggregate and sand storage and handling operations	45.417257	tpy PM_{10}	Based on annual total
Batch Concrete Non-Emergency Engines	NO_x	• Good combustion and operating practices • Selective catalytic reduction in compliance with Tier 4 standards	0.40	g/kW-hr	
	CO	• Proper engine design and operation with good combustion practices • Exclusively combust diesel for improved combustion efficiency • Oxidation catalyst in compliance with Tier 4 standards	3.5	g/kW-hr	
	$PM/PM_{10}/PM_{2.5}$	• Exclusively combust diesel for improved combustion efficiency • Proper engine design and operation • Each generator would be equipped with a diesel particulate filter	0.20	g/kW-hr	
	SO_2	• Ultra-low sulfur diesel fuel with sulfur content of 15 ppmv not to be exceeded • Proper engine design and operation with good combustion practices	3.1E-06	lb/hp-hr	
	VOC	• Oxidation catalyst in compliance with Tier 4 standards • Proper engine design and operation with good combustion practices	0.19	g/kW-hr	
	CO_2e	• Good combustion practices • Good O&M practices • Insulation would be implemented for surfaces above 120 °F	1,226	typ	Based on annual total

CC = combined cycle; CFR = Code of Federal Regulations; CO = carbon monoxide; CO_2e = carbon dioxide equivalent; g/KW-hr = grams per kilowatt-hour; gr/dscf = grains per cubic foot; H_2S = hydrogen sulfide; kW = kilowatt; lb/gal = pounds per gallon; lb/hp-hr = pounds per horsepower-hour; lb/hr = pounds per hour; lb/MMBtu = pounds per million British thermal units; NO_x = nitrogen oxides; O&M = operations and maintenance; O_2 = oxygen; PM = particulate matter; PM_{10} = particulate matter of 10 microns in diameter or less; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; ppmv = parts per million volume; SO_2 = sulfur dioxide; tpy = tons per year; VOC = volatile organic compounds

APPENDIX J

NOISE-SENSITIVE AREAS NEAR PIPELINE HORIZONTAL DIRECTIONAL DRILL ACTIVITIES

HORIZONTAL DIRECTIONAL DRILL LOCATIONS - EAST LATERAL PIPELINE IN RELATION TO NOISE RECEPTORS

HDD: Horizontal Directional Drill
MP: Milepost

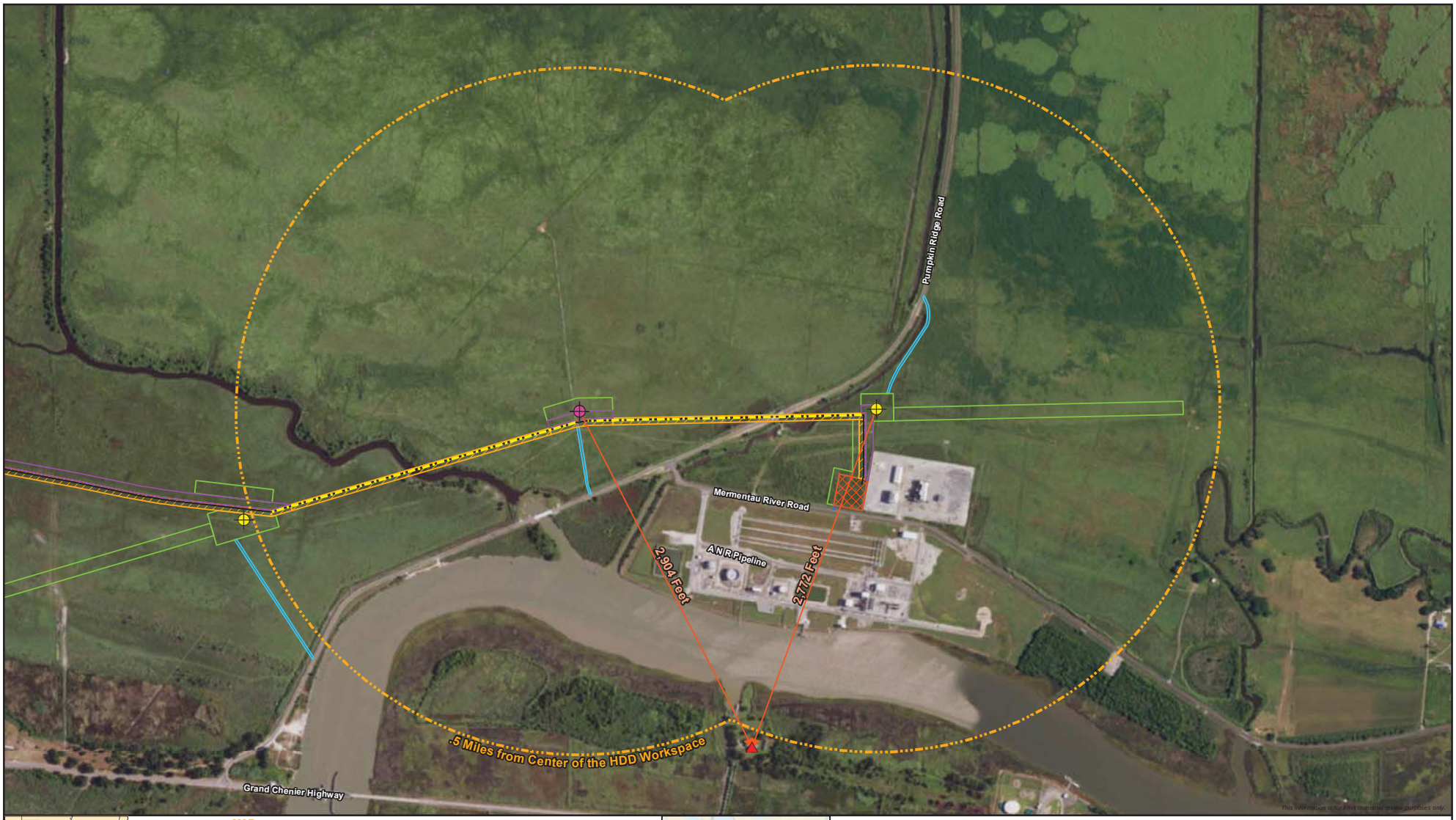

Figure J-1
Mermentau River Road HDD, MP 0.5
Calcasieu Pass Terminal and TransCameron Pipeline
Project Cameron Parish, Louisiana

CALCASIEU PASS

TransCameron PIPELINE

FILE: M:\Clients\V-X\VGL\CalcasieuPass_ArcGIS\2016\09\22_EIR_13_HDD_NSA_CalcasieuPass_EIR13_East_NSA.mxd | REVISED: 10/07/2016 | SCALE: 1:8,400 when printed at 11x17

DRAWN BY: JMS

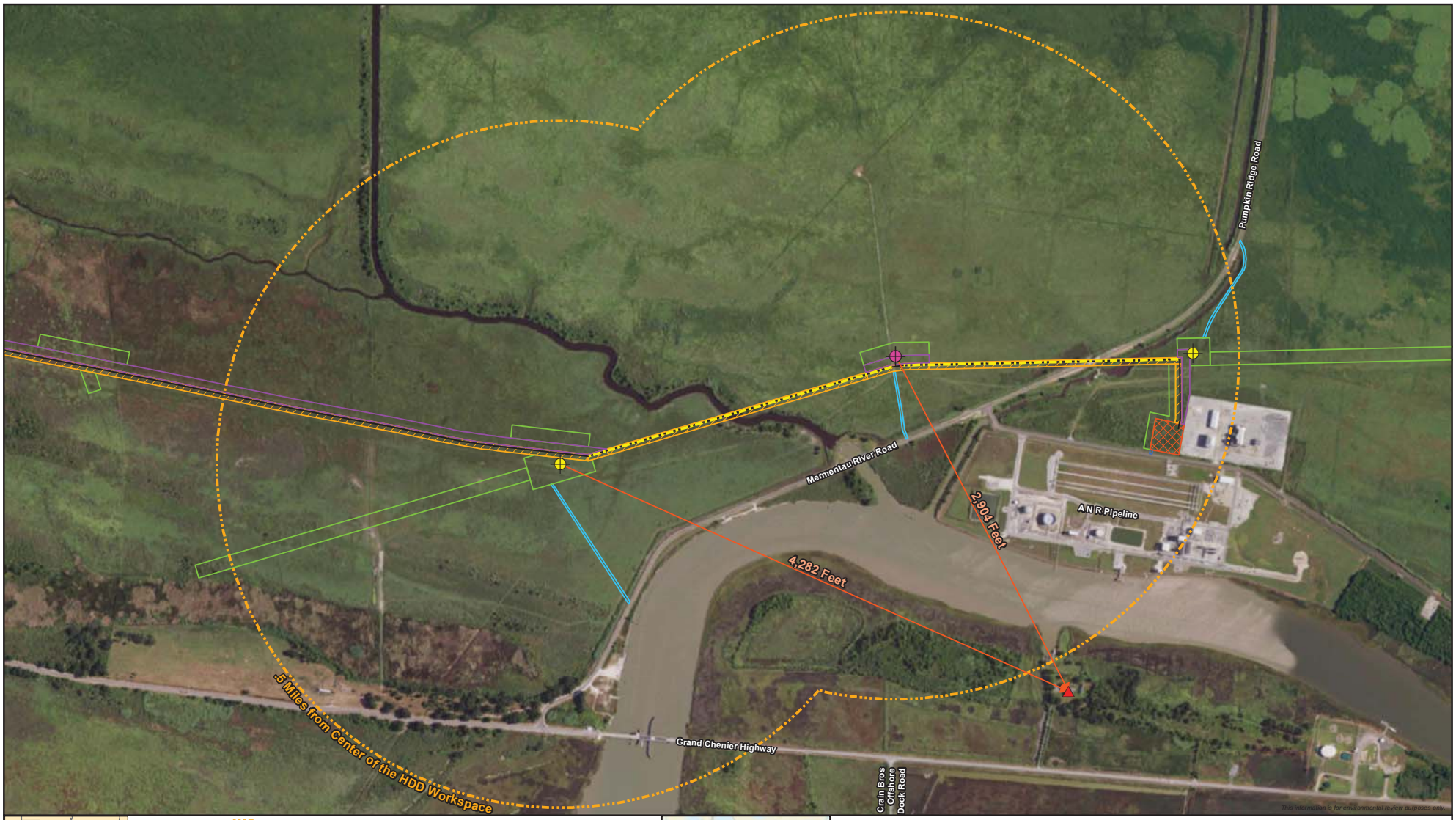

Figure J-2
Kings Bayou HDD, MP 0.5
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana

CALCASIEU PASS

TransCameron PIPELINE

FILE: M:\Clients\V-X\VGL\CalcasieuPass_ArcGIS\2016\09\22_EIR_13_HDD_NSA_CalcasieuPass_EIR13_East_NSA.mxd | REVISED: 10/07/2016 | SCALE: 1:8,400 when printed at 11x17

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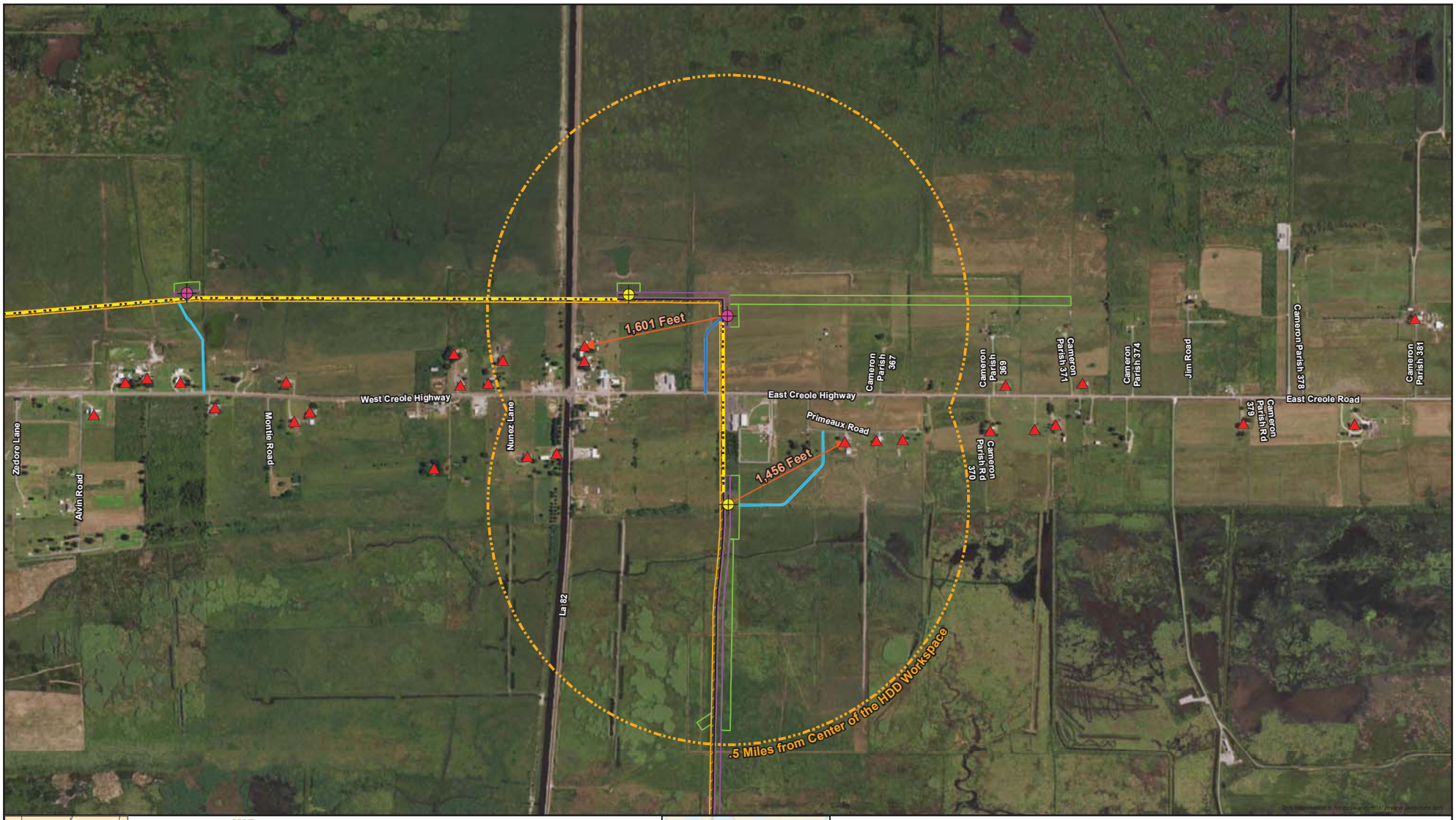

Figure J-3
East Creole Highway HDD, MP 8.3
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana

CALCASIEU PASS

TransCameron PIPELINE

FILE: M:\Clients\V-X\VGL\CalcasieuPass_ArcGIS\2016\09\22_EIR_13_HDD_NSA_CalcasieuPass_EIR13_East_NSA.mxd | REVISED: 10/07/2016 | SCALE: 1:12,000 when printed at 11x17

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Figure J-4
West Creole Highway HDD, MP 9.4
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana

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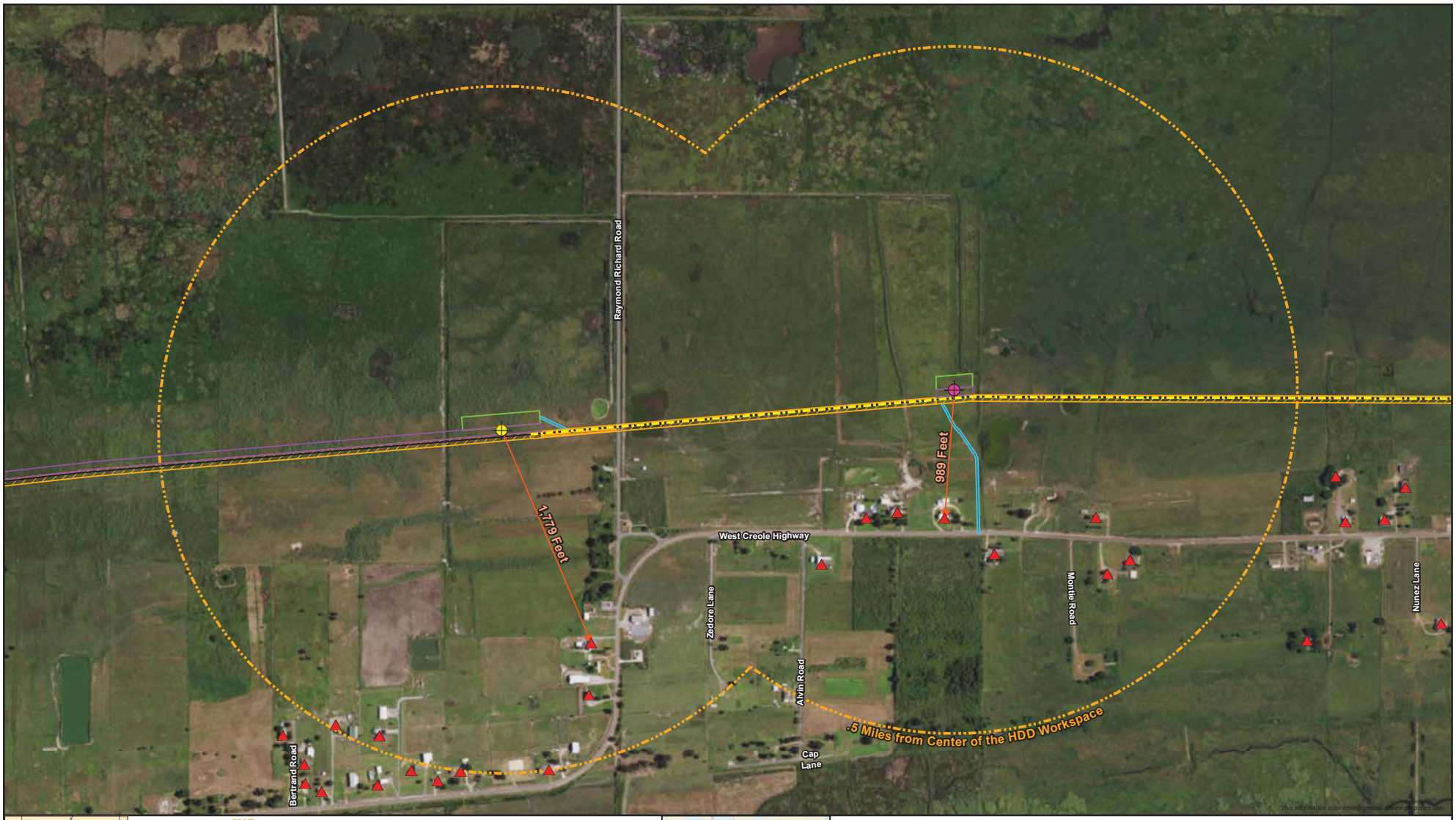

Figure J-5
Raymond Richard Road HDD, MP 9.4
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana

CALCASIEU PASS

TransCameron PIPELINE

FILE: M:\Clients\V-X\VGL\CalcasieuPass_ArcGIS\2016\09\22_EIR_13_HDD_NSA_CalcasieuPass_EIR13_East_NSA.mxd | REVISED: 10/07/2016 | SCALE: 1:8,400 when printed at 11x17

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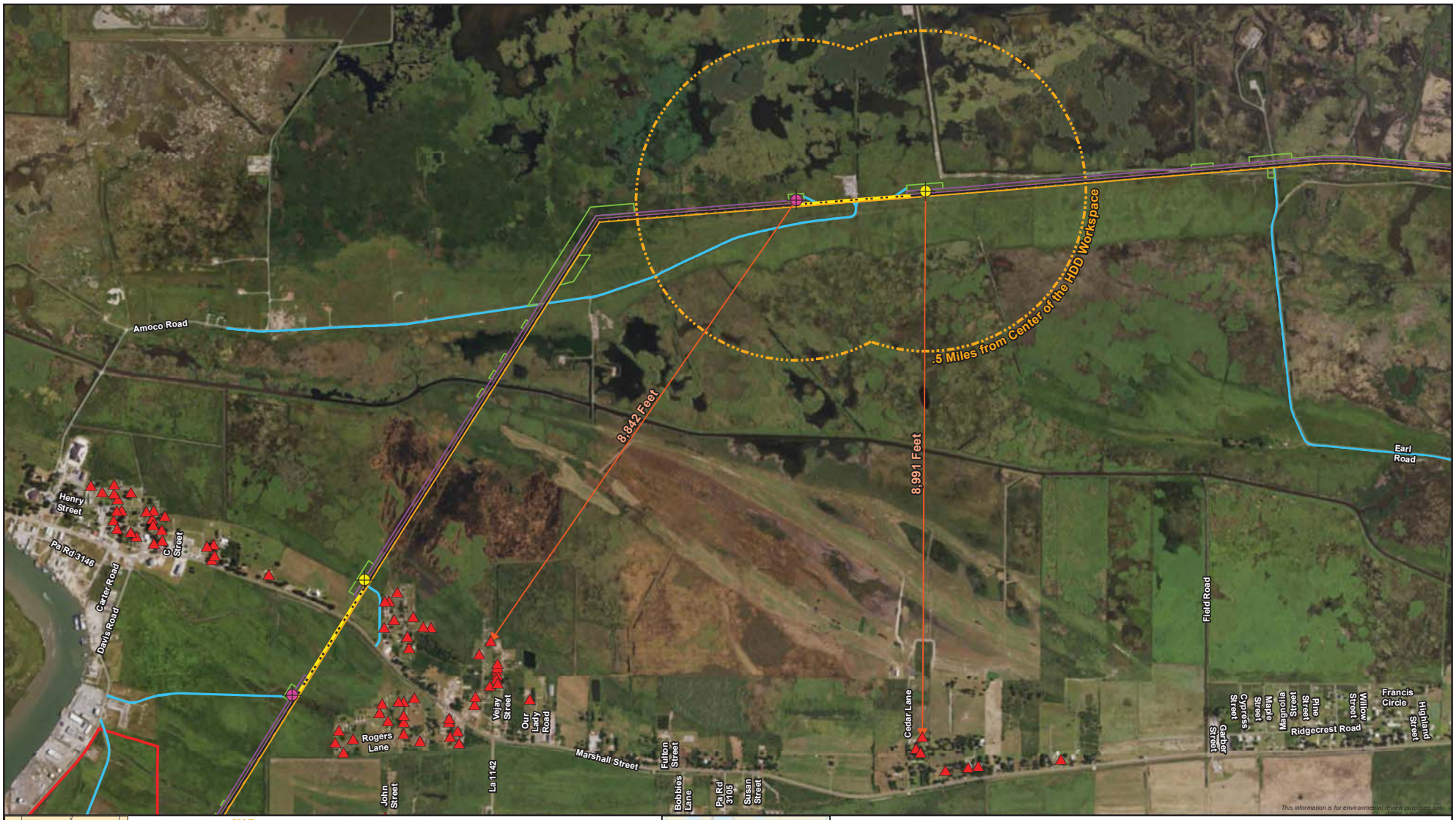

Figure J-6
Amoco Road HDD, MP 19.1
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana

CALCASIEU PASS

TransCameron PIPELINE

FILE: M:\Clients\V-X\VGL\CalcasieuPass_ArcGIS\2016\09\22_EIR_13_HDD_NSA_CalcasieuPass_EIR13_East_NSA.mxd | REVISED: 10/07/2016 | SCALE: 1:18,000 when printed at 11x17

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Figure J-7
Marshall Street – State Highway 27 HDD, MP 21.3
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana

CALCASIEU PASS

TransCameron PIPELINE

FILE: M:\Clients\V-X\VGL\CalcasieuPass_ArcGIS\2016\09\22_EIR_13_HDD_NSA_CalcasieuPass_EIR13_East_NSA.mxd | REVISED: 10/07/2016 | SCALE: 1:10,000 when printed at 11x17

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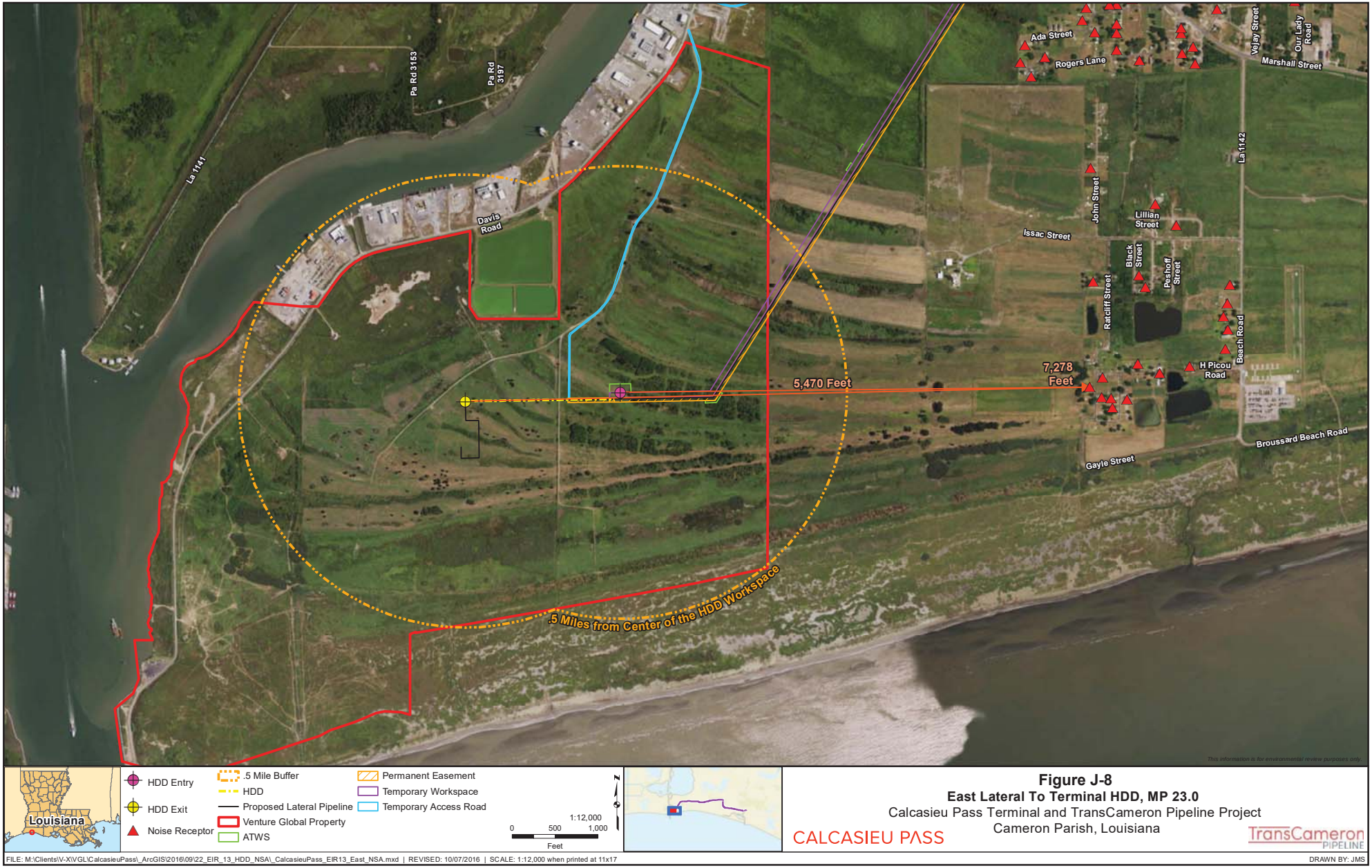

Figure J-8
East Lateral To Terminal HDD, MP 23.0
Calcasieu Pass Terminal and TransCameron Pipeline Project
Cameron Parish, Louisiana

CALCASIEU PASS

TransCameron PIPELINE

APPENDIX K

REFERENCES

APPENDIX K
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APPENDIX L

LIST OF PREPARERS

APPENDIX L
LIST OF PREPARERS

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ICF

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NV5

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ICF is a third party contractor assisting the Commission staff in reviewing the environmental aspects of the project application and preparing the environmental documents required by NEPA. Third party contractors are selected by Commission staff and funded by project applicants. Per the procedures in 40 CFR 1506.5(c), third party contractors execute a disclosure statement specifying that they have no financial or other conflicting interest in the outcome of the project. Third party contractors are required to self-report any changes in financial situation and to refresh their disclosure statements annually. The Commission staff solely directs the scope, content, quality, and schedule of the contractor's work. The Commission staff independently evaluates the results of the third-party contractor's work and the Commission, through its staff, bears ultimate responsibility for full compliance with the requirements of NEPA.

APPENDIX M

MIGRATORY BIRD HABITAT MITIGATION PLAN AND MIGRATORY BIRD NESTING IMPACT MITIGATION PLAN

CALCASIEU PASS

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October 3, 2017

Angela Trahan, Fish and Wildlife Biologist
U.S. Department of the Interior
Fish and Wildlife Service
Louisiana Ecological Services Office
646 Cajundome Blvd., Suite 400
Lafayette, LA 70506

RE: Preliminary Migratory Bird Habitat Mitigation Plan
Calcasieu Pass Terminal and TransCameron Pipeline Project

Dear Ms. Trahan,

Further to our meeting on July 18, 2017 concerning migratory bird habitat mitigation for the Calcasieu Pass Terminal and TransCameron Pipeline Project (Project), this letter provides preliminary details of a proposed mitigation plan. The plan reflects our previous discussions, recognizes potential impacts of Project development on migratory bird habitat, and offers a practical means by which these potential impacts can be mitigated. As Project planning continues, Venture Global Calcasieu Pass, LLC and TransCameron Pipeline, LLC (hereinafter referred to as the "Project proponents") anticipate continued communication and cooperation with the U.S. Fish and Wildlife Service (USFWS) and Louisiana Department of Wildlife and Fisheries (LDWF) to advance the mitigation plan's detailed design and successful execution. Figure 1 (attached) depicts the habitat types and area locations referenced in the paragraphs below.

Functional Habitat Loss

Based on migratory bird habitat field studies conducted in 2015 and 2016 by Environmental Resources Management (ERM) on behalf of the Project proponents and presented in a November 2016 report, coupled with its own subsequent field assessment, the USFWS issued a report in May 2017 that identifies 225.2 acres of upland migratory bird habitat that would be temporarily or permanently impacted by Project development. The USFWS report identifies the component habitat types and acreages that make up these 225.2 acres, categorized by impact type (temporary or permanent). The USFWS used a specific modeling methodology for coastal chenier/ridge communities to calculate the functional loss associated with these impacts, as reflected in a reduction of Average Annual Habitat Units (AAHUs) for each habitat type. This information is presented below.

Upland Habitat Type	Impact Type	Acreage	AAHUs Lost
Scrub-shrub	Permanent	11.7	5.50
Grassland	Permanent	151.0	3.54
Scrub-shrub	Temporary	5.5	16.80
Grassland	Temporary	57.0	3.18
	Total:	225.2	29.02

The USFWS considered a scenario where existing grazed upland grassland that will be temporarily impacted by the Project is converted to forested chenier habitat through active planting and prevention of further grazing to mitigate for migratory bird habitat impacts. Based on the modeling, the USFWS calculated that the conversion of 1.0 acre of grassland to chenier forest would generate 0.54 AAHU. As such, to compensate for the 29.02 AAHUs lost through Project-related impacts, approximately 54.0 acres of grassland would need to be converted (29.02/0.54 = 53.74). The 54.0 acres of conversion mitigation is in addition to the restoration of the 5.5 acres of existing upland scrub-shrub habitat that would be temporarily impacted by the Project. The USFWS later indicated that a rerun of the modeling program resulted in a higher mitigation acreage, but concluded that 54.0 acres represented the basis on which any restoration proposal could move forward.

Mitigation Proposal

Figure 1 presents the layout of the proposed mitigation area, which lies wholly within the 828.6-acre Venture Global property where the Terminal Site will be developed and for which the Project proponents have secured an option for a 70-year lease. The mitigation area constitutes approximately 76.5 contiguous acres located northeast of the Terminal Site's perimeter floodwall. It encompasses the upper 47.1 acres of the 62.7-acre Eastern Temporary Workspace (TWS) and 29.4 acres flanking the east and north sides of the Eastern TWS. Of the 76.5 acres, 54.0 acres are existing upland grassland (pasture) subject to grazing pressure; the remaining 22.5 acres are existing forested wetland, scrub-shrub wetland, emergent wetland, and scrub-shrub upland. The overall intent of the mitigation proposal is to convert the 54.0 acres of existing upland grassland to a forested chenier community through prevention of grazing across the entire 76.5-acre mitigation area and active planting within the aforementioned 47.1-acre section of the Eastern TWS. This proposal is in line with the USFWS' mitigation recommendation and will provide a contiguous expanse of favorable coastal habitat for migratory birds. The proposed mitigation strategy within and outside the Eastern TWS is described in further detail below.

The Eastern TWS will be used for storage of materials and equipment laydown during construction of the adjacent Terminal facilities. It is anticipated that the period of active construction will be approximately 36 months. Following construction, the Eastern TWS may be retained for a further 12 months to provide a site for continued storage and laydown, as needed. As such, the restoration of temporarily impacted wetlands and the concurrent restoration and/or enhancement of upland habitat for migratory bird mitigation might not commence until approximately 48 months after construction start-up.

Preparation of the Eastern TWS for storage and laydown will involve initial grading of the low ridge and swale terrain that characterizes the area, to achieve uniform, level topography. Subsequently, an approximately two-foot-thick layer of gravel and crushed stone will be placed on geotextile fabric over the native soil to provide a safe and well-drained surface for vehicular traffic, heavy equipment, and material stockpiles. This surface will be retained throughout the duration of workspace use.

At the outset of restoration, the aggregate material in the Eastern TWS will be regraded to restore the original pattern of ridge and swale topography over the site. Depressional areas will be created to mirror those currently supporting emergent and scrub-shrub wetlands. Due to the net addition of aggregate material during site preparation, the upland ridges that characterize the existing topography will necessarily be accentuated, the higher elevations and stable component material possibly helping to counteract the erosional degradation that has evidently occurred in recent history.

Given the coarse, infertile nature of the aggregate material used to form the upland ridges, a soil overlay may be necessary. The soil may be imported from an offsite source or obtained from overburden originally removed from the Terminal Site during ground preparation and stockpiled at another location on the Venture Global property.

The upper 47.1 acres of the 62.7-acre Eastern TWS contains approximately 27.9 acres of upland grassland that is currently subject to grazing pressure. Following the reestablishment of ridge and swale topography and the placement of a soil overlay, as necessary, to encourage revegetation, this upland grassland will be reseeded to establish herbaceous vegetative cover for erosion control and planted with a mix of woody species to promote the long-term growth of a forested chenier community. The actual species and planting regime will be determined through continued collaboration with the USFWS and LDWF.

The upper 47.1 acres of the 62.7-acre Eastern TWS is part of the 76.5-acre area in which cattle grazing will be prevented. Active planting of woody species in the upper 47.1 acres of the Eastern TWS will be coupled with control of invasive plant species, notably Chinese tallow (*Triadica sebifera*), to favor the development of a canopy of desirable woody species that limits the growth of non-desirable species through ecological competition. Active invasive species control will be accomplished by the local application of a suitable herbicide, according to a schedule to be established in collaboration with the USFWS and LDWF. The planting of woody species will be a one-time event, but the accentuation of ridge topography, absence of grazing pressure, and invasive species control will collectively provide conditions that favor successful reestablishment of a forested chenier community.

The 29.4 acres located within the 76.5-acre no grazing area but outside the Eastern TWS lie beyond the Project's proposed construction footprint. These 29.4 acres contain 26.1 acres of existing upland grassland. In the absence of grazing pressure and through successional growth, these 26.1 acres have the potential to evolve into scrub-shrub habitat for migratory birds.

In summary, the proposed plan for migratory bird habitat mitigation includes:

- the conversion of 27.9 acres of existing grazed upland grassland in the Eastern TWS to forested chenier habitat through topographic ridge accentuation, soil improvement, active planting, and invasive plant species control; and

- the successional conversion of 26.1 acres of existing grazed upland pasture outside of the Eastern TWS through prevention of cattle grazing.

The total amount of existing upland pasture that will be potentially converted to forested chenier habitat is 54.0 acres, which compensates for the 29.5 AAHU loss indicated by the USFWS model.

Land Development Considerations

The mitigation proposal discussed in this letter is contingent upon a mutual understanding and agreement that, should the Project proponents decide to pursue the further development of the 828.6-acre Venture Global property in the future, they would not be prevented from doing so in the area currently designated for migratory bird habitat mitigation described in this letter, based on such a designation. However, we acknowledge that if the area currently designated for migratory bird habitat mitigation was subject to future development, any migratory bird habitat mitigation associated with that development would be addressed contemporaneously in a separate plan presented to the USFWS.

We appreciate the opportunity to present this preliminary mitigation plan, understanding that additional details will be developed through on-going communication with your office. If you have any questions or comments, please contact me by e-mail at pbell@vglng.com, by phone at 281-972-7021, or at the letterhead address.

Sincerely,

Venture Global LNG, Inc.

Peter G. Bell, Ph.D.
Vice President, Environmental and Regulatory

Attachment: Figure 1 (Overview Map of Migratory Bird Habitat Restoration Area)

cc. Michael Seymour (Louisiana Department of Wildlife and Fisheries)
Ben Frothingham (Venture Global LNG, Inc.)
Fory Musser (Venture Global LNG, Inc.)

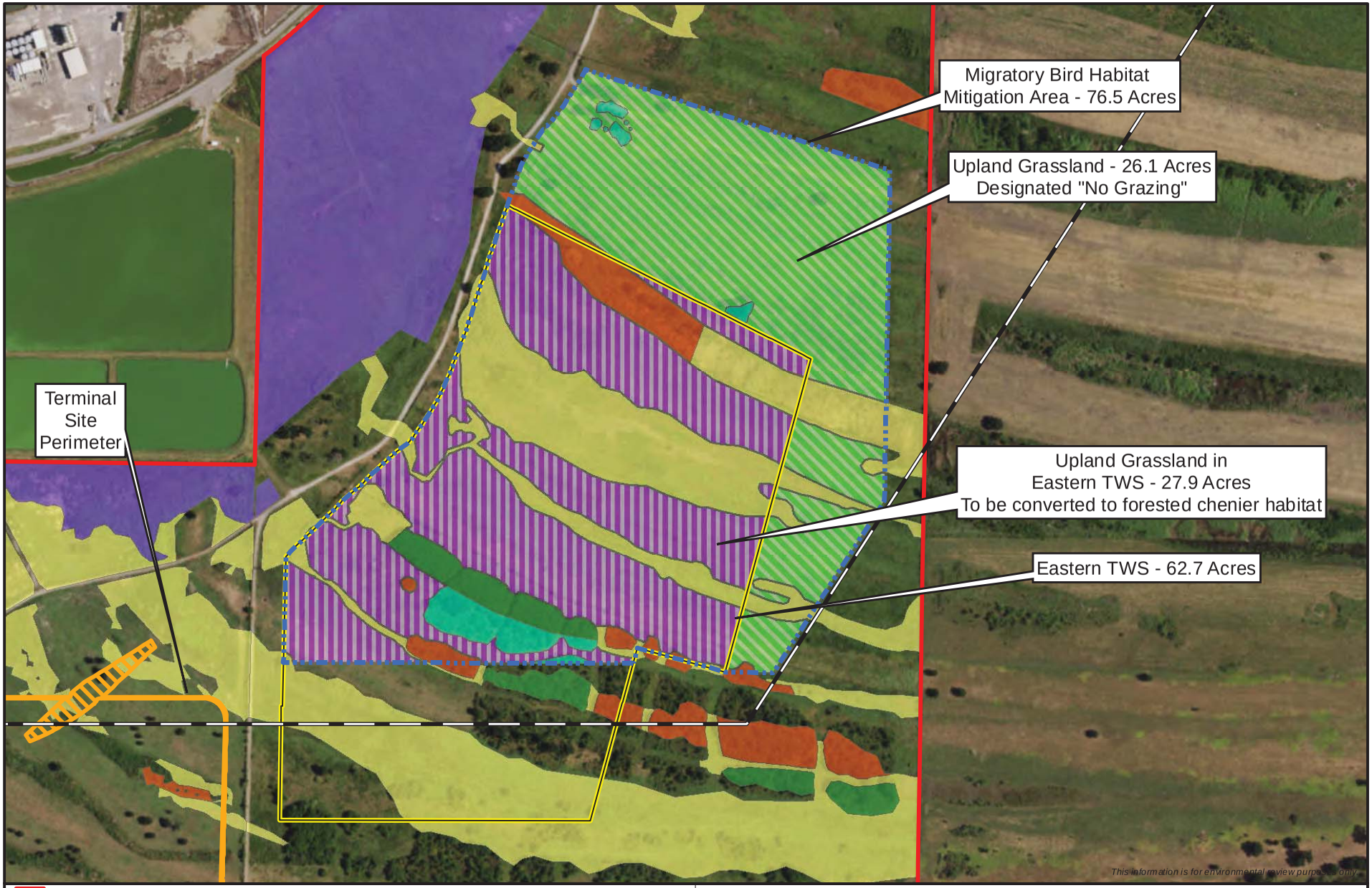

Figure 1
Overview Map of Migratory Bird Habitat Mitigation Area
Calcasieu Pass Terminal and TransCameron Pipeline Project

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TransCameron PIPELINE

FILE: M:\Clients\V-X\VGL\CalcasieuPass_ArcGIS\2017\10\2_Bird_Figure_VGL_CPP_Bird.mxd | REVISED: 10/03/2017 | SCALE: 1:6,000 DRAWN BY: GIS

Pat Robblee

From: Peter Bell <pbell@ventureglobalng.com>
Sent: Friday, February 02, 2018 10:14 AM
To: Trahan, Angela
Cc: Michael Seymour; Fory Musser; Benjamin Frothingham
Subject: Venture Global - Calcasieu - Migratory Bird Nesting Impact Mitigation Plan
Attachments: USFWS Letter - Nesting Impact Mitigation_02-02-18.pdf

Angela,

Per our conversation this morning, please find attached a migratory bird nesting impact mitigation plan for the Calcasieu Pass Terminal Site. This plan addresses the issues concerning vegetation clearing windows and pre-emptive nesting abatement (hazing) that were discussed during and subsequent to our October 4, 2017 meeting. It is separate but complementary to the preliminary migratory bird habitat mitigation plan that was submitted on October 3, 2017.

The attached plan addresses the Terminal Site as opposed to the Pipeline System. For the latter, migratory bird nesting impact mitigation measures will focus on colonial nesting waterbirds, given the marshland that characterizes much of the pipeline route. During construction, vegetation clearing beyond the pipeline trenchline will be minimal and limited to the footprints of new access roads, the contractor yard, and appurtenant aboveground facilities. As such, instead of being designed around the same potential area-wide seasonal vegetation clearing restriction as the Terminal Site, the mitigation measures for the Pipeline System will be tailored to address construction disturbance in general and to consider nesting windows on a species-by-species and site-specific basis. To this effect, and in accordance with agency recommendations, TransCameron Pipeline will conduct a pre-construction field survey for evidence of nesting colonies of waterbirds in and within 400 meters of the construction workspace, should work be scheduled to overlap with the nesting seasons of potentially occurring species. (The survey of areas beyond the construction footprint would be by remote observation only, rather than an actual walk-though). If evidence of nesting colonies were to be found, appropriate mitigation measures would be determined in follow-up communication with the U.S. Fish and Wildlife Service and/or Louisiana Department of Wildlife and Fisheries on a case-by-case basis.

M-6

Please let me know if you have any questions or comments about the attached plan or if you would like to discuss it in further detail at any time. Thank you for your continued assistance.

Best regards,

Peter G. Bell, Ph.D.
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M-7

CALCASIEU PASS

TransCameron PIPELINE

February 2, 2018

Angela Trahan, Fish and Wildlife Biologist
U.S. Department of the Interior
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646 Cajundome Blvd., Suite 400
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RE: Migratory Bird Nesting Impact Mitigation Plan
Calcasieu Pass Terminal and TransCameron Pipeline Project

Dear Ms. Trahan,

Following our discussion on October 4, 2017 regarding migratory bird impact mitigation at the Calcasieu Pass Terminal location, Venture Global Calcasieu Pass, LLC (Venture Global Calcasieu Pass) has further developed its approach to avoidance and minimization of potential on-site impacts to migratory birds during nesting. The currently proposed approach and its developmental basis are described below.

Background Information

To assist the Federal Energy Regulatory Commission's (FERC) National Environmental Policy Act (NEPA) review, Venture Global Calcasieu Pass submitted Resource Report 3 (Fish, Wildlife, and Vegetation) as part of its Application, dated September 4, 2015, for the Calcasieu Pass Terminal and TransCameron Pipeline Project (Project). Resource Report 3 includes scientific information on migratory bird species that could occur in the Project area and measures to avoid or minimize potential impacts at the Terminal Site. The information is based on literature searches, review of agency and non-governmental organization databases, field surveys conducted by Venture Global Calcasieu Pass's environmental consultant (Natural Resource Group, an ERM Group Company [NRG]), and consultation with both the United States Fish and Wildlife Service (FWS) and the Louisiana Department of Wildlife and Fisheries (LDWF).

Resource Report 3 identifies the onshore species of Migratory Birds of Conservation Concern (BCC) listed for Region 37 (Gulf Coastal Prairie U.S. portion only) (FWS, 2008) and, on this regional basis, indicates that all these species could potentially be affected by the Project. Seasonal occurrence information ("wintering, "year-round", "breeding", and/or "migrating") is provided for each species through review of the FWS Information, Planning, and Conservation System (2015a). Based on the information available at the time of preparation, Resource Report 3 describes avoidance and minimization measures relating to migratory birds as follows:

At the Terminal Site, and where practicable along the pipeline routes, clearing will take place outside of the migratory bird nesting window of March 1 to September 15. Where clearing cannot occur outside of the nesting window, a walkover of the Project area will take place prior to construction. If active nests are detected, they will be avoided until young have fledged. Venture Global Calcasieu Pass and TransCameron Pipeline will implement measures as necessary to decrease the risk of impacts on and the loss of habitat for migratory birds to the level of insignificant, thereby complying with the MOU[1] and the MBTA[2].

With respect to habitat loss and pursuant to agency comment, Venture Global Calcasieu Pass is committed to finalizing the preliminary migratory bird habitat mitigation plan that was submitted to your office on October 3, 2017. With regards to avoidance and minimization of potential nesting impacts associated with vegetation clearing during site preparation, Venture Global Calcasieu Pass has evolved and refined its approach since the submittal of Resource Report 3, based primarily on information obtained from subsequent Project-specific field surveys (as described in NRG's November 2016 report entitled *Migratory Bird Habitat Assessment and Species Observations*,), data available at ebird.org pertaining to site-specific field observations by local ornithologists, and our October 4, 2017 discussion.

Birds of Conservation Concern

The Memorandum of Understanding (MOU) between the FERC and FWS to implement Executive Order 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds) (2011) recognizes an emphasis on BCC species during migratory bird impact mitigation planning for energy-related projects. Consistent with this emphasis, Venture Global Calcasieu Pass further analyzed the FWS list of BCC species for Region 37 and focused on those species with a seasonal occurrence status of "breeding" or "year-round". The analysis of BCC species was further divided into "birds other than colonial nesting waterbirds" and "colonial nesting waterbirds", as discussed separately below.

Birds other than Colonial Nesting Waterbirds (BCC Species)

Based on supplemental information provided directly by the FWS (2017), one species (Le Conte's sparrow) was added to the "birds other than colonial nesting waterbirds" sub-list derived from the full Region 37 BCC list and including those species with a seasonal occurrence status of "breeding" or "year-round". The sub-list is provided below.

- American oystercatcher (*Haematopus palliatus*)
- Bald eagle (*Haliaeetus leucocephalus*)
- Black rail (*Laterallus jamaicensis*)
- Dickcissel (*Spiza americana*)
- Least bittern (*Ixobrychus exilis*)
- Le Conte's sparrow (*Ammodramus leconteii*)
- Loggerhead shrike (*Lanius ludovicianus*)
- Mississippi kite (*Ictinia mississippiensis*)
- Painted bunting (*Passerina ciris*)
- Prothonotary warbler (*Protonotaria citrea*)

[1] Memorandum of Understanding between the FERC and FWS to implement Executive Order 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds) (2011)

[2] Migratory Bird Treaty Act

- Swainson's warbler (*Limnothlypis swainsonii*)
- Swallow-tailed kite (*Elanoides forficatus*)
- Wilson's plover (*Charadrius wilsonia*)

To obtain site-specific information for the 13 BCC species listed above, Venture Global Calcasieu Pass consulted ebird.org for historical species sighting checklists from locations within and around the proposed Terminal area. The checklists for *East Jetty Woods* constituted the primary information source. This location is characterized by scrub-shrub/forested habitat and is mapped east of the walled Terminal Site, within the Eastern Temporary Workspace. Other checklists that were reviewed included those for the East Jetty Beach (geographically proximate to the Jetty Pier Facility south of Venture Global Calcasieu Pass's property) and multiple sites along Davis Road on or near the shoreline of the Calcasieu Ship Channel. From this review, Venture Global Calcasieu Pass determined which of the above-listed BCC species had been historically observed in the area and, for each species recorded, its patterns of seasonal occurrence, the dates on which the species was first seen and last seen, and the total number of individuals counted during any week/month of the year. Recognizing that these data are based on "snapshots" in time and are open to various interpretations and biases, they cannot prove the absence, actual abundance patterns, or seasonal nesting behavior of any particular species. Nonetheless, they do suggest that several of the BCC species are much more likely than others to be observed at the proposed Terminal location.

In concert with the analysis of the ebird.org checklists, Venture Global Calcasieu Pass consulted the Audubon Guide to North American Birds (2017) to corroborate or otherwise update the breeding status information that was provided in Resource Report 3. Of the 13 BCC species noted above, Audubon mapping indicates that, along the Louisiana coast, breeding is absent in 6 species (bald eagle, black rail, dickcissel, Le Conte's sparrow[3], Swainson's warbler, and swallow-tailed kite), breeding is common in 4 species (least bittern, loggerhead shrike, painted bunting, and Wilson's plover), breeding is uncommon in 2 species (Mississippi kite and prothonotary warbler), and any breeding occurs far east of the Project area in 1 species (American oystercatcher).

Of the two BCC species (Mississippi kite and Swainson's warbler) for which breeding is uncommon along the Louisiana coast, neither is likely to nest at the Terminal location. With respect to the Mississippi kite, occurrence records show a restriction to September and early October, outside the breeding season. Also, the Mississippi kite tends to nest in loose colonies and the most recent sighting of multiple (11) individuals at the East Jetty Woods was in 2004. With respect to Swainson's warbler, the only documented local occurrence was one individual at the East Jetty Woods in 1981.

Of the four BCC species that commonly breed along the Louisiana coast, two (loggerhead shrike and painted bunting) favor semi-open country with scattered bushes and trees for nesting, while the other two species (least bittern and Wilson's plover) utilize marshes and beaches, respectively, for this purpose. Based on the ebird.org checklist data for the Terminal location, the loggerhead shrike, painted bunting, and Wilson's plover appear to be the most populous and frequently observed of the 13 BCC species under review. The least bittern appears less numerous but, in addition to rare sightings at the East Jetty Woods (where some marsh wetland does exist), it was more commonly observed at several locations along Davis Road, where

[3] Note that the Audubon mapping shows breeding is absent for LeConte's sparrow, although FWS information for East Jetty Woods (2017) ascribes this species breeding status.

reedgrass stands fringing the roadside ditch could offer suitable habitat.

Colonial Nesting Waterbirds (BCC Species)

Prior to submittal of the FERC Application, the FWS (2015b) provided a table of 26 colonial nesting waterbird species found in Louisiana, 5 of which (black skimmer [*Rynchops niger*], gull-billed tern [*Gelochelidon nilotoca*], least tern [*Sterna antillarum*], reddish egret [*Egretta rufescens*], and sandwich tern [*Thalasseus sandvicensis*]) appear on the Region 37 BCC list. However, subsequent to the FERC Application, FWS provided a revised abbreviated list of those colonial nesting waterbird species (both BCC and non-BCC) that could feasibly have breeding colonies affected by the Project and only one of the BCC species (reddish egret) was represented on this list.

To obtain site-specific information for the reddish egret, Venture Global Calcasieu Pass consulted ebird.org for historical species sighting checklists from locations within and around the proposed Terminal area. The checklists that were reviewed included those for the East Jetty Woods, East Jetty Beach, and multiple sites along Davis Road on or near the shoreline of the Calcasieu Ship Channel. Seasonal occurrence patterns for the East Jetty Beach suggest that the reddish egret may be present in the Project area throughout the year; however, Project-specific field assessments conducted by NRG between 2014 and 2016 (NRG, 2016), and review of the Louisiana Natural Heritage Program database (LDWF, 2015), revealed no colonies of the reddish egret or any other BCC waterbird species in, or within 400 meters of, the Terminal's construction footprint. As such, no impacts on nesting colonies of BCC waterbird species are anticipated during site preparation.

Colonial Nesting Waterbirds (other than BCC Species)

Of the 21 non-BCC species of colonial nesting waterbirds for which FWS (2015b) provided information prior to the submittal of Resource Report 3, the 14 species listed below may be found in the Project area, according to subsequent information received from the FWS (2015c).

- Anhinga (*Anhinga anhinga*)
- Olivaceous cormorant (*Phalacrocorax brasilianus*)
- Great blue heron (*Ardea herodias*)
- Great egret (*Ardea alba*)
- Snowy egret (*Egretta thula*)
- Little blue heron (*Egretta caerulea*)
- Tricolored heron (*Egretta tricolor*)
- Cattle egret (*Bubulcus ibis*)
- Green-backed heron (*Butorides virescens*)
- Black-crowned night heron (*Nycticorax nycticorax*)
- Yellow-crowned night heron (*Nyctanassa violacea*)
- White ibis (*Eudocimus albus*)
- White-faced ibis (*Plegadis chihi*)
- Roseate spoonbill (*Platalea ajaja*)

Review of ebird.org checklists indicates that all the above-listed species have been previously documented in the vicinity of the Terminal area, including the East Jetty Woods, and their seasonal patterns of occurrence generally indicate presence during their respective breeding

seasons, the anhinga being the exception with occurrence restricted to late September/early October. However, as with the BCC species of colonial nesting waterbirds, Project-specific field assessments conducted by NRG between 2014 and 2016 (NRG 2016), and review of the LHNP database (LDWF, 2015), revealed no colonies in, or within 400 meters of, the Terminal construction footprint. As such, no impacts on nesting colonies of the above-listed bird species are anticipated during site preparation.

Proposed Mitigation Measures for Migratory Bird Nesting Impacts

The long seasonal restriction on clearing (March 1 – September 15) around the nests of migratory birds, as described in Resource Report 3, was based on an initial conservative assessment of potential species presence and abundance, and incorporated the time windows associated with species that FWS subsequently excluded from the list of colonial nesting waterbirds potentially affected by the Project (FWS, 2015c). Comparative time windows for similar Gulf Coast projects have been shorter, more closely reflecting the nesting periods of migratory species other than colonial waterbirds. For example, the time window for the Lake Charles LNG Liquefaction Project was March 1 to July 31 and the time window for the Freeport LNG Liquefaction Project was April 1 to July 15. Based on the proximity of the Lake Charles LNG Liquefaction Project to Venture Global Calcasieu Pass's proposed Terminal site location, a time window of March 1 to July 31 is considered appropriate and is integral to the nesting impact mitigation plan discussed below.

While any vegetation clearing directly associated with Project-specific site preparation is subject to FERC authorization, the routine mowing and brush-hogging that is undertaken by the existing property owner is expected to continue until FERC-authorized site preparation begins. Assuming that mowing/brush-hogging occurs early in the year (before March 1), the resultant landscape would likely be less conducive to nesting birds than if the vegetative cover was unmaintained.

Based on the more detailed analysis presented in the preceding paragraphs, better definition of site preparation and scheduling, a revised clearing-restriction time window of March 1 to July 31, and our October 4 discussion, the following sequential measures are proposed to mitigate the potential nesting impacts of site clearing on BCC species and non-BCC colonial waterbirds.

Construction Scheduling

- Currently, pending receipt of all required permits and approvals, Project-specific vegetation clearing during site preparation is projected to be completed outside the clearing–restriction window of March 1 through July 31, precluding the need to implement further mitigation measures to avoid or reduce nesting impacts on BCC species and non-BCC colonial waterbirds.

Pre-construction Site Survey

- Should the construction schedule require that vegetation clearing take place wholly or partly within the stated clearing restriction window, Venture Global Calcasieu Pass will conduct a walk-through site survey approximately four weeks prior to March 1 to determine species present at the Terminal location. The survey will focus on the following species, which have the greatest potential to exhibit nesting behavior according to the latest analysis:

BCC Species (Other than Colonial Nesting Waterbirds)

- Least bittern (*Ixobrychus exilis*)
- Loggerhead shrike (*Lanius ludovicianus*)
- Painted bunting (*Passerina ciris*)

Colonial Nesting Waterbirds

- Olivaceous cormorant (*Phalacrocorax brasilianus*)
- Great blue heron (*Ardea herodias*)
- Great egret (*Ardea alba*)
- Snowy egret (*Egretta thula*)
- Little blue heron (*Egretta caerulea*)
- Tricolored heron (*Egretta tricolor*)
- Cattle egret (*Bubulcus ibis*)
- Reddish egret (*Egretta rufescens*)
- Green-backed heron (*Butorides virescens*)
- Black-crowned night heron (*Nycticorax nycticorax*)
- Yellow-crowned night heron (*Nyctanassa violacea*)
- White ibis (*Eudocimus albus*)
- White-faced ibis (*Plegadis chihi*)
- Roseate spoonbill (*Platalea ajaja*)

- For each species, the field survey will target specific habitats that offer the greatest nesting potential. The survey will proceed as follows:

  BCC Species (Other than Colonial Nesting Waterbirds)

  For the loggerhead shrike, painted bunting, and least bittern, species abundance will be documented, together with evidence of any pre-nesting behavior (e.g., courtship rituals). All three species are known to begin nesting along the Gulf Coast in March. Specific locations where the probability of nesting is considered strong, based on the recorded presence of favorable habitat, spatiotemporal patterns of distribution and abundance, and/or behavioral characteristics, will be identified and targeted for the implementation of hazing techniques to discourage nesting ahead of vegetation clearing and site preparation.

  Colonial Nesting Waterbirds

  Given the previously documented lack of evidence to suggest that any colonial waterbirds nest at the Terminal location, it is not anticipated that the pre-construction survey will yield any information to the contrary. However, the strongest evidence to suggest the possibility of on-site nesting would likely be manifest in groupings of old nests within favorable habitat and, in addition to species counts and courtship behavior, such evidence would be documented during the site survey. Any areas exhibiting the potential for colonial nesting will be targeted for the implementation of hazing techniques to discourage nesting ahead of vegetation clearing and site preparation.

Implementation of Hazing Techniques

- If site preparation has not started by February 15, hazing techniques will be implemented forthwith at targeted habitats, based on the results of the field surveys described above. If vegetation clearing is initiated between March 1 and July 31, hazing at any given location will continue until clearing is completed at that location. Hazing will be discontinued if and when site preparation is no longer expected to commence before July 31, based on a revised Project schedule.

- A practical hazing program for the Terminal location may involve one or more of the techniques listed below.

    - Auditory Techniques

        - Pyrotechnics – manually-operated devices that frighten birds by producing loud bangs, whistling noises, or bright flashes of light (e.g., pistol-fired cartridges, shotgun-fired shell crackers, and flare gun-fired rockets).

        - Propane Cannons – produce a loud, directional blast at regular or random intervals and operate automatically after deployment.

        - Broadcast Calls and Sounds – various automatic devices that broadcast sound (e.g., distress and alarm calls) in the audible range of birds.

        - Clappers – wooden boards that are manually struck together to produce a sharp cracking sound heard up to 1/8-mile away.

        - Air Horns – manually or automatically operated to produce a very loud noise at regular or random intervals.

    - Visual Deterrents

        - Mylar Tape or Balloons – reflective tape or balloons tied to stakes or woody vegetation - move in the wind and flash when they reflect sunlight. Depending on wind speed, the tape may also produce a humming or crackling noise when it moves.

        - Flags – made of sheets of plastic tied to stakes or woody vegetation.

The actual combination of techniques initially selected will be based on the results of the pre-construction survey and tailored to address the specific habitat conditions and species profile within any given area at the Terminal location. Due to the potential need to implement a long-term hazing program on a continual basis from mid-February through July, Venture Global Calcasieu Pass anticipates a flexible, integrated program that 1) can be adapted to changing conditions on a real-time basis, 2) avoids or minimizes bird habituation to any particular method, and 3) incorporates a variety of techniques, including direct human intervention, deployment of automatic auditory devices (e.g., clappers), and visual deterrents (e.g., mylar tape). Direct human intervention will be an important deterrence element of the program, through enactment of manual measures (e.g., clappers) and the presence of personnel and all-terrain vehicles during frequent monitoring and maintenance patrols. Venture Global Calcasieu Pass will continue to coordinate with the USFWS during program development and implementation.

We appreciate the opportunity to present this nesting impact mitigation plan, understanding that additional details will be developed through on-going communication with your office. If you have any questions or comments, please contact me by e-mail at pbell@vglng.com, by phone at 281-972-7021, or at the letterhead address.

Sincerely,

Venture Global LNG, Inc.

Peter G. Bell, Ph.D.
Vice President, Environmental and Regulatory

cc. Michael Seymour (LDWF)
Ben Frothingham (Venture Global LNG, Inc.)
Fory Musser (Venture Global LNG, Inc.)

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U.S. Fish and Wildlife Service. 2015c. Letter dated September 24, 2015 from Brad S. Rieck (FWS Deputy Field Supervisor, Louisiana Ecological Services Office) to D. Jones (NRG).

U.S. Fish and Wildlife Service. 2017. E-mail dated May 22, 2017 from A. Trahan (Fish and Wildlife Biologist) to P. Bell (Venture Global LNG, Inc.).

United States Department of the Interior

FISH AND WILDLIFE SERVICE
646 Cajundome Blvd.
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Lafayette, Louisiana 70506

February 21, 2018

Mr. David Butler
Natural Heritage Program
Louisiana Department of Wildlife and Fisheries
Post Office Box 98000
Baton Rouge, Louisiana 70898

Subject: Venture Global Calcasieu Pass, LLC, Cheniere Habitat Restoration and "Migratory Bird Nesting Impact Mitigation Plan"

Dear Mr. Butler:

Please reference the Federal Energy Regulatory Commission's (FERC) January 20, 2015, Notice of Intent to Prepare an Environmental Impact Statement for the Proposed Venture Global Calcasieu Pass and TransCameron Pipeline, LLC, Calcasieu Pass Liquefied Natural Gas (LNG) Project (Venture Global Calcasieu Pass), Request for Comments on Environmental Issues, and Notice of Public Scoping Meeting (Calcasieu Pass Project Docket No. PF15-2-000), and their November 29, 2017, Notice of Schedule for Environmental Review (Docket Nos. CP15-550-000 and CP15-551-001). In coordination with the Louisiana Department of Wildlife and Fisheries (LDWF) and the Fish and Wildlife Service (Service), Venture Global Calcasieu Pass is proposing to restore cheniere habitat adjacent to and in association with the development of the LNG production, storage, and export terminal (terminal facilities) at an approximately 828.6-acre site east of the Calcasieu Ship Channel in Cameron Parish, Louisiana. The proposed restoration plan offsets impacts to cheniere habitat that will occur as a result of the permanent LNG terminal facility.

The Service provides the attached habitat assessment for cheniere impacts associated with the proposed terminal facilities as well as a habitat assessment quantifying benefits associated with the proposed restoration plan. The assessments and recommended conservation measures are provided in accordance with provisions of the National Environmental Policy Act (NEPA) of 1969 (83 Stat. 852; 42 U.S.C. 4321 *et seq.*) and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

Forested and scrub-shrub habitats within 100 kilometers (62 miles) inland of the Gulf coastline are considered important stopover habitat for neo-tropical migrants, as these habitats are the first

stop for food and water after the long journey across the Gulf of Mexico (Gauthreaux 1975, in Barrow et al 2005). The chenieres of southwestern Louisiana and coastal forests of the upper Texas coast are documented as a key migration route that receives peak densities of most trans-Gulf migrants (Gauthreaux, Jr. et al. 2006, and Barrow et al. 2005). Many neo-tropical migrants are species of conservation concern identified by the Service and by the LDWF, and while some of them may not breed in Louisiana, they are dependent of these coastal habitats during migration. The Service intends to evaluate the need for listing species under the Endangered Species Act (e.g. golden-winged warbler and black rail) that depend on these coastal habitats.

Based on Natural Resource Group's habitat assessment and further investigations by Service personnel, the following upland impacts were assessed using the Coastal Wetlands Planning, Protection and Restoration Act, Wetland Value Assessment (WVA) Methodology, Coastal Cheniere/Ridge Community Model: 1) Permanent, Scrub-Shrub Upland (11.7 acres); 2) Temporary, Scrub-Shrub Upland (5.5 acres); 3) Permanent, Upland Pasture/Grassland (151 acres); and 4)Temporary, Upland Pasture/Grassland (57 acres). Based on that assessment 45.68 average annual habitat units (AAHUs) would be lost in association with removing 225.2 acres of habitat either temporarily or permanently (Table 1).

A preliminary analysis was conducted to estimate acres needed to restore lost habitat value. It was determined that 85 acres of pasture restored to a forested cheniere habitat could offset the 225.2 acres of cheniere impacts. This is based on the assumption that optimal conditions identified by the model will be achieved by the end of the project life (i.e., 20 years). A previous version of the analysis produced 54 acres, or 29 AAHUs. Because we presented Venture Global Calcasieu Pass with the 54-acre-value (29 AAHUs) needed to offset losses, we continue to support that habitat assessment outcome.

Once construction of the LNG facility is complete, the topography of the 47.1 acre temporary workspace will be restored to pre-project conditions to the greatest extent possible, and a total of 76.64 acres will be designated for restoration under the Cheniere Habitat Restoration Plan (Venture Global Calcasieu Pass "Preliminary Migratory Bird Habitat Mitigation Plan"). An estimated 29.48 acres of upland cheniere habitat will be reforested of which 0.1 acres is classified as palustrine scrub-shrub wetland habitat. Also, 26.94 acres of upland pasture will be set aside as a no-grazing area allowing natural succession along those chenieres to take place. Of the 26.94 acres designated as a no-grazing area, 0.57 acres is comprised existing mature live oak and associated understory habitat, and 0.24 acres is palustrine scrub-shrub wetland habitat.

Interspersed within the upland pasture is 20.22 acres of wetlands that will also be restored and designated as no-grazing area. These wetland areas are associated with the cheniere ridge topography formed from the deposition of the relict beaches. According to discussions with the applicant these wetlands will be restored "to previous conditions to the extent practicable" as a requirement of the wetland regulatory process; however, protection of these areas from cattle grazing is a function of the migratory bird conservation plan. At this time the requirements of the wetland regulatory permit are not known. These assumptions and benefits are tentative; final benefits will be based on the requirements of the Coastal Zone Management and Clean Water Act permits. Restoration and reforestation of adjacent upland habitats along with the no-grazing

protection will further increase the value of these habitats under the future-with-project conditions. See Table 1 for a summary of habitat acres restored and the AAHUs provided.

Table 1: Summary of Impacts and Benefits Analysis

Impacts

Habitat	Acres	AAHUs
Permanent Scrub-Shrub (SS) Upland	11.7	-6.68
Temporary SS Upland	5.5	-3.63
Permanent Grassland	151	-31.66
Temporary Grassland	57	-3.72
Total	225.2	-45.68

Restoration

Habitat	Acres	AAHUs
Forested Chenier Restoration	29.48	14.49
No - Grazing Uplands	26.94	7.11
No - Grazing Wetlands	20.22	11.88
Total	76.64	33.48

The Service supports the cheniere restoration plan ("Preliminary Migratory Bird Habitat Mitigation Plan") as proposed by Venture Global Calcasieu Pass. To ensure that optimum habitat conditions (i.e., quality and quantity) defined in the Coastal Cheniere/Ridge Community WVA Model are met and that the project is successful, the Service offers the following additional conservations measures which were also provided within the Cheniere Habitat Restoration Plan ("Preliminary Migratory Bird Habitat Mitigation Plan") Project Information Sheet:

1. Planting guidelines provided in the Cheniere Habitat Restoration ("Preliminary Migratory Bird Habitat Mitigation Plan") Project Information Sheet (Page 3) recommend that the entire forested cheniere feature be planted with mast-producing species suited to the soil(s) and site conditions. We recommend using tree species and mid-story species that may occur at coastal stopover sites. A list of species has been provided in the project information sheet.

2. A preferred planting density that could provide desired stand condition for the forested cheniere feature has also been provided. It is suggested that planting of mast-producing species would be on by 9-foot x 9-foot centers (538/acre) and mid-story species on 20-foot x 20-foot centers (109/acre) in order to quickly establish a dense canopy and to minimize the re-establishment and growth of invasive species such as Chinese tallow-tree and tamarisk.

3. A monitoring plan should be developed that will define initial, interim, and long-term success criteria, describe how those criteria will be measured, and define adaptive measures that will be implemented should success criteria not be met.

4. The monitoring plan should also include monitoring and management measures for invasive species control (e.g., Chinese tallow-tree, Chinese privet, and tamarisk). We recommend that no more than 10% of the site be comprised of non-native species.

5. The features of the Cheniere Habitat Restoration Plan are within the limits of the proposed terminal facility footprint. As such, the features of the plan should be included in the project description within the FERC permit and the NEPA evaluation. This will ensure that the plan is implemented and is considered equally with the project goals.

On February 2, 2018, Venture Global Calcasieu Pass provided a "Migratory Bird Nesting Impact Mitigation Plan" that outlines measures to avoid and minimize potential on-site construction impacts to migratory birds during the nesting season (Appendix D of the Final Cheniere Habitat Restoration Project Information Sheet). Based on no-activity time windows implemented by similar projects in the vicinity and nesting activity windows of species likely to occur at the site, Venture Global Calcasieu Pass proposes a no-clearing activity time window of March 1 to July 31, at their terminal site location. Provided that project-specific vegetation clearing during site preparation is completed outside that no-clearing activity time window, the need to implement further mitigation measures to avoid or reduce nesting impacts on species of conservation concern and colonial waterbirds is not required.

Should the construction schedule require that vegetation clearing take place wholly or partly within the no-clearing activity time window, Venture Global Calcasieu Pass will conduct a walk-through site survey approximately four weeks prior to March 1 to determine species present at the terminal location. The survey will focus on the species most likely to nest on-site and will focus on the areas that provide the most suitable habitat. If site preparation has not started by February 15, hazing techniques will be implemented immediately within targeted habitats, based on the results of the field surveys. If vegetation clearing is initiated between March 1 and July 31, hazing at any given location will continue until clearing is completed at that location. Venture Global Calcasieu Pass will continue to coordinate with the resource agencies during program development and implementation. The Service supports this plan.

Finally, gas flaring occurs at liquefied natural gas (LNG) facilities, and other industrial plants and oil rigs, during plant start up and shutdown events as well as during unplanned pressure release events. The flame emitted to burn off flammable gas during a flaring event can attract birds especially at night. Nighttime attraction of lighting during inclement weather has proved to be a key liability for birds, and being that LNG facilities are located along the Gulf shoreline within the direct migratory path of neotropical songbirds that threat could be even more pronounced. Guidance has been developed by the Service to assist with the design and operation of gas flare structures to avoid and minimize impacts to migratory birds (enclosed). Conservation recommendations provided are discretionary activities to minimize or avoid adverse effects of a proposed action on migratory birds. They should in no way impede any emergency actions.

We appreciate the opportunity to assist LDWF and the applicant in the development of a conservation plan that improves and protects imperiled habitats and benefits at-risk species. We commend the applicant's leadership and commitment to ensure the protection of species of

conservation concern and of the unique qualities of cheniere habitat. If you have any questions regarding the specific information contained in this letter, please contact Ms. Angela Trahan (337-291-3137) of this office.

Sincerely,

Joseph Ranson
Field Supervisor
Louisiana Ecological Services Office

Enclosures

cc: FERC, Washington D.C., (Attn: Nicholas Tackett)
USACE, New Orleans District, LA (Attn: James W. Little, Jr.)
LDWF, Natural Heritage Program, Baton Rouge, LA (Attn: Michael Seymour)
LDNR, Office of Coastal Management, Baton Rouge, LA (Attn: Andi Zachary)
Venture Global Calcasieu Pass, Washington, DC (Attn: Peter Bell)

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Conservation Measures for Operation of Flare Stacks

Fish and Wildlife Service
Louisiana Ecological Services Field Office

February 15, 2018

Issue

Gas flaring occurs at liquefied natural gas (LNG) facilities, and other industrial plants and oil rigs, during plant start up and shutdown events as well as during unplanned pressure release events. The flame emitted to burn off flammable gas during a flaring event can attract birds especially at night. Nighttime attraction of lighting during inclement weather has proved to be a key liability for birds, and being that LNG facilities are located along the Gulf shoreline within the direct migratory path of Neotropical songbirds that threat could be even more pronounced. In September 2013, approximately 7,500, migrating songbirds were attracted to and killed by a flare at a LNG terminal in Saint John, New Brunswick, Canada. This event occurred during a foggy, low cloud cover, early fall evening along important migratory routes for songbirds creating conditions that are described as the perfect storm (Jenny Mandel, E&E reporter, *October 11, 2013*). Similar incidents have occurred at flares on offshore oil and gas installations.

The following guidance has been developed to assist with the design and operation of gas flare structures to avoid and minimize impacts to migratory birds. Conservation recommendations provided are discretionary activities to minimize or avoid adverse effects of a proposed action on migratory birds. They should in no way impede any emergency actions.

Conservation Measures

1. To minimize the potential impacts to migrating birds during a flare event:
    a. avoid flaring at night,
    b. avoid flaring during low visibility (i.e., fog, storm event),
    c. avoid flaring during peak spring (mid-March through April) and fall (September and October) migrations depending on the location; and,
    d. lighting around the facility and on the flare stacks should follow FWS communication tower guidance, http://www.fws.gov/migratorybirds/pdf/management/usfwscommunicationtowerguidance.pdf

2. Mortality of birds perching on flare stacks results from direct incineration or by inhalation of the toxic gas if the flare igniter fails to work properly. Consideration should be given to installing anti-perching devices on flare stacks to prevent raptors and other birds from using them as perch sites. Open vent stack equipment, such as heater-treaters, separators, and dehydrator units, should be designed and constructed to prevent birds and bats from entering or nesting in or on such units, and to the extent practical, to discourage birds from perching on the stacks. Installing cone-shaped mesh covers on all open vents is one suggested method. Flat mesh covers are not expected to discourage perching and

are not acceptable. < http://www.fws.gov/mountain-prairie/contaminants/contaminants1f.html >

3. Consideration should be given to implementing an audible system (e.g. frightening device) that could also aid in deterring birds from the area during a flare event. Per the U.S. Department of Agriculture, Prevention and Control of Wildlife Damage (1994), useful frightening devices include broadcasted alarm and distress calls, pyrotechnics, exploders, and other miscellaneous auditory and visual frightening devices. No single technique can be depended upon to solve the problem. Numerous techniques must be integrated into a frightening program, and qualified knowledgeable personnel should be involved in the deterrent activities <http://icwdm.org/Handbook/birds/bird_e19.pdf>.

Migration Monitoring

Bird migration projections should be actively monitored, and maintenance activities (flaring events) should be planned to avoid peak migration periods and adverse weather conditions as much as possible. We recommend coordinating with U.S. Geological Survey (USGS), Radar Technology Program to develop a monitoring plan to determine peak migrations events in the area and how birds may be using the areas around the facility. Please contact, Wylie Barrow, Research Wildlife Biologist with USGS (barroww@usgs.gov, 337-266-8668).

Survey Plan

During all flaring events surveys similar to those conducted for communication towers should be conducted to determine if bird mortality has occurred. Please refer to the "Briefing Paper on the Need for Research into the Cumulative Impacts of Communication Towers on Migratory Birds and Other Wildlife in the United States" (Attachment) for examples of sampling methods. Survey plans should be reviewed by the Service prior to implementation, and survey results should be provided to the Service upon request.