An Ecological Framework for Reviewing Compensatory Mitigation: How Interests in Property May Affect Mitigation Projects

Factors Affecting Cost and Feasibility of Mitigation Projects

February 20, 2020

Factors Affecting Cost and Feasibility of Mitigation Projects

Regulatory Drivers
- Federal
- State
- Local

Competing Property Interests
- Development
- Water Rights
- Mineral Rights
- Utility Conflicts

Existing Conditions
- Soils
- Topography
- Hydrology Source
- Cultural Resources
- RT&E Species
- Hazardous Materials

Newton Creek Tidal Mitigation Site

PROS

- Upland Waterfront Property with Willing Landowner
- Within Developed Urban Area, Abutting Natural Marshes
- Sufficient Land Area to Develop a Tidal Wetland Bank
- Demand Modeling and ProForma Calculated for Site Suggest Economic Feasibility
- Early Buy-In from the Interagency Review Team

Newton Creek Tidal Mitigation Site

Due Diligence

- **Property Considerations**
  - Site Development Costs
  - Requires Rezoning
- **Regulatory Considerations**
  - Chesapeake Bay Preservation Act
  - Conflicting Agency Mitigation Crediting Policies
  - Protected Species
  - Cultural Resources
  - Agency Mitigation Banking Instrument Approval Timelines

Newton Creek Tidal Mitigation Site

Concept Design

- 4.48 Acres Created Tidal Wetlands
- 0.80 Acres Preserved Tidal Wetlands
- 2.47 Acres Upland Forested Buffer Enhancement
- 4.68 Credits Generated

Newton Creek Tidal Mitigation Site

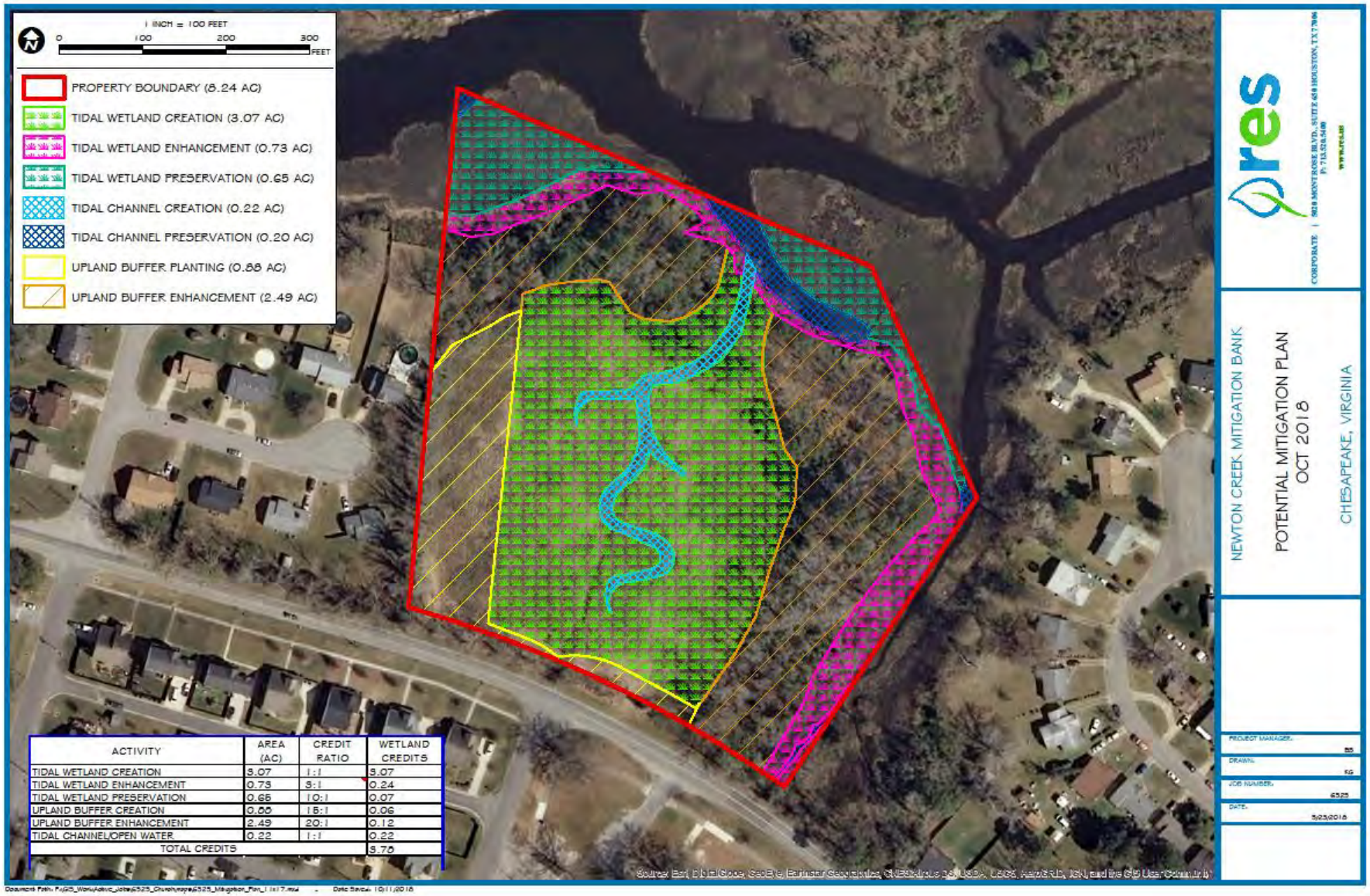
Revised Concept Design with 100’ RPA Buffer

- 3.48 Acres Created Tidal Wetlands
- 0.73 Acres Tidal Wetland Enhancement
- 0.65 Acres Tidal Wetland Preservation
- 0.36 Acres Tidal Channel Creation
- 0.20 Acres Tidal Channel Preservation
- 1.58 Acres Upland Forested Buffer
- **4.29 Credits Generated**

Newton Creek Tidal Mitigation Site

Revised Concept Design after IRT Site Visit

- 3.07 Acres Tidal Wetland Creation
- 0.73 Acres Tidal Wetland Enancement
- 0.65 Acres Tidal Wetland Preservation
- 0.22 Acres Tidal Channel Creation
- 0.20 Acres Tidal wetland Preservation
- 3.37 Acres Upland Forested Buffer
- 3.74 Credits Generated

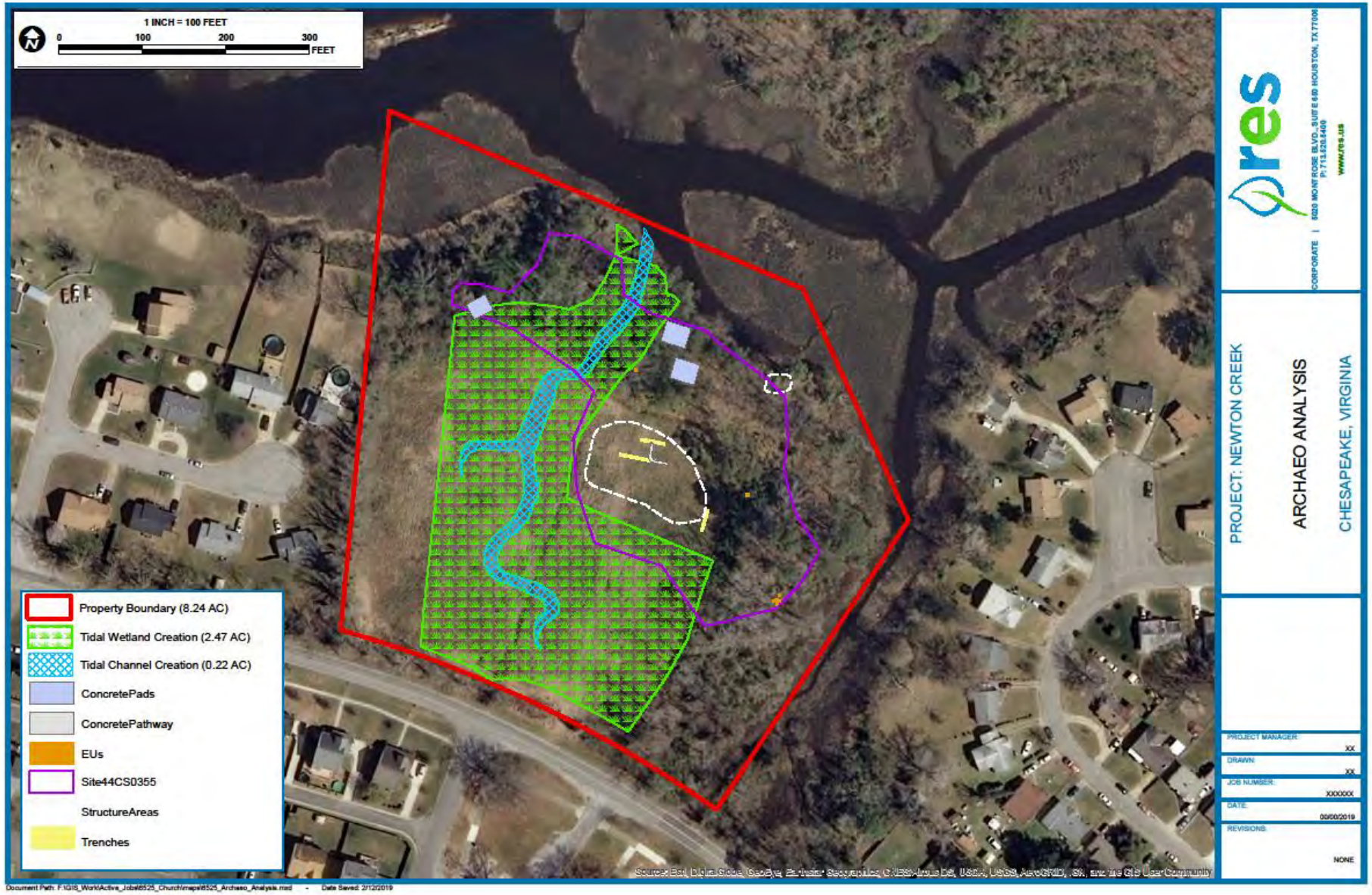


ACTIVITY	AREA (AC)	CREDIT RATIO	WETLAND CREDITS
TIDAL WETLAND CREATION	3.07	1:1	3.07
TIDAL WETLAND ENHANCEMENT	0.73	3:1	0.24
TIDAL WETLAND PRESERVATION	0.65	10:1	0.07
UPLAND BUFFER CREATION	0.88	15:1	0.06
UPLAND BUFFER ENHANCEMENT	2.49	20:1	0.12
TIDAL CHANNEL/OPEN WATER	0.22	1:1	0.22
TOTAL CREDITS			3.76

Newton Creek Tidal Mitigation Site

Revised Concept Design After IRT requested revisions and VMRC Input

- 2.47Acres Created Tidal Wetlands
- 0.22 Acres Tidal Wetland Channel Creation
- 0.41 Acres Upland Forested Buffer
- 2.71 Credits Generated



Phillips Creek Nontidal Wetland Mitigation

- Property Owned by Conservation Organization
- Immediately Abuts Existing Conservation Lands
- Sufficient Land Area to Develop Necessary Credits
- Preliminary Feasibility Studies Suggested Construction Costs on the High End, but Feasible Because no Land Costs
- Project Proponent Gained Approval from the Interagency Review Team to put out for Bids
- Concept Designs Developed and Provided to Prospective Bidders
- A Site Visit Was Required to Submit a Bid

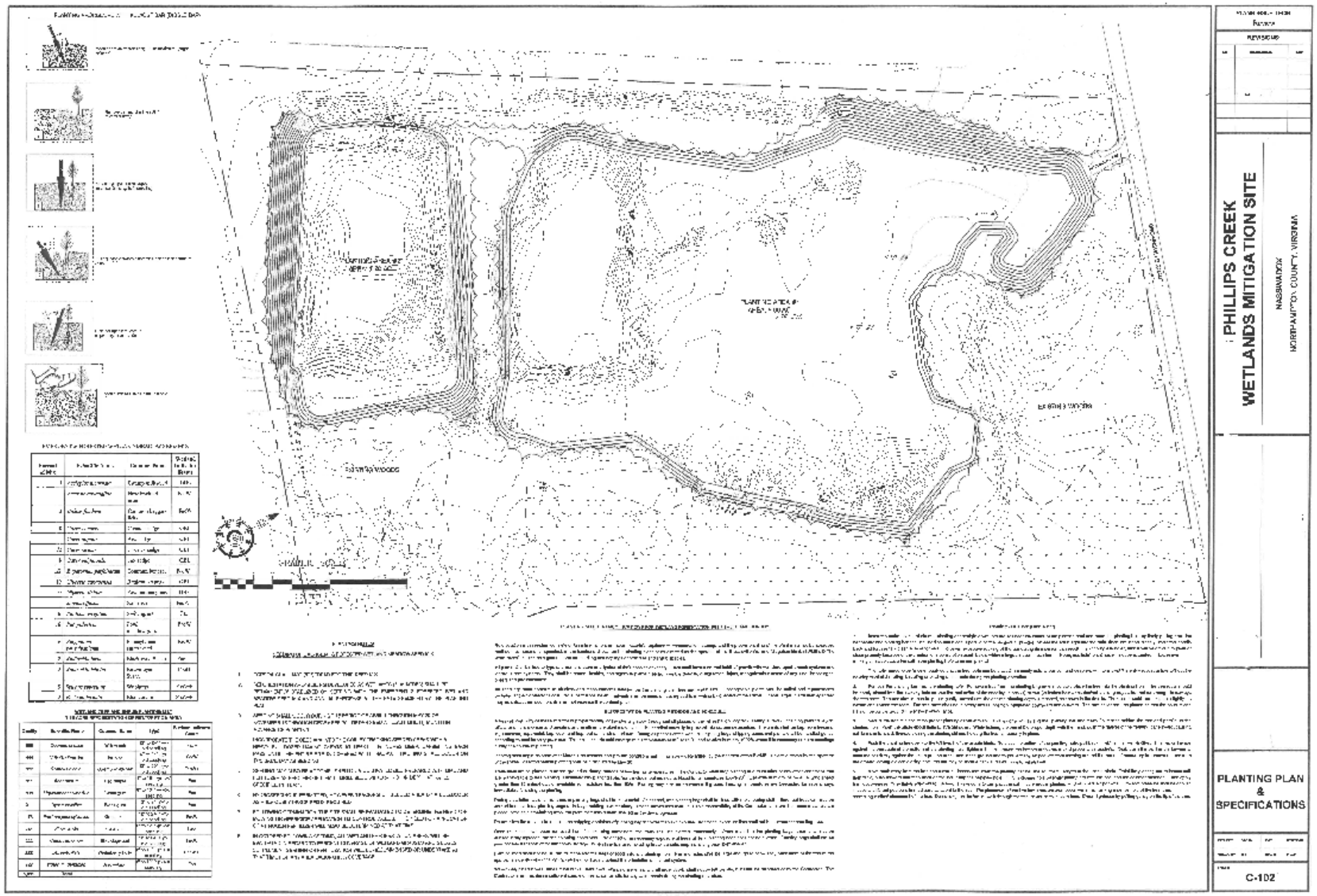
Phillips Creek Nontidal Wetland Mitigation

Aerial View

Phillips Creek Nontidal Wetland Mitigation

Preliminary Design

- Excavate Upland Area down to Wetland Elevation
- Use Excavated Material from Upland Area to Fill Ponds and Raise Elevation to Wetland Elevation
- Assumed a Clean Cut and Fill Balance



Phillips Creek Nontidal Wetland Mitigation

Due Diligence

- RES Staff Conducted Preliminary Site Visit to Verify Site Conditions
- Site Visit Confirmed Some Preliminary Concerns and Required Additional Data
- RES Requested Permission to Conduct Additional Subsurface Investigations

Phillips Creek Nontidal Wetland Mitigation

Concerns Identified During Due Diligence

- Subsurface Investigations Confirmed Validity of Concerns
- Costs to Develop Site Would be More Than Double the Original Cost Estimates
- Excessive Costs and Potential Presence of Hazardous Materials Killed the Site

Phillips Creek Nontidal Wetland Mitigation

Positive Ending

- RES Found a Better Site Nearby that Could Be Developed at Lower Cost Per Credit
- Able to Obtain Expedited Agency Buy-In for New Site
- Currently Moving Forward with Land Acquisition and Site Design

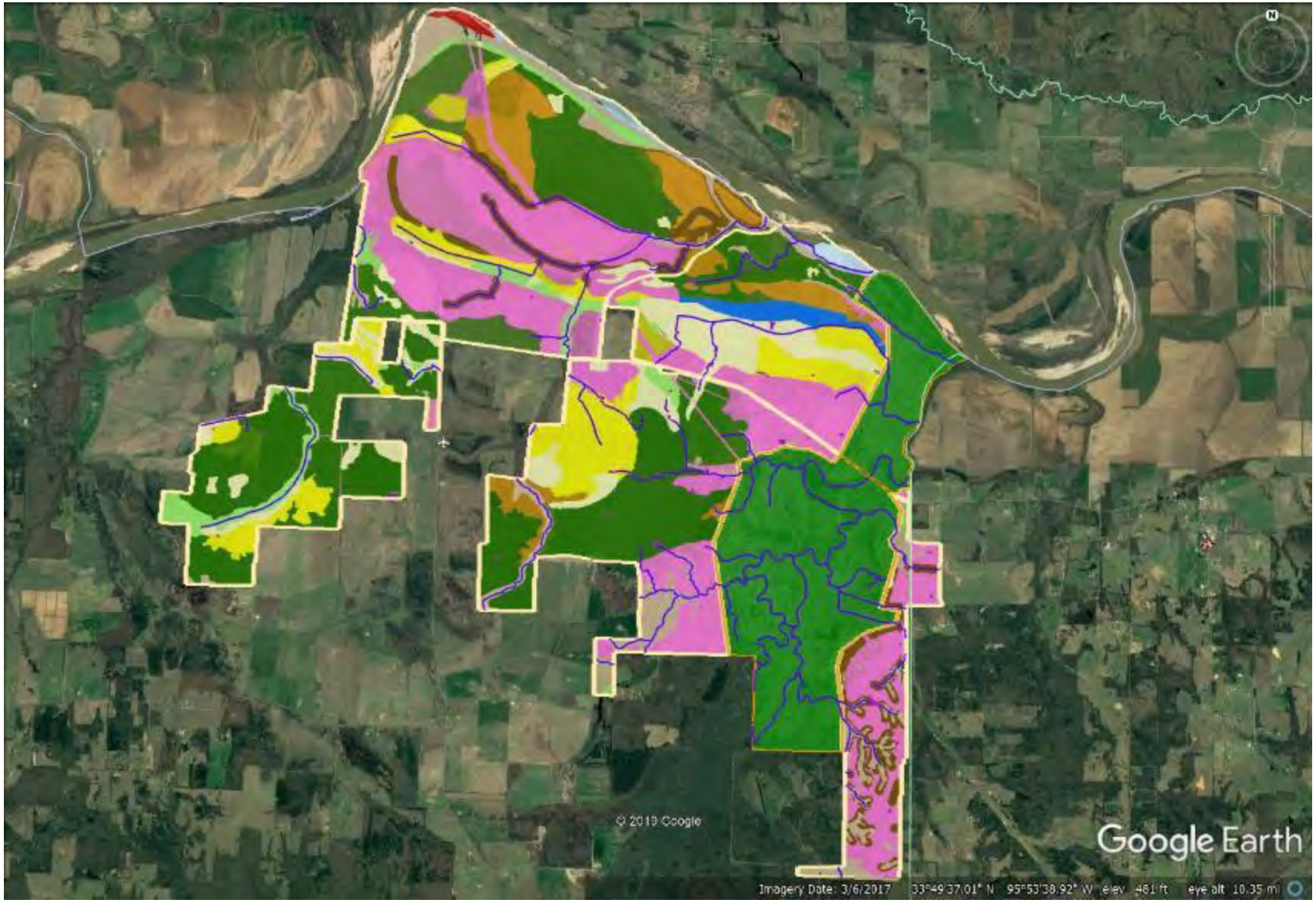
Lower Bois d'Arc Creek Reservoir Mitigation

- Over 14,000 Acres of Habitat Mitigation and over 392,000 Linear Feet of Stream Restoration, Enhancement, and Establishment
- Mitigation Requirements Established by Others and Concept Plans Prepared by Others.
- RES Assumed Risk
- Due Diligence Studies and Design Optimization
- Utility Conflicts
- Cultural Resource Protection Challenges

Lower Bois d'Arc Creek Reservoir Mitigation

Conceptual Design

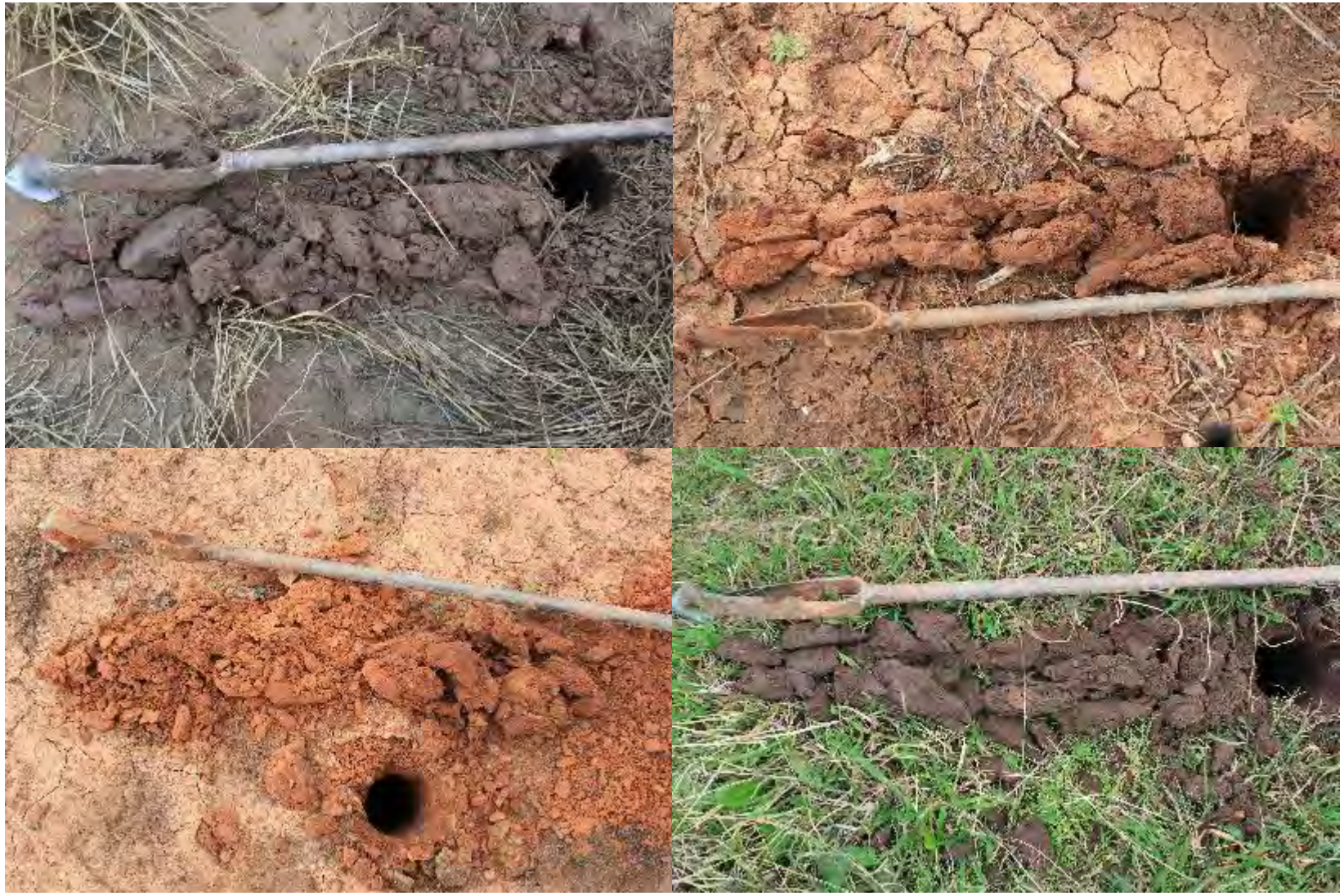
- Concept Design and Mitigation Requirements Established during NEPA Process and Permitting
- RES Committed to Deliver Specified Acreages of Habitat and Habitat Functions, but Reserved the Right to Redesign to Decrease Risk



Lower Bois d'Arc Creek Reservoir Mitigation

Final Design

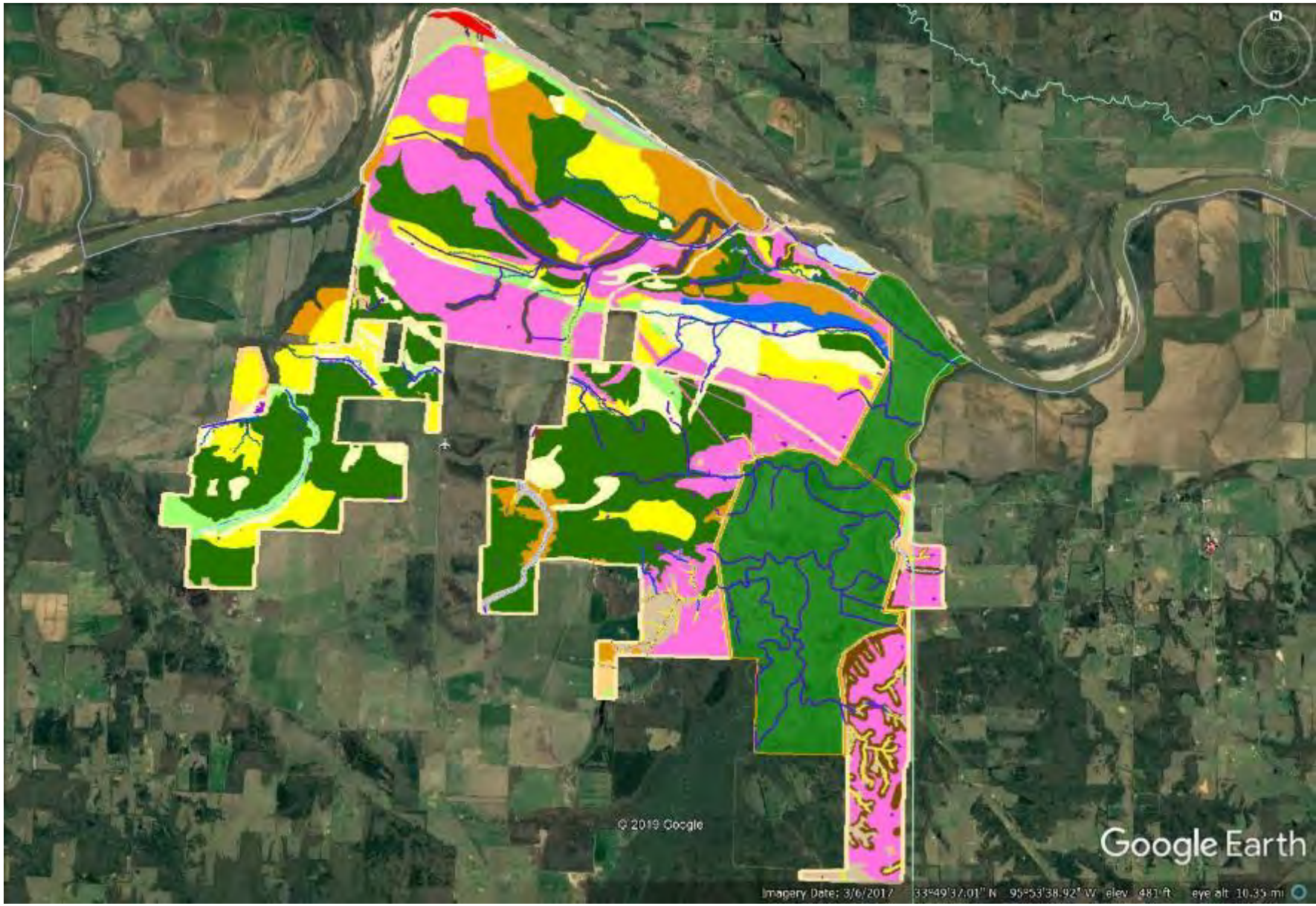
- Conducted Extensive Soils Investigations and Developed Risk Mapping for Different Habitat Types
- Relocated Some Habitats to Areas of Lower Risk
- Coordinated Habitat Revisions with Cultural Resources Concerns, Utility Concerns, and Stream Designs



Lower Bois d'Arc Creek Reservoir Mitigation

Final Design

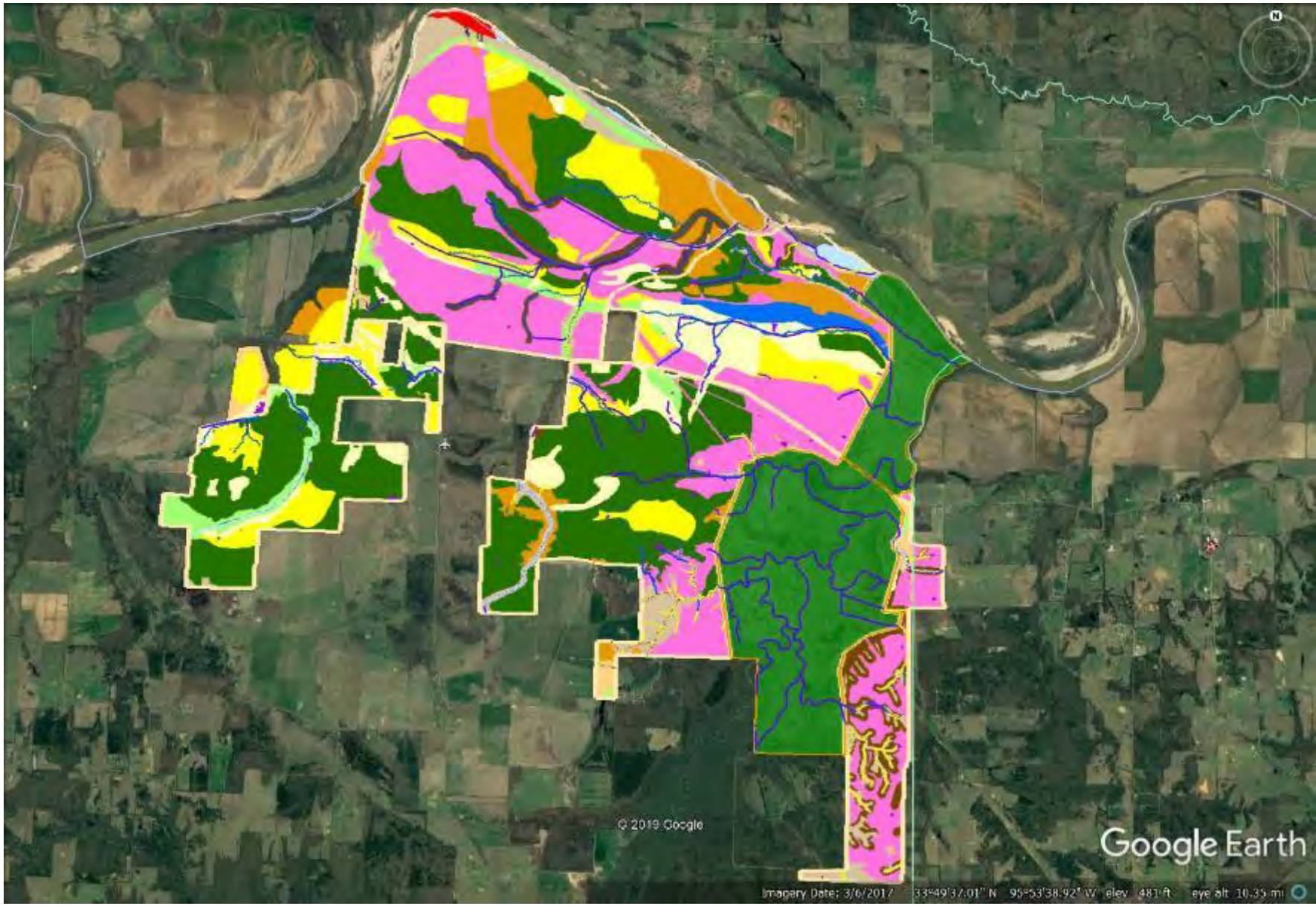
- Developed Spreadsheet to Track Habitat Revisions to Ensure that Everything Balanced Out.
- Ultimately RES had to Ensure that All Habitat Acreages and Functional Assessment Scores Matched the Requirements in the Project Permits.



Lower Bois d'Arc Creek Reservoir Mitigation

Utility Conflicts

- 4 Major Oil and Gas Pipelines Cross the Property
- Had to Coordinate for Access of Construction Equipment Across the Pipelines
- Had to Redesign Some Streams to Raise Stream Beds to Cross the Pipelines
- Had to relocate some emergent wetland depressions that overlapped the pipeline ROW



Lower Bois d'Arc Creek Reservoir Mitigation

Cultural Resources Coordination

- Many Areas of Cultural Resource Significance on the Ranch.
- Extensive Coordination was Conducted During NEPA and Permitting, and Continued After Permits were Issued
- Sensitive Areas were Identified and Protective Actions Prescribed.
- Prior to Initiation of Land Disturbing Activities, All Areas of Cultural Significance Fenced off and Signage Posted to Stay Out.

Lower Bois d'Arc Creek Reservoir Mitigation

Cultural Resources Coordination

- No Land-Disturbing Activities Were Allowed until CR Coordination Complete.
- Due to Compressed Construction Schedule, RES Needed to Start Work in Some Areas of the Ranch While Coordination Was Being Completed.
- NTMWD and RES Were Able to Gain Approval to Begin Activities with Minimal Land Disturbance Such as Discing/Plowing to plant Cover Crops by Having CR Monitors on Site to Monitor the Planting Activity to Ensure No Impacts to Unknown CR.

Lessons Learned

Regulatory Drivers

- Know your federal, state, and local regulatory environment associated with Wetland, Stream, or Habitat Mitigation
- Coordinate Early and Often with Regulatory Agencies to Identify Potentially Conflicting Regulatory Policies or Regulations that Could Negatively Affect your Project

Lessons Learned

Property Rights

- Fully Investigate Property Rights, especially Water Rights and Mineral Rights.
- Be Sure to Identify all Potential Utility Conflicts and Begin Coordination with Affected Utility Companies as Early as Possible
- Check Local Zoning Laws and be sure to Coordinate Early with the Locality to Ensure that the Site Can be Rezoned for Conservation Purposes.

Lessons Learned

Existing Conditions

- Utilize Information from GIS or Provided by Others with an Understanding that it May be Insufficient to Support Design of your Mitigation Project.
- Be Sure to do the Most Complete Due Diligence Studies that Schedule and Cost can Support.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