

List of Appendices

Appendix A – Project Site Map and Erosion and Sediment Control Plans

Appendix B – UDOT's Erosion and Sediment Control Standard Drawings and Specifications

Appendix C – UDOT's Spill Prevention and Response Plan for Construction Sites

Appendix D – Notice of Intent and Utah Construction General Permit

Appendix E – UDOT Environmental Control Supervisor (ECS) Training Certificates

Appendix F – Inspection Reports

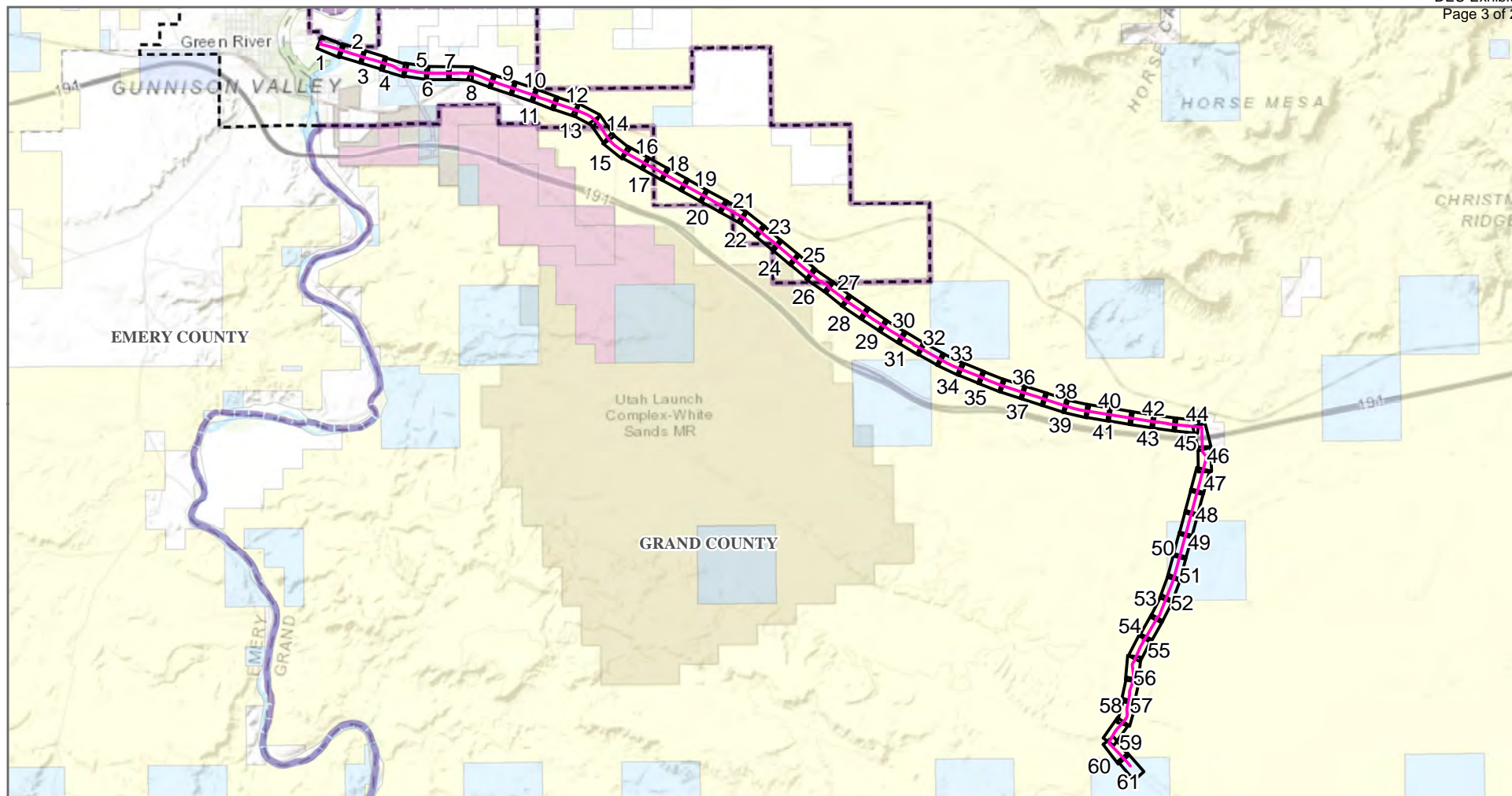
Appendix G – Enforcement Action Log

Appendix H – Grading and Stabilization Log

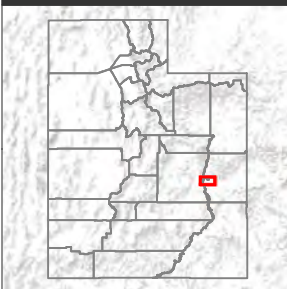
Appendix I – Recommended Seed Mix

Appendix A

Project Site Map and Erosion and Sediment Control Plans



LOCATION



- Green River Project Alignment
- Panel Maps
- Counties
- Municipalities
- BLM
- DOD
- Private
- SITLA
- UDOT

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

**Appendix A:
Project Overview**

0 0.5 1 Miles
1:122,000

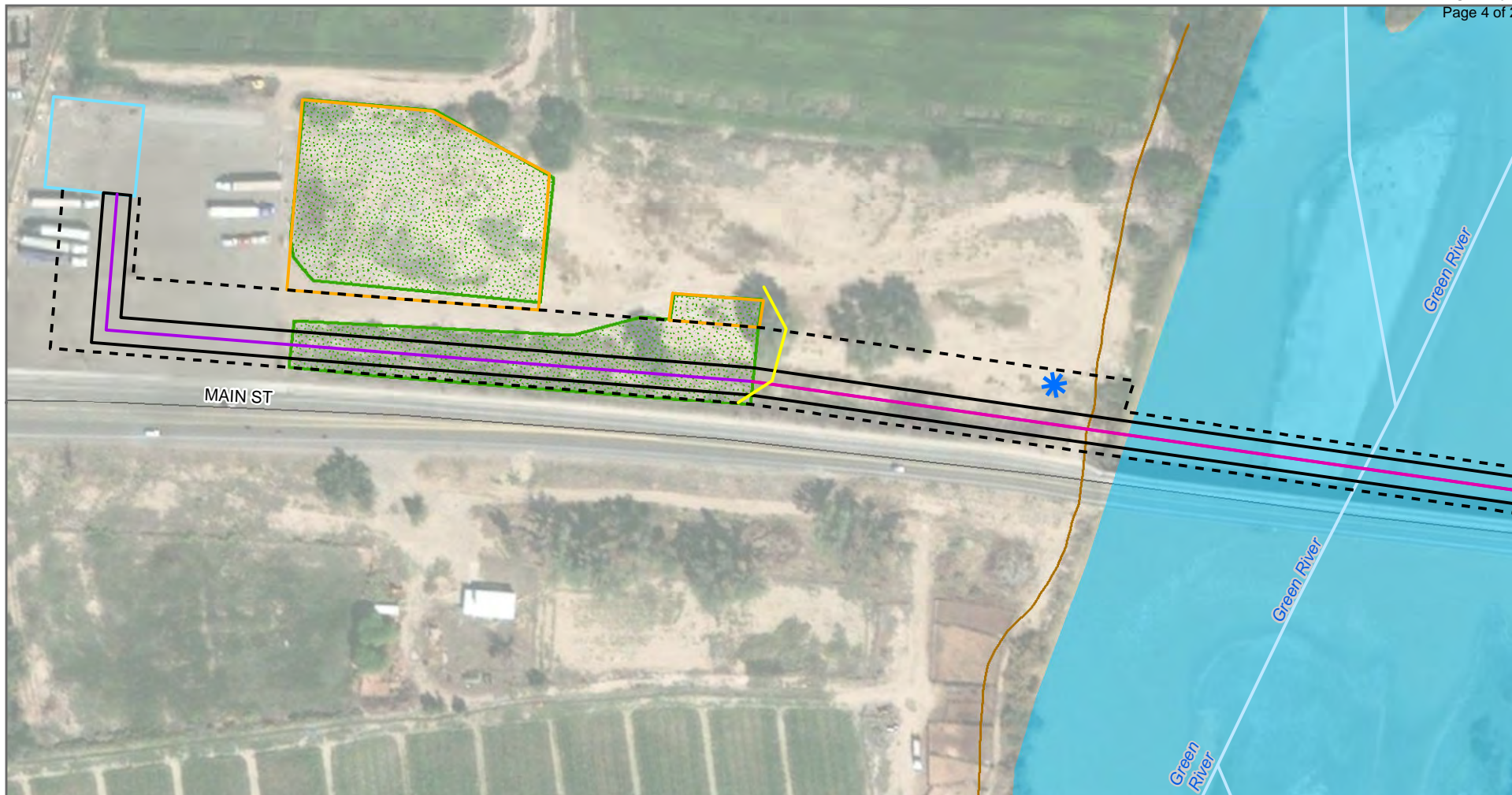


11/3/2022 NAD 1983 UTM Zone 12N

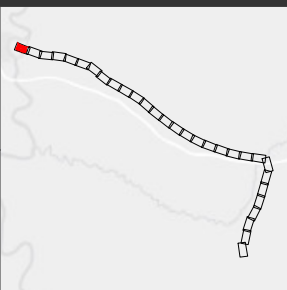
G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Overview.mxd



Planners &
Scientists



PANEL 1 of 61

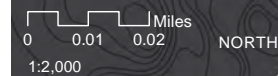


- Drop Inlet Protection
- Additional Temporary Construction Workspace
- Boring
- Permanent Easement
- Project Centerline
- Proposed Reg Station
- Temporary Construction Workspace
- Straw Wattle
- NHD Waterway
- NWI - Riverine
- Vegetation Disturbance
- Private

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 1 of 61

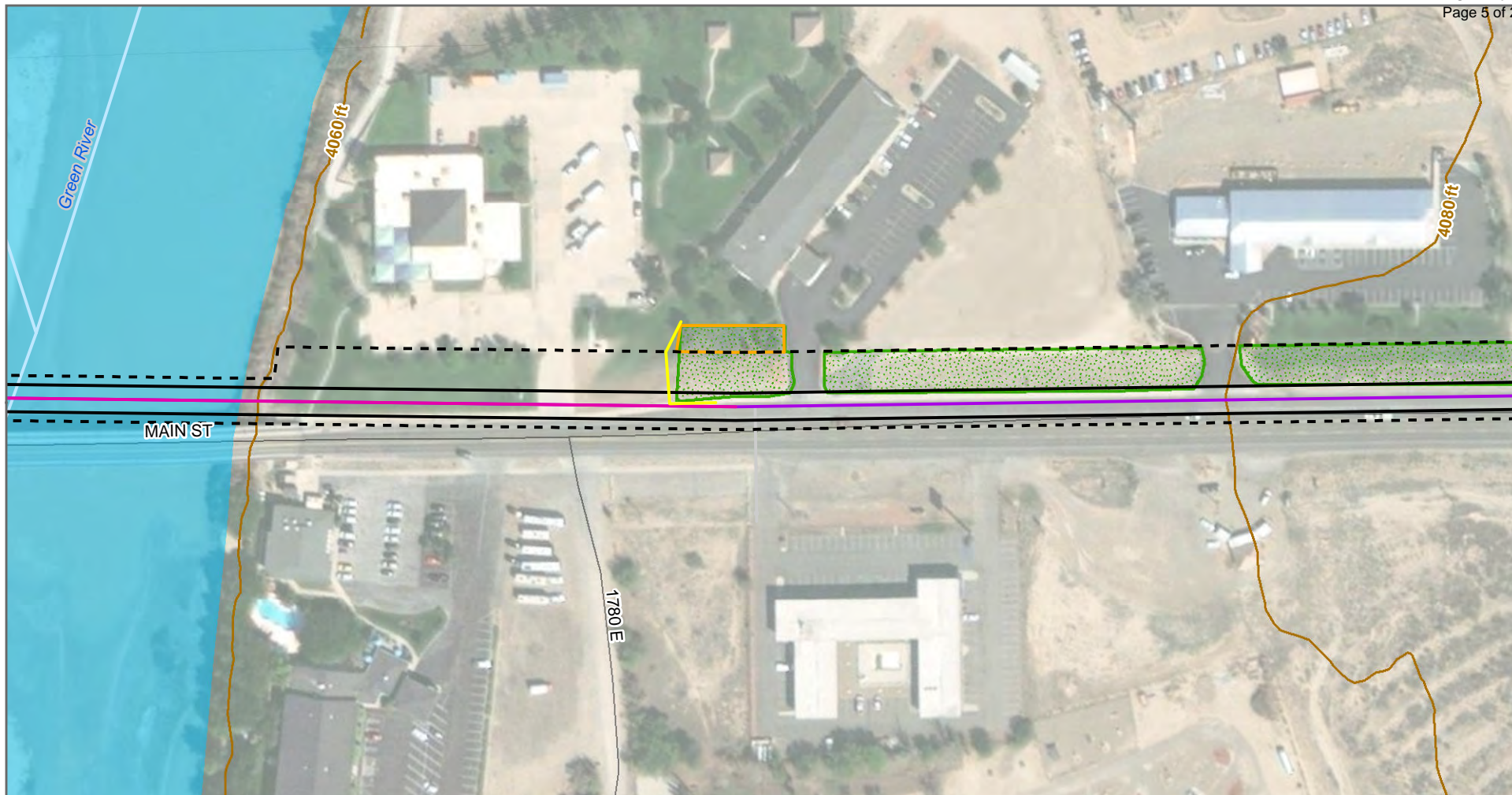
BMPs will be field fitted by
the construction contractor



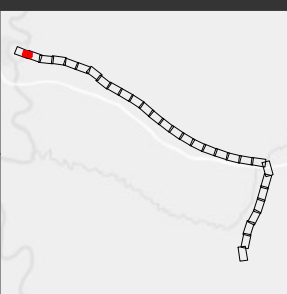
11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

Privileged and Confidential



PANEL 2 of 61

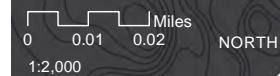


- Additional Temporary Construction Workspace
- Boring
- Other
- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Straw Wattle
- NHD Waterway
- NWI - Riverine
- Vegetation Disturbance
- Private

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 2 of 61

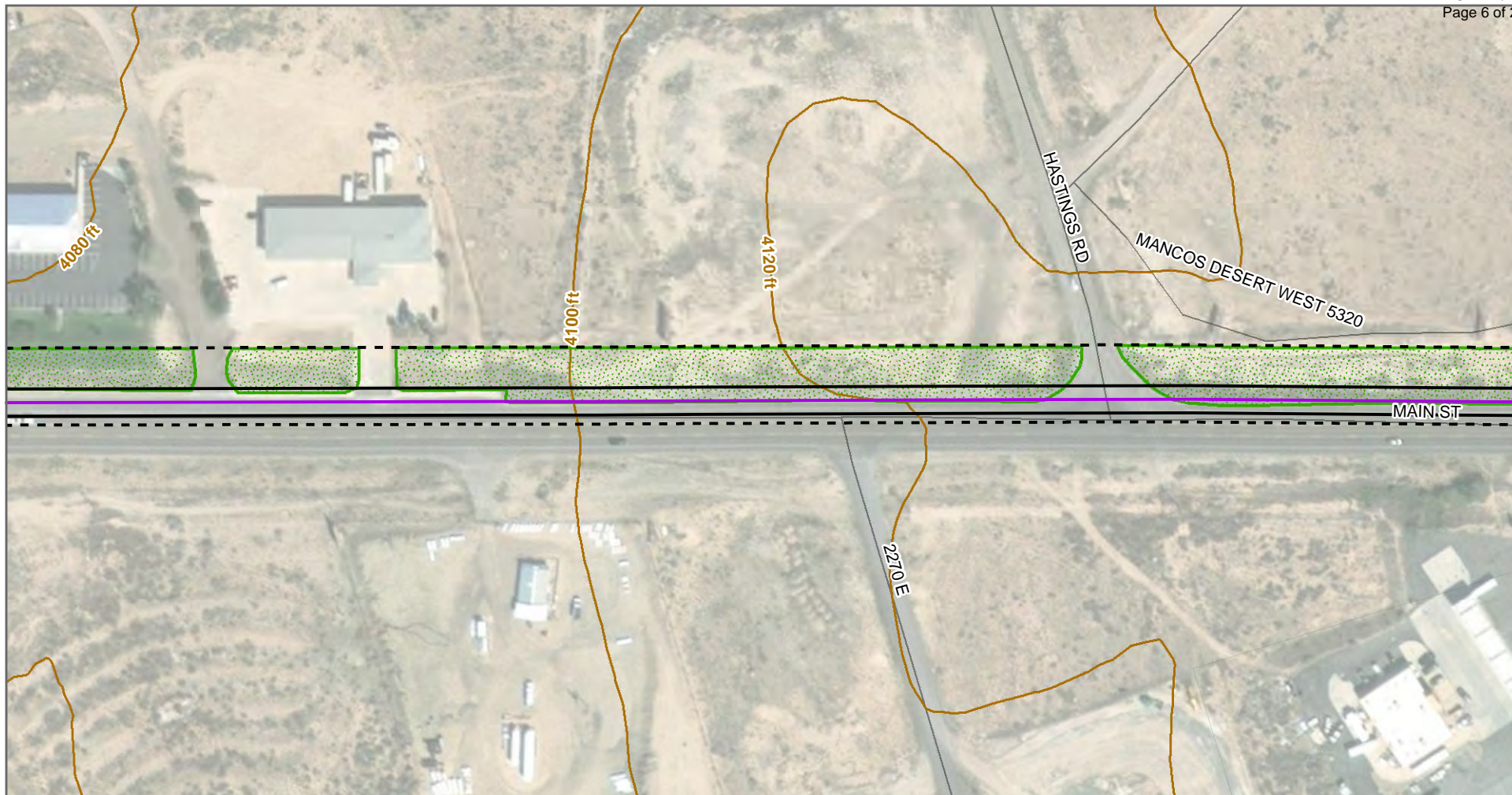
BMPs will be field fitted by
the construction contractor



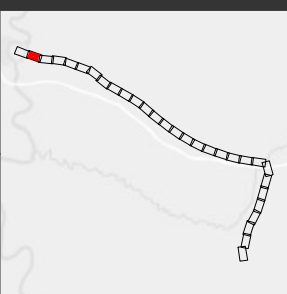
11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

Privileged and Confidential



PANEL 3 of 61

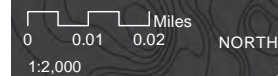


- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Vegetation Disturbance
- Private

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 3 of 61

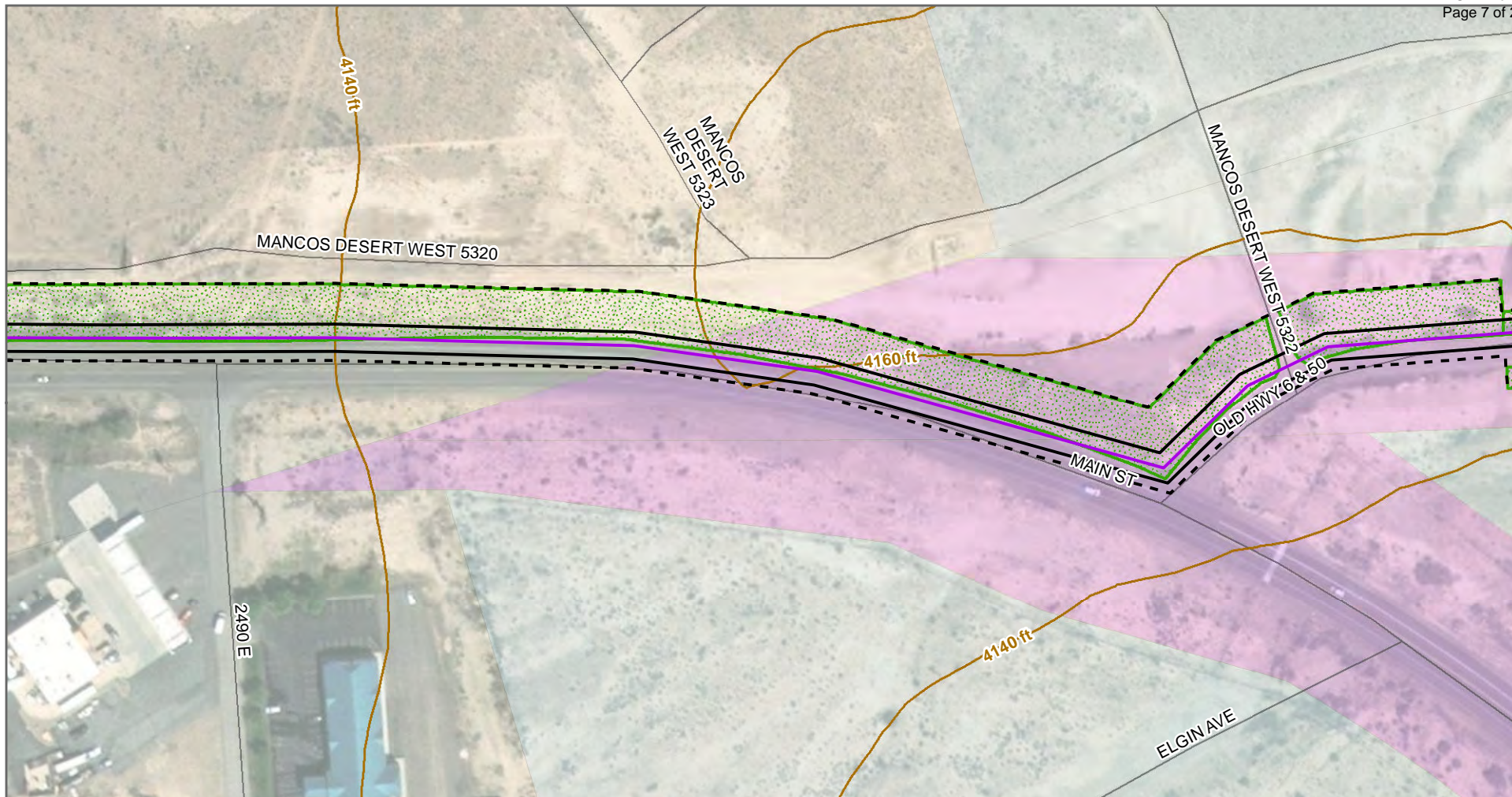
BMPs will be field fitted by
the construction contractor



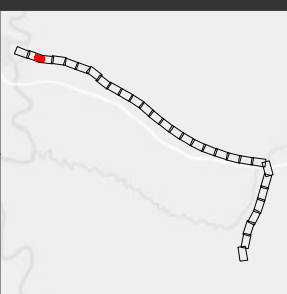
11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

Privileged and Confidential



PANEL 4 of 61



- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Vegetation Disturbance
- Private
- SITLA
- UDOT

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 4 of 61

BMPs will be field fitted by
the construction contractor

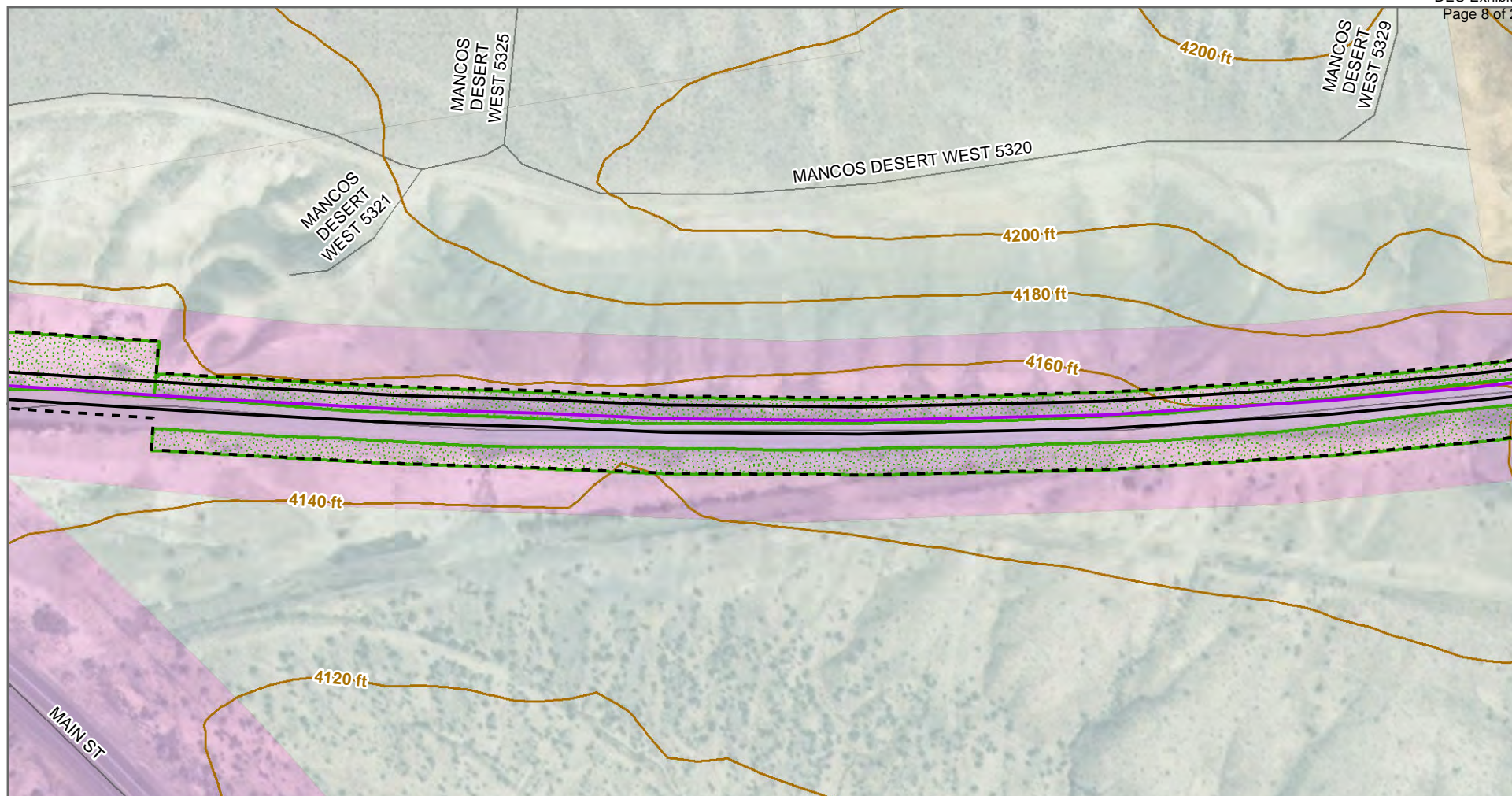
0 0.01 0.02 Miles
1:2,000

NORTH

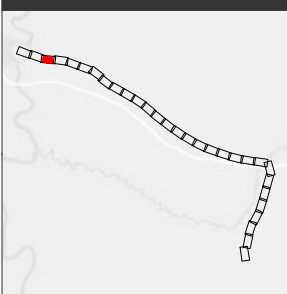
11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

Privileged and Confidential



PANEL 5 of 61



- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Vegetation Disturbance
- Private
- SITLA
- UDOT

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 5 of 61

BMPs will be field fitted by
the construction contractor

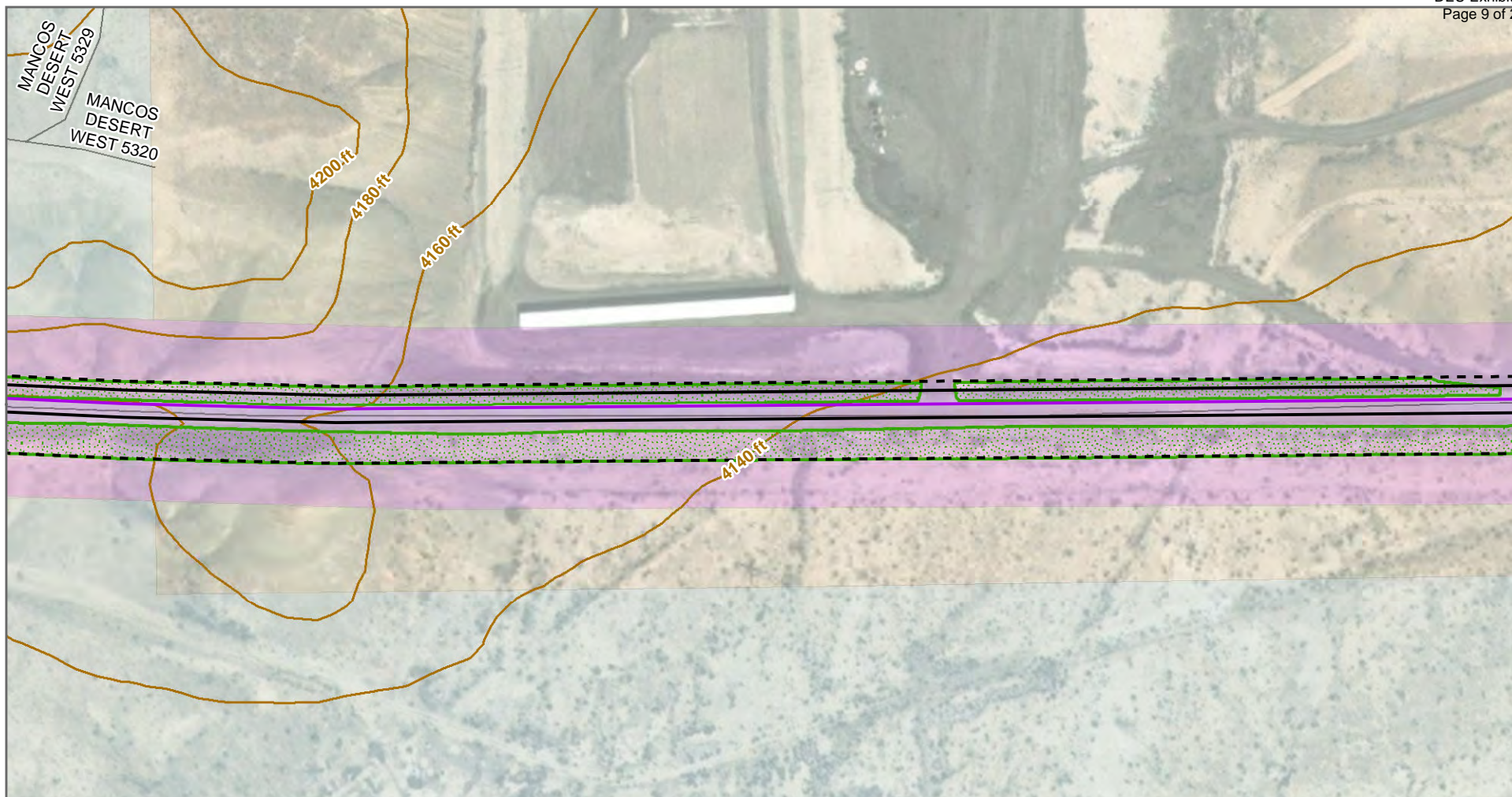
0 0.01 0.02 Miles
1:2,000

NORTH

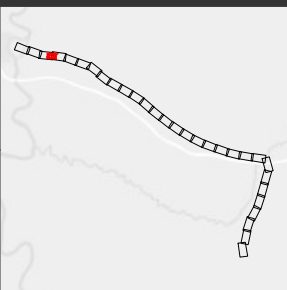
11/4/2022 NAD 1983 UTM Zone 12N








G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

Privileged and Confidential



PANEL 6 of 61

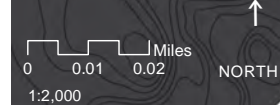


-  Permanent Easement
-  Project Centerline
-  Temporary Construction Workspace
-  Vegetation Disturbance
-  Private
-  SITLA
-  UDOT

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 6 of 61

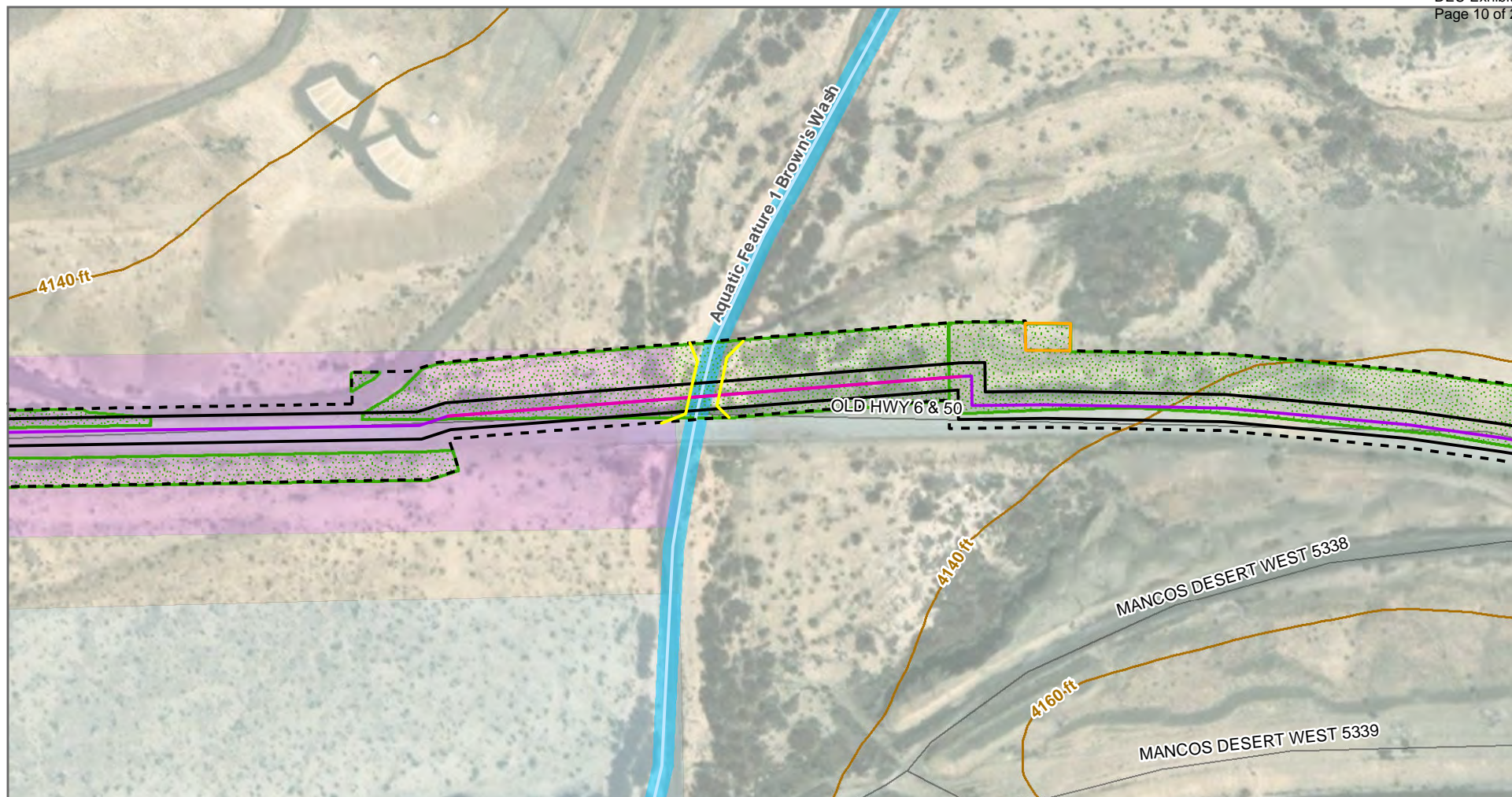
BMPs will be field fitted by
the construction contractor



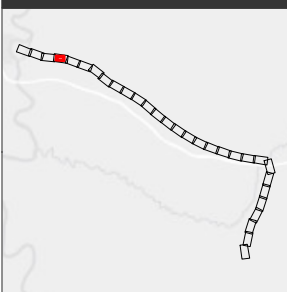
11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

Privileged and Confidential



PANEL 7 of 61

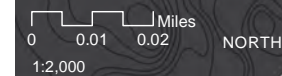


- Additional Temporary Construction Workspace
- Boring
- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Straw Wattle
- NHD Waterway
- NWI - Riverine
- Vegetation Disturbance
- Private
- SITLA
- UDOT

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 7 of 61

BMPs will be field fitted by
the construction contractor

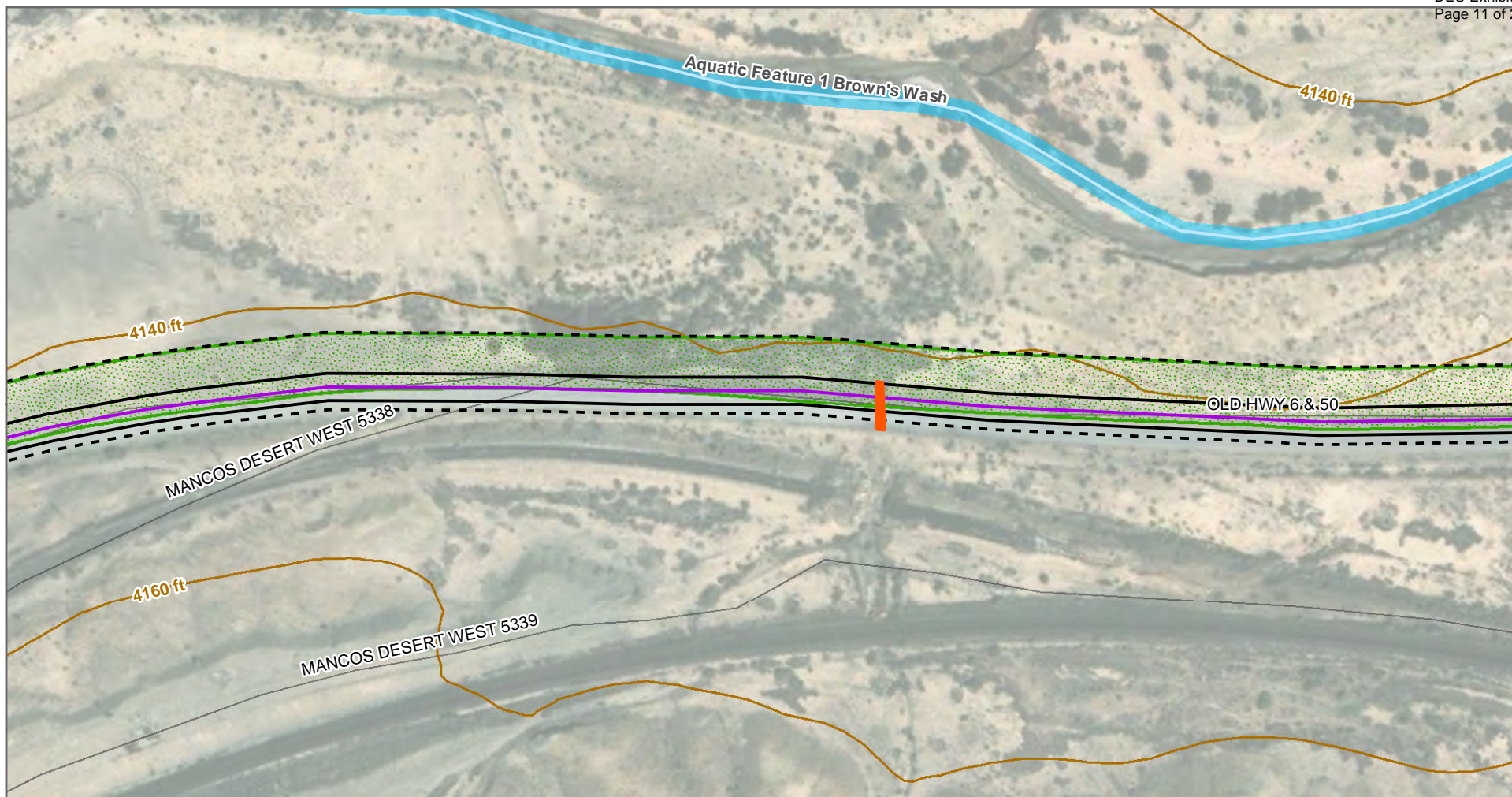


11/4/2022 NAD 1983 UTM Zone 12N

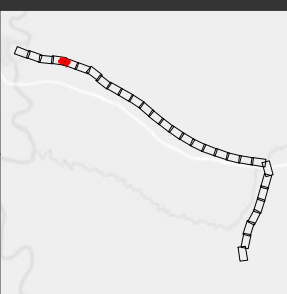
G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd



Planners &
Scientists



PANEL 8 of 61

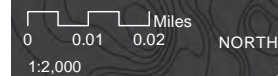


- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- NHD Waterway
- Culvert
- NWI - Riverine
- Vegetation Disturbance
- Private

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 8 of 61

BMPs will be field fitted by
the construction contractor

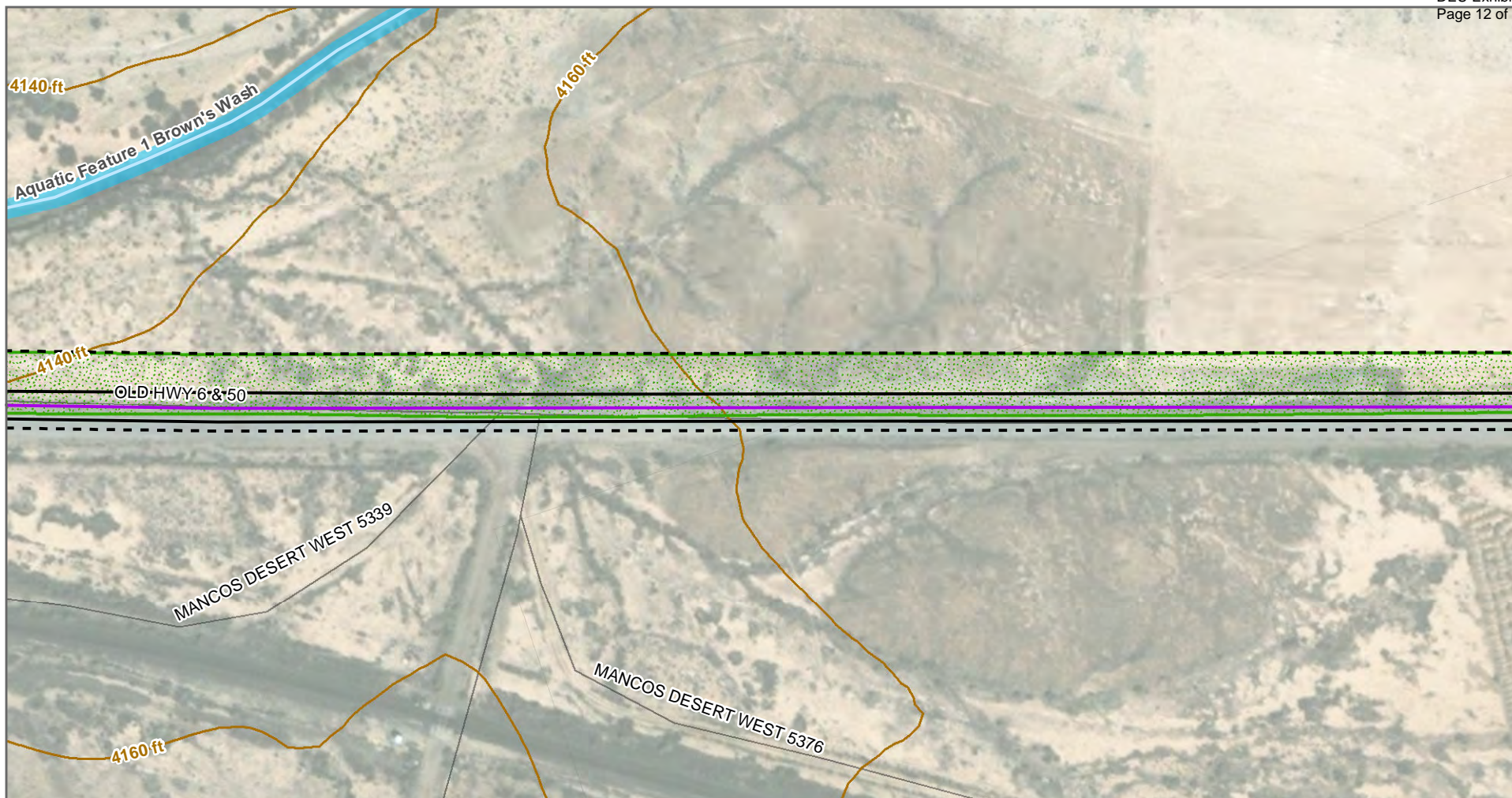


11/4/2022 NAD 1983 UTM Zone 12N

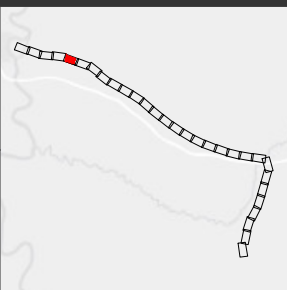
G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd



Planners &
Scientists



PANEL 9 of 61



- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- NHD Waterway
- NWI - Riverine
- Vegetation Disturbance
- Private

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 9 of 61

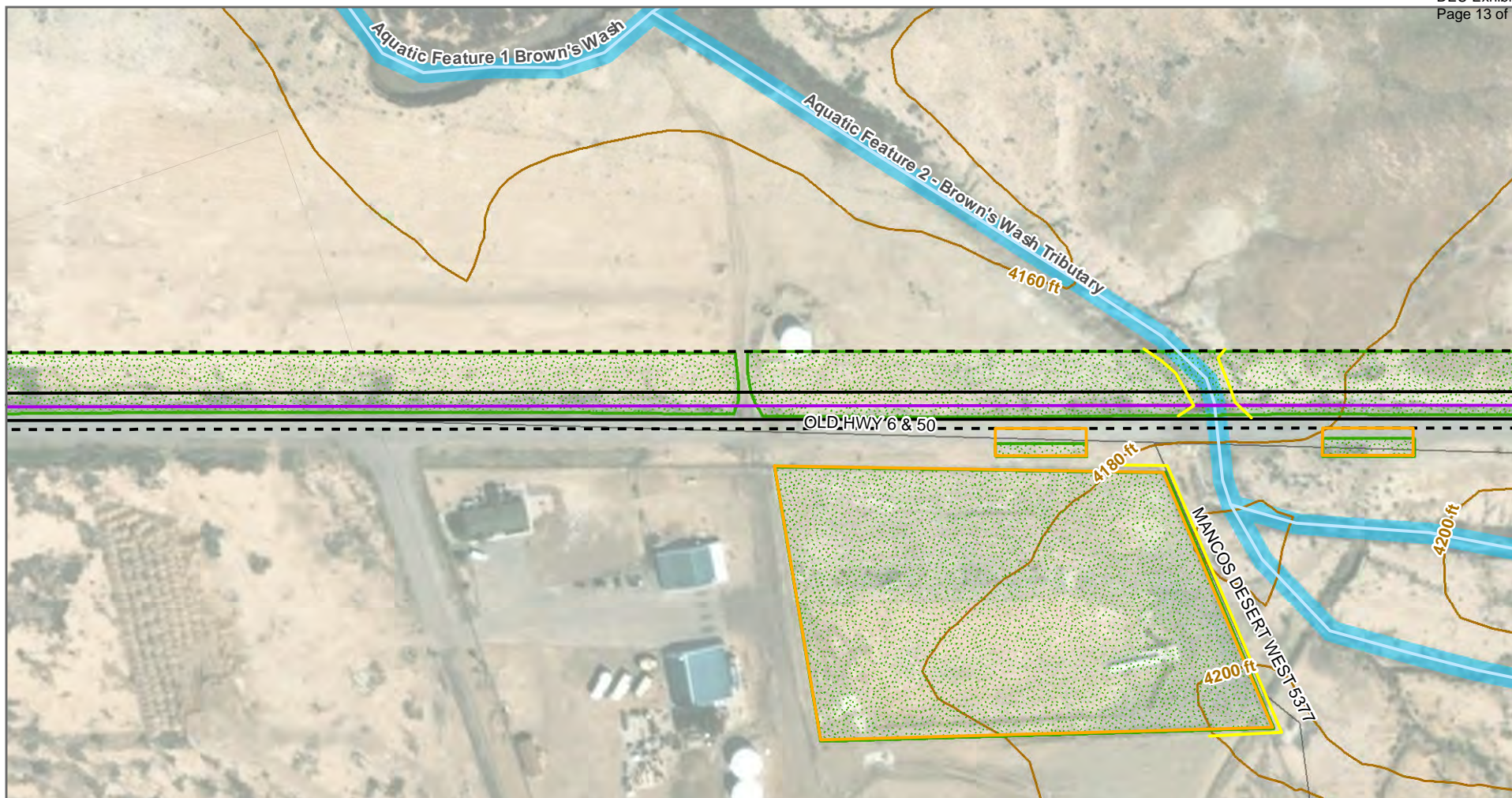
BMPs will be field fitted by
the construction contractor

0 0.01 0.02 Miles
1:2,000
NORTH

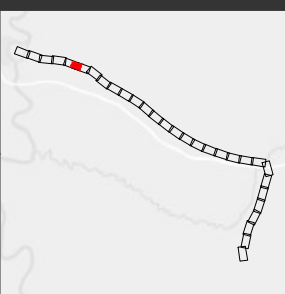
11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

Privileged and Confidential



PANEL 10 of 61



- | | |
|---|---------|
| Additional Temporary Construction Workspace | BLM |
| Boring | Private |
| Permanent Easement | |
| Project Centerline | |
| Temporary Construction Workspace | |
| Straw Wattle | |
| NHD Waterway | |
| NWI - Riverine | |
| Vegetation Disturbance | |

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 10 of 61

BMPs will be field fitted by
the construction contractor

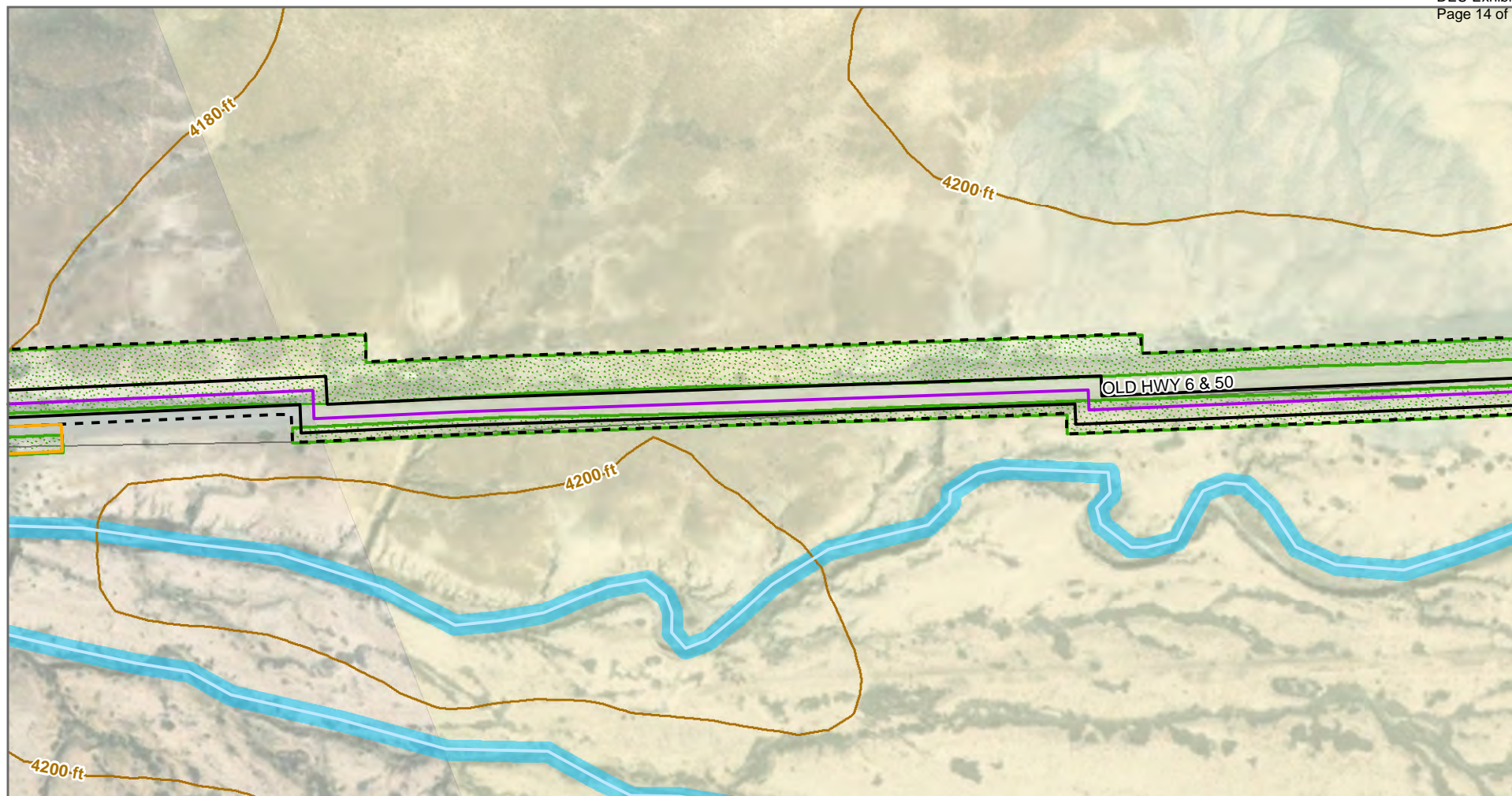
0 0.01 0.02 Miles
1:2,000
NORTH

11/4/2022 NAD 1983 UTM Zone 12N

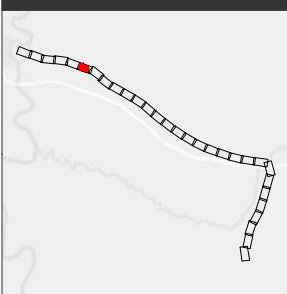
G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd



Planners &
Scientists



PANEL 11 of 61



- Additional Temporary Construction Workspace
- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- NHD Waterway
- NWI - Riverine
- Vegetation Disturbance
- BLM
- Private

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 11 of 61

BMPs will be field fitted by
the construction contractor

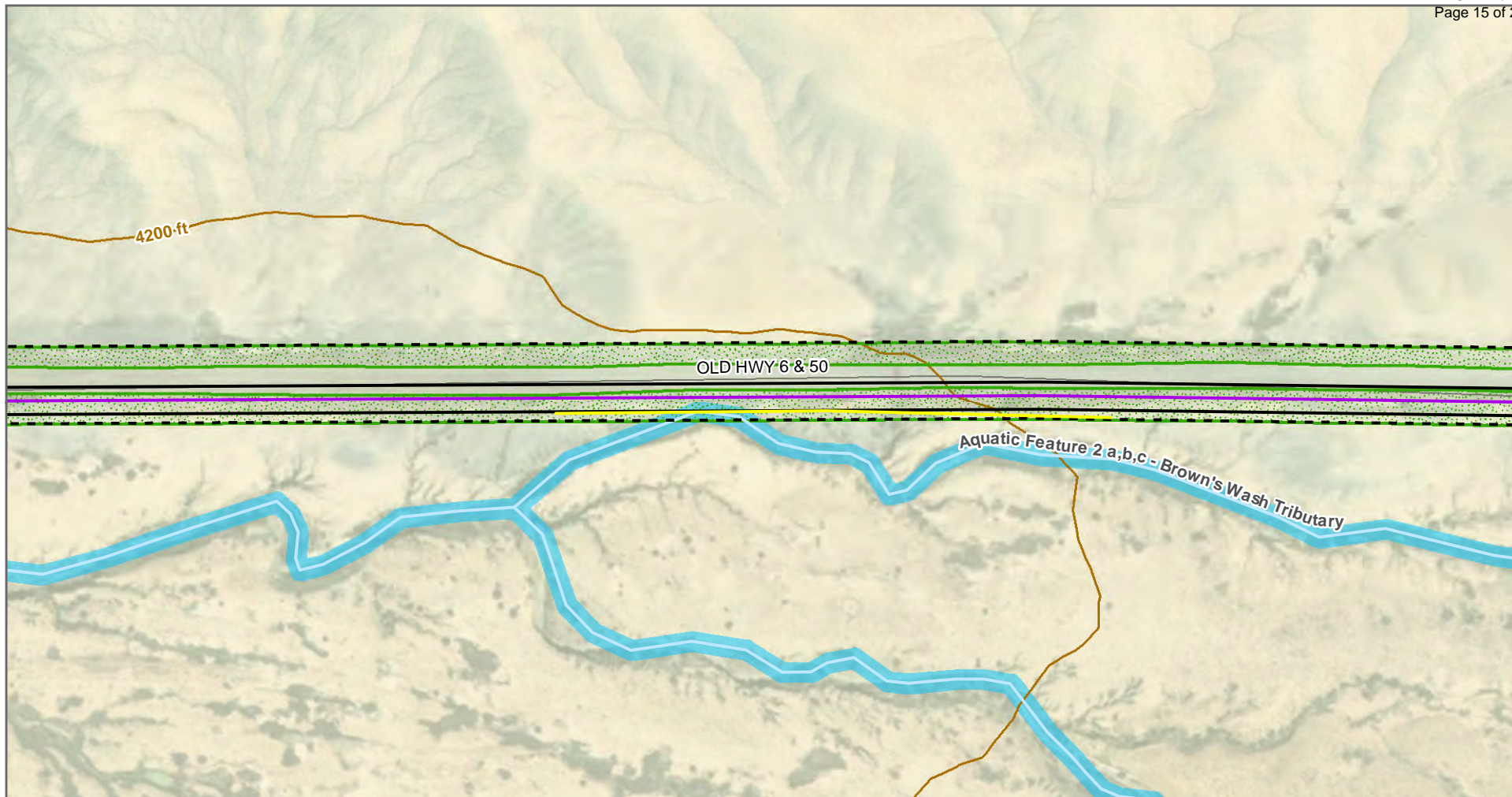
0 0.01 0.02 Miles
1:2,000
NORTH

11/4/2022 NAD 1983 UTM Zone 12N

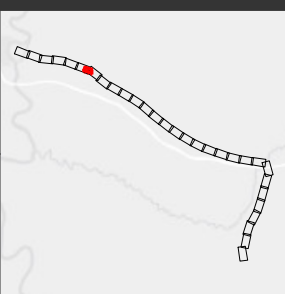
G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd



Planners &
Scientists



PANEL 12 of 61



- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Straw Wattle
- NHD Waterway
- NWI - Riverine
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 12 of 61

BMPs will be field fitted by
the construction contractor

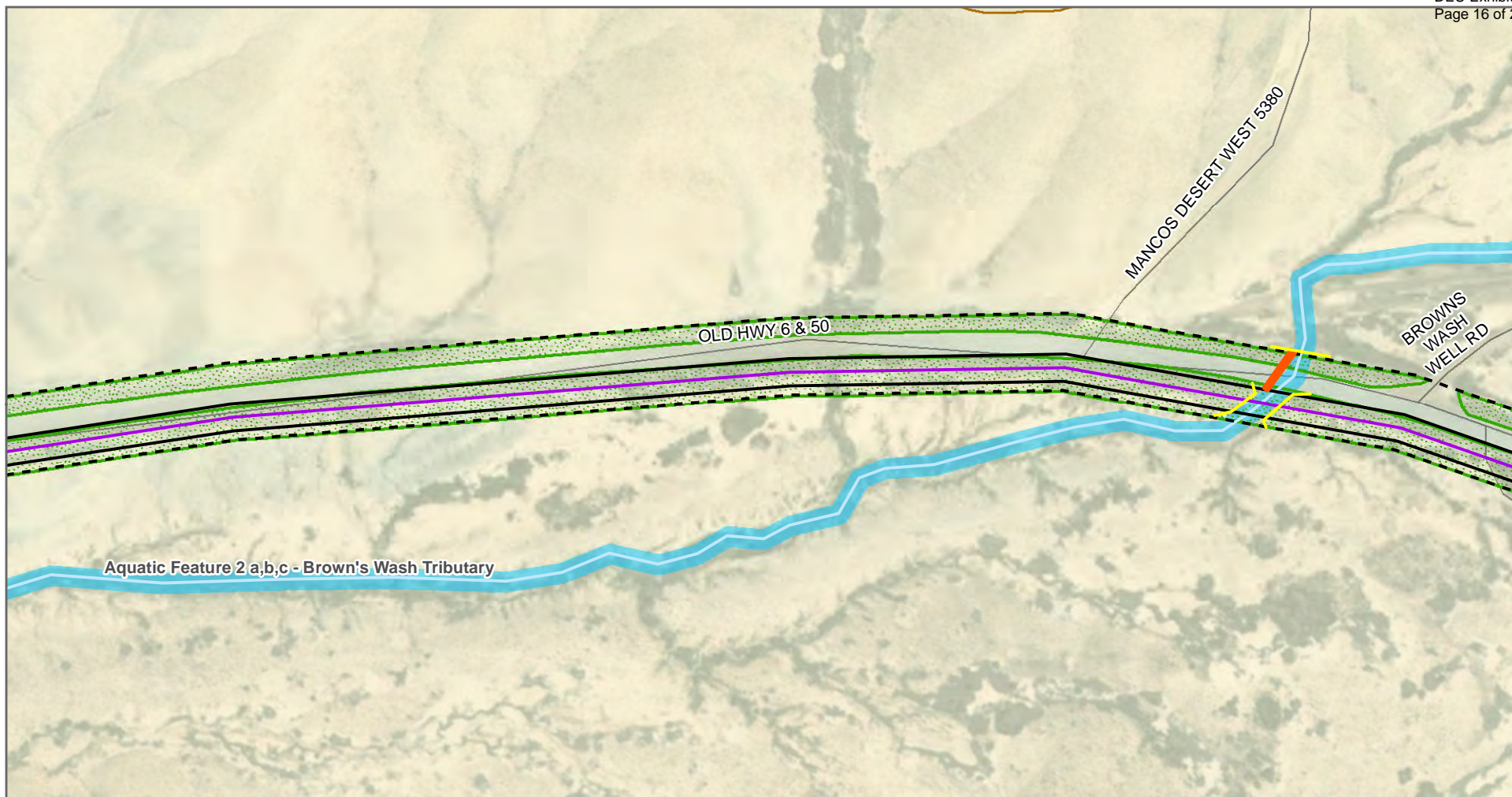
0 0.01 0.02 Miles
1:2,000
NORTH

11/4/2022 NAD 1983 UTM Zone 12N

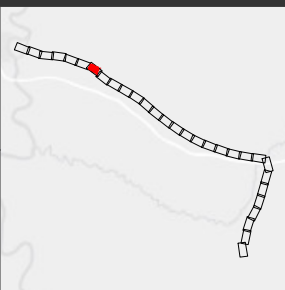
G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd



Planners &
Scientists



PANEL 13 of 61

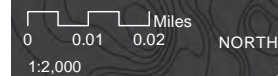


- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Straw Wattle
- NHD Waterway
- Culvert
- NWI - Riverine
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 13 of 61

BMPs will be field fitted by
the construction contractor

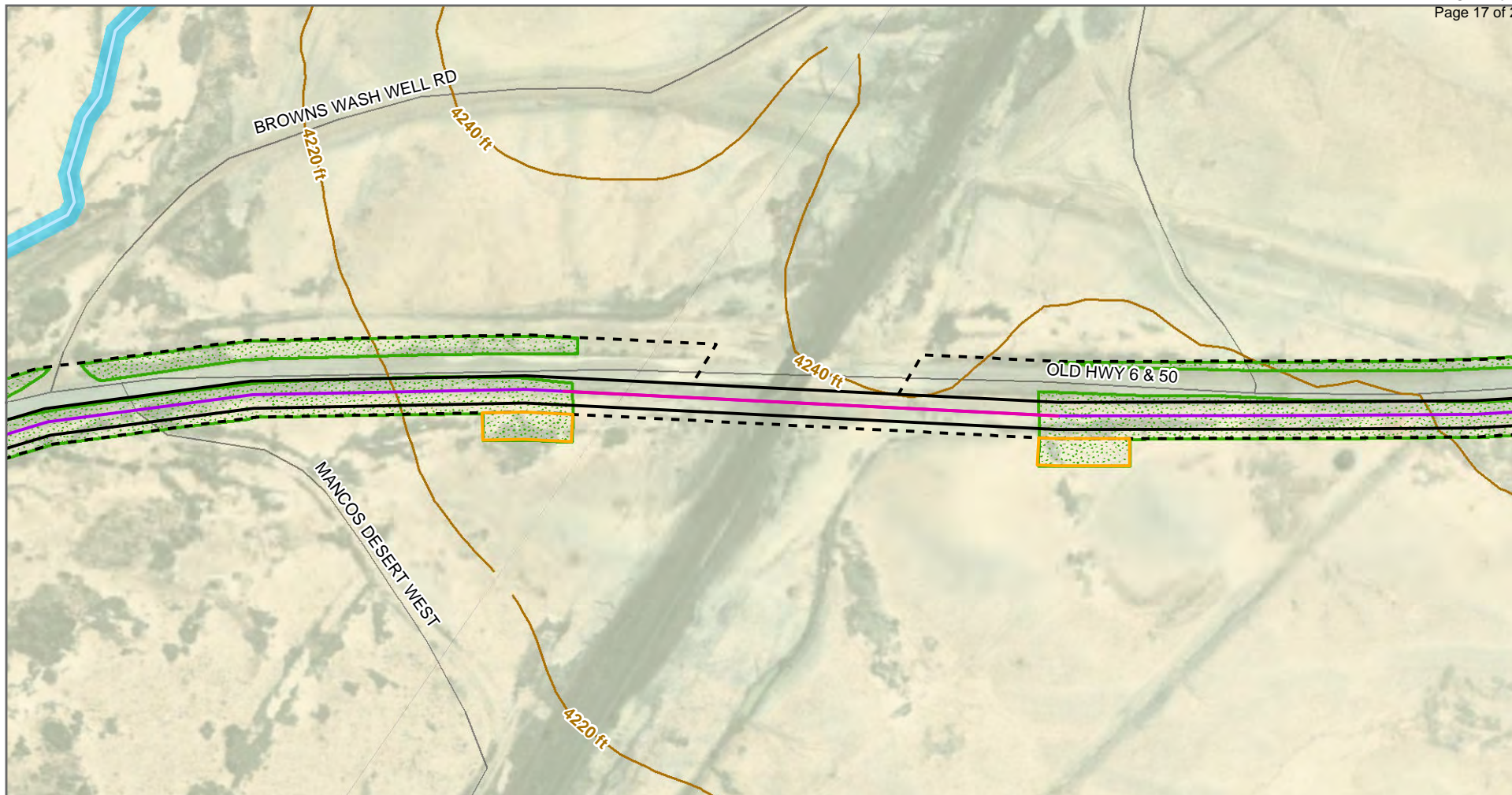


11/4/2022 NAD 1983 UTM Zone 12N

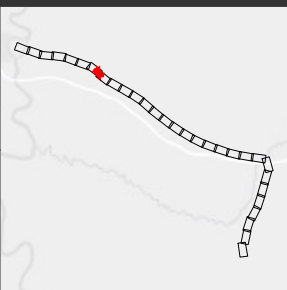
G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd



Planners &
Scientists



PANEL 14 of 61

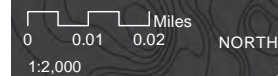


- Additional Temporary Construction Workspace
- Boring
- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- NHD Waterway
- NWI - Riverine
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 14 of 61

BMPs will be field fitted by
the construction contractor



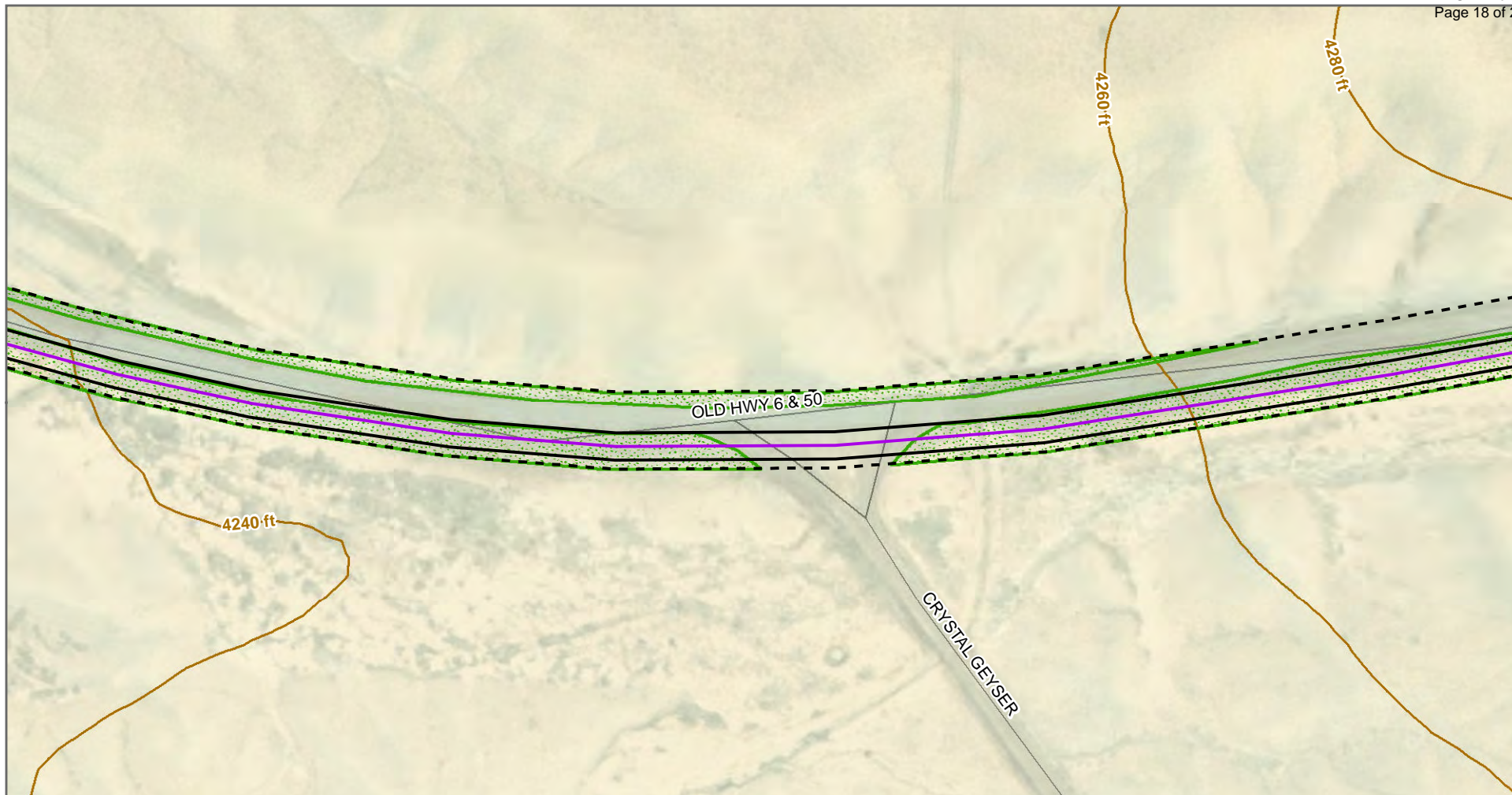
11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

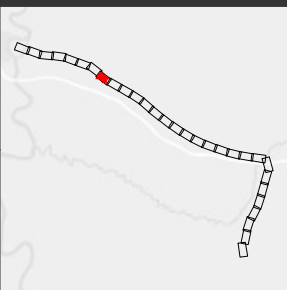
Privileged and Confidential



Planners &
Scientists



PANEL 15 of 61

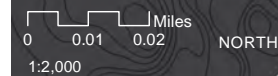


- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 15 of 61

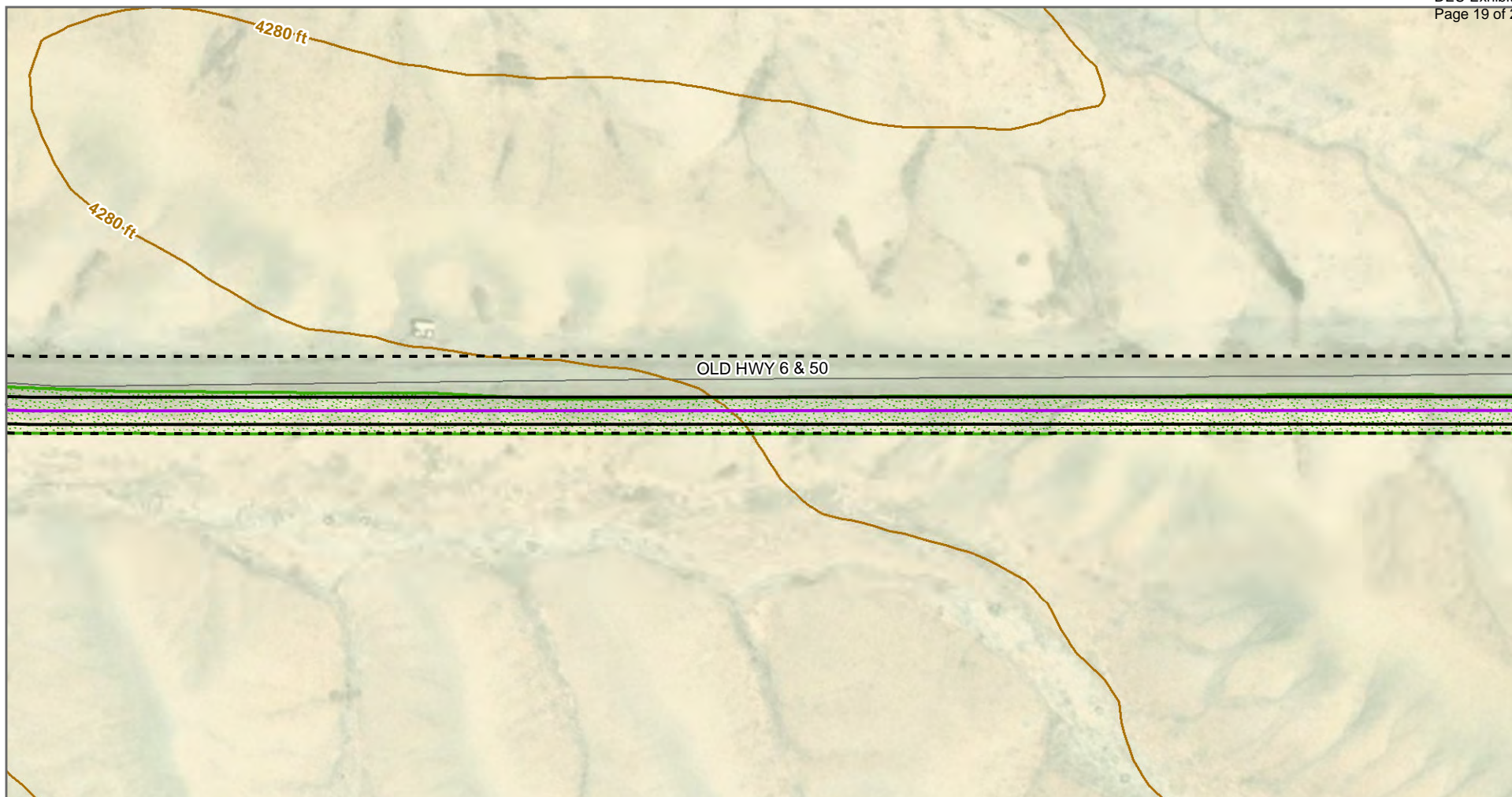
BMPs will be field fitted by
the construction contractor



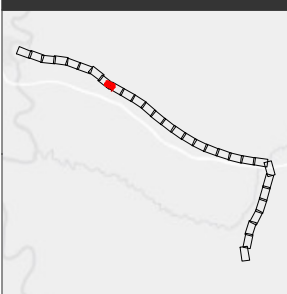
11/4/2022 NAD 1983 UTM Zone 12N






G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

Privileged and Confidential



PANEL 16 of 61



-  Permanent Easement
-  Project Centerline
-  Temporary Construction Workspace
-  Vegetation Disturbance
-  BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 16 of 61

BMPs will be field fitted by
the construction contractor

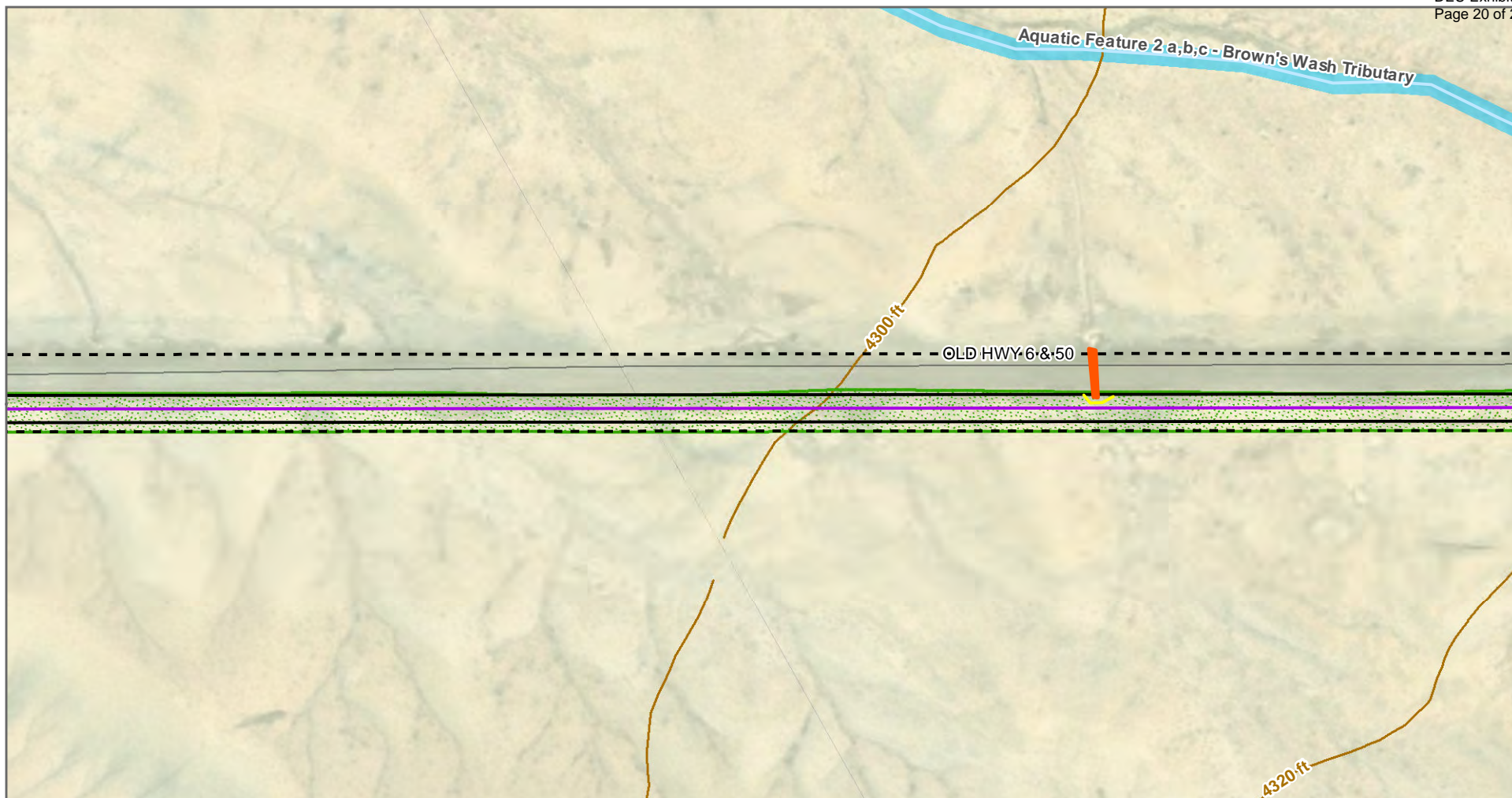
0 0.01 0.02 Miles
1:2,000

NORTH

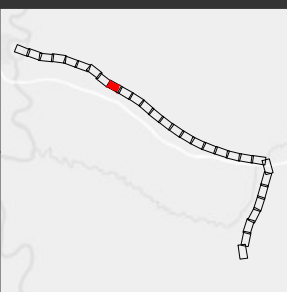
11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

Privileged and Confidential



PANEL 17 of 61

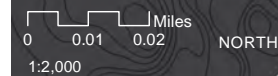


- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Straw Wattle
- NHD Waterway
- Culvert
- NWI - Riverine
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 17 of 61

BMPs will be field fitted by
the construction contractor

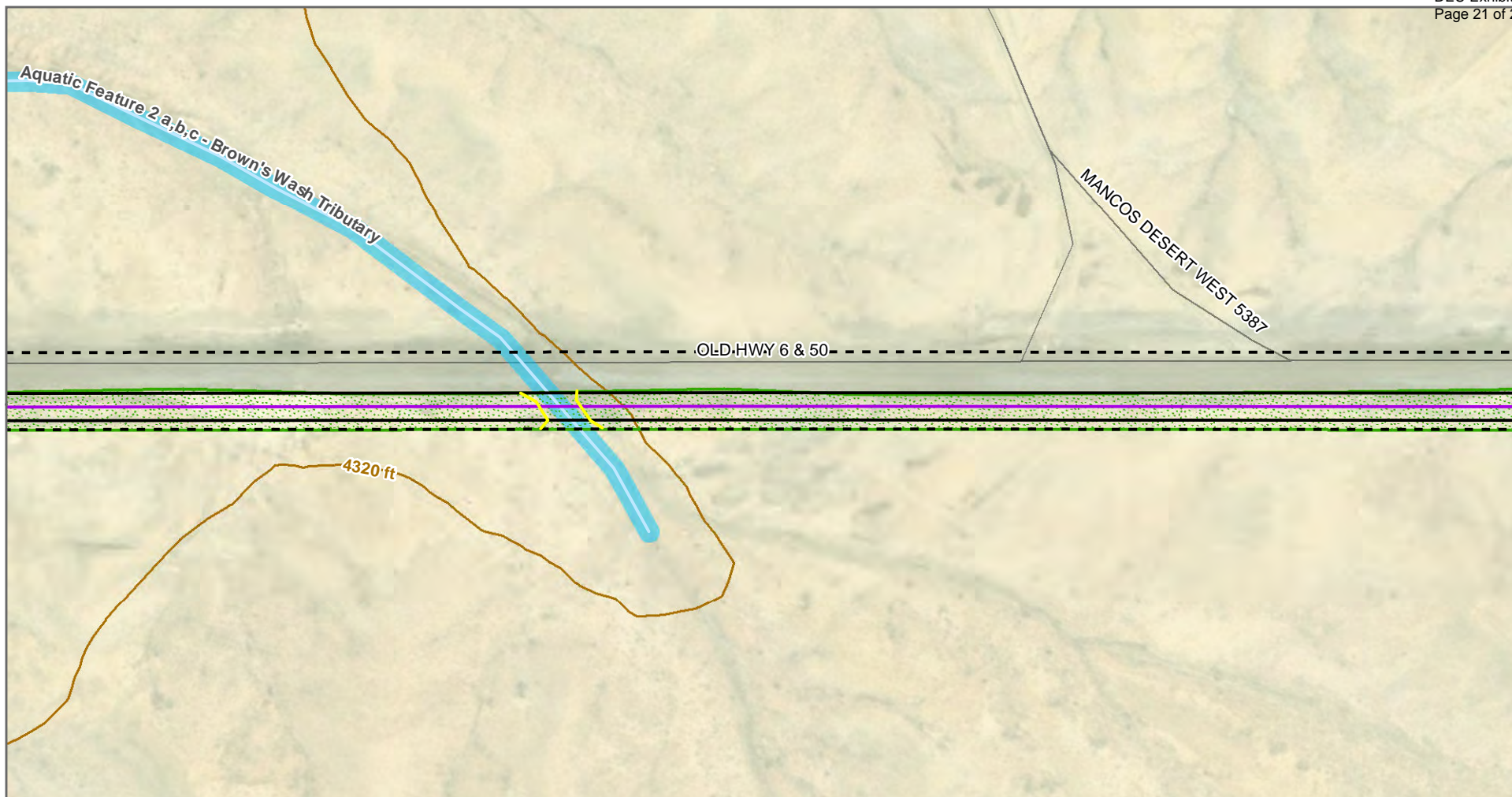


11/4/2022 NAD 1983 UTM Zone 12N

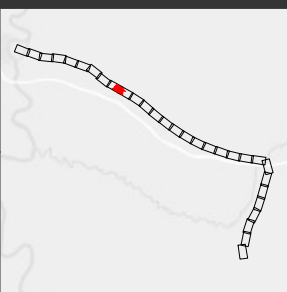
G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd



Planners &
Scientists



PANEL 18 of 61



- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Straw Wattle
- NHD Waterway
- NWI - Riverine
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 18 of 61

BMPs will be field fitted by
the construction contractor

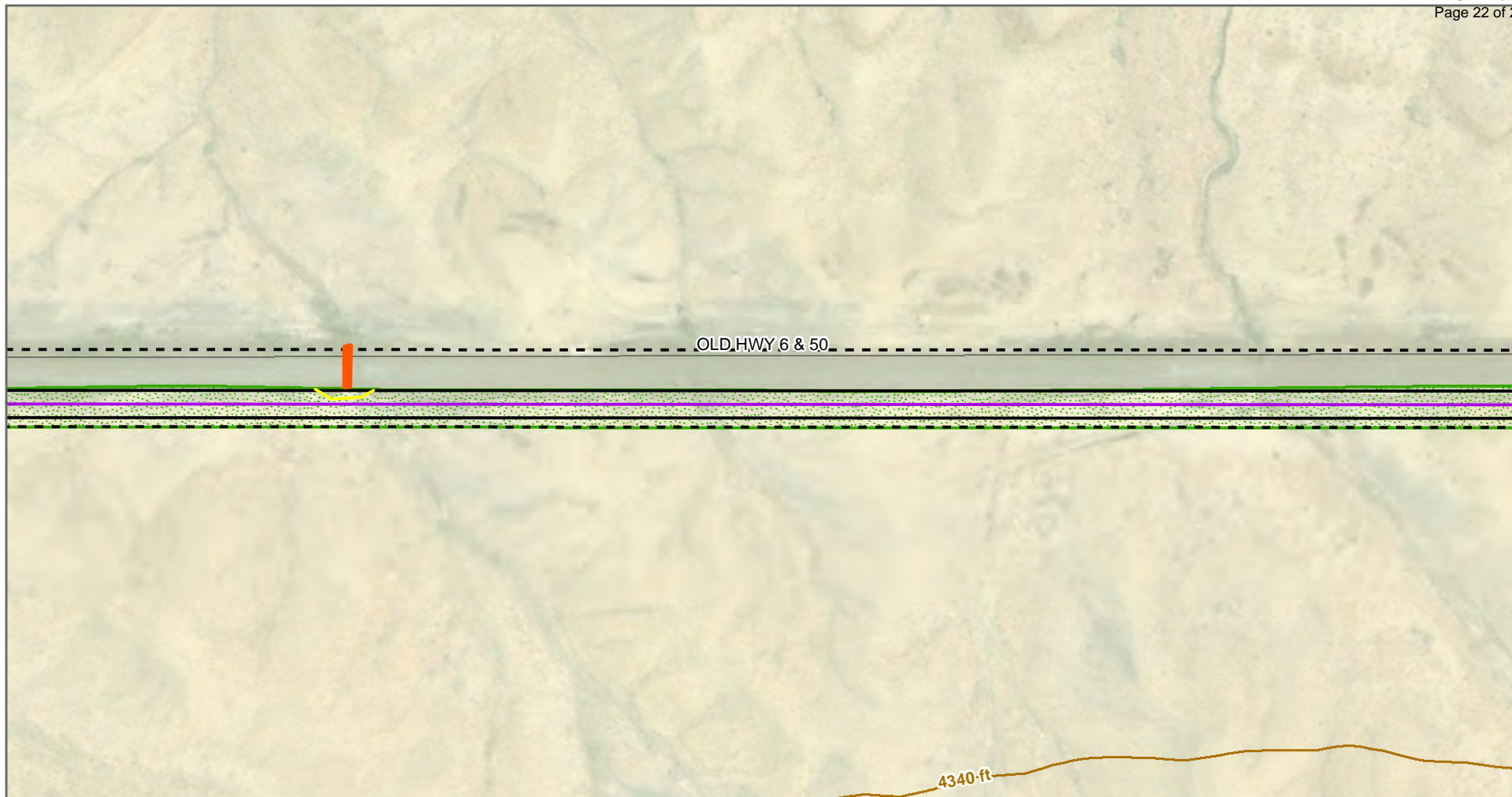
0 0.01 0.02 Miles
1:2,000

NORTH

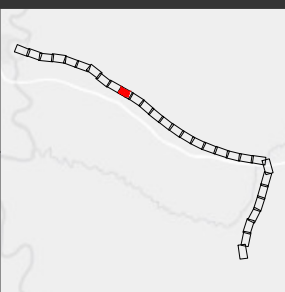
11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

Privileged and Confidential



PANEL 19 of 61



- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Straw Wattle
- Culvert
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 19 of 61

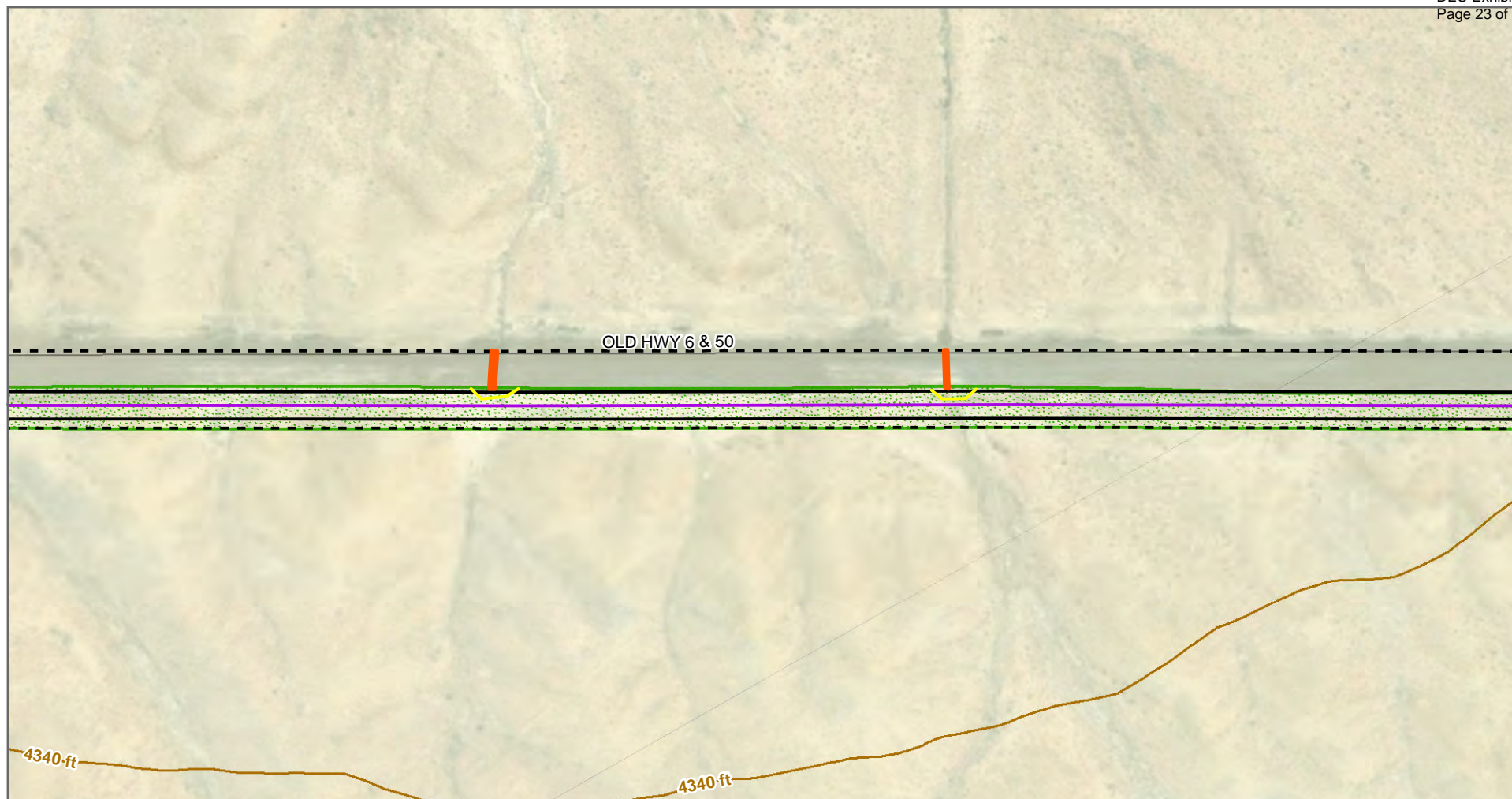
BMPs will be field fitted by
the construction contractor

0 0.01 0.02 Miles
1:2,000
NORTH

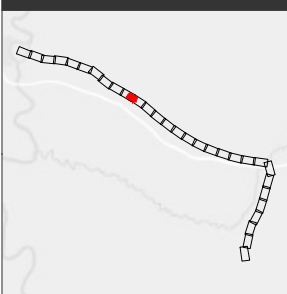
11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

Privileged and Confidential



PANEL 20 of 61



- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Straw Wattle
- Culvert
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 20 of 61

BMPs will be field fitted by
the construction contractor

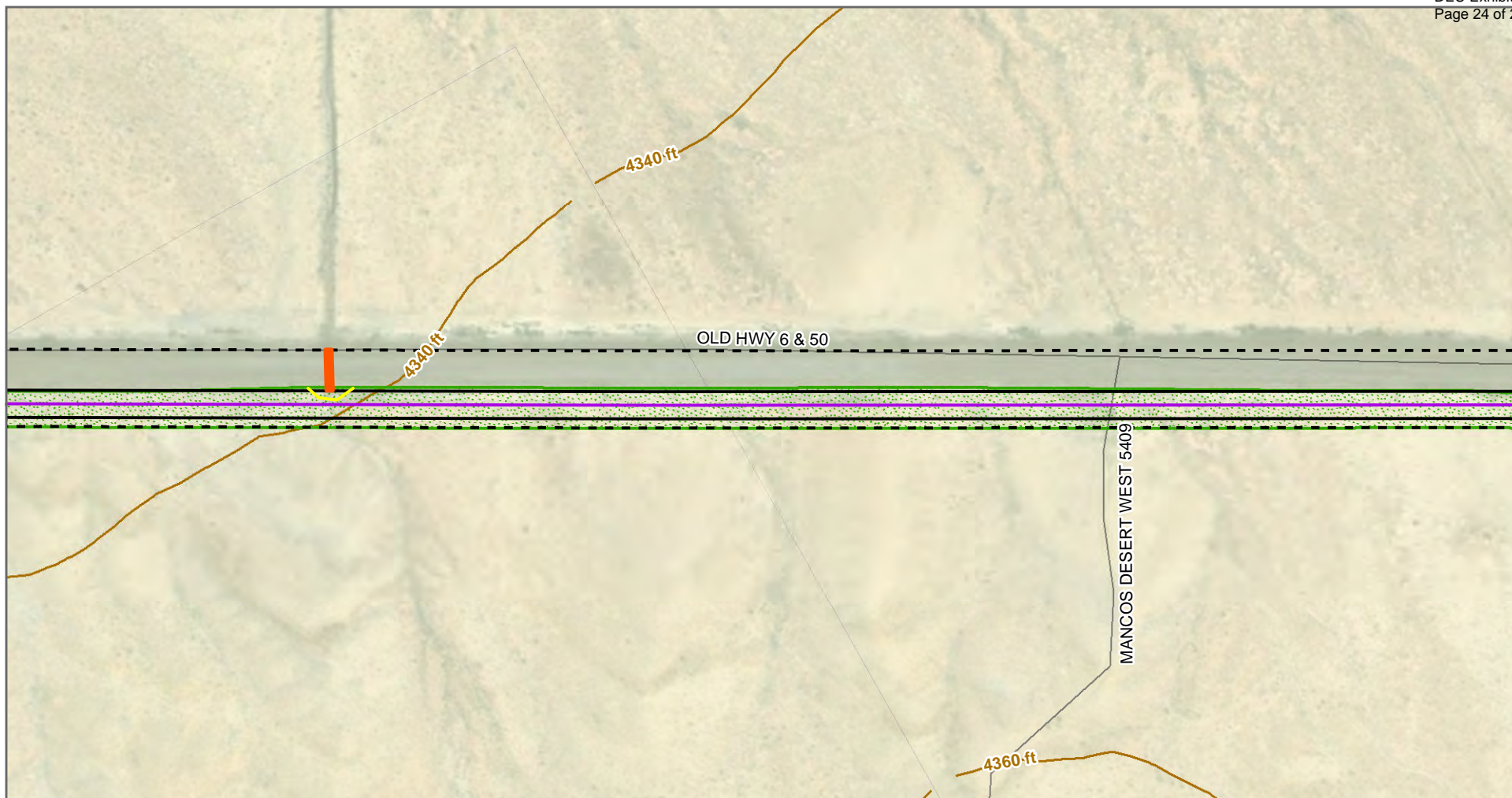
0 0.01 0.02 Miles
1:2,000

NORTH

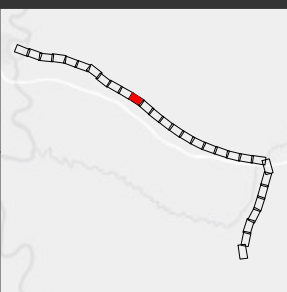
11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

Privileged and Confidential



PANEL 21 of 61

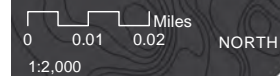


- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Straw Wattle
- Culvert
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 21 of 61

BMPs will be field fitted by
the construction contractor

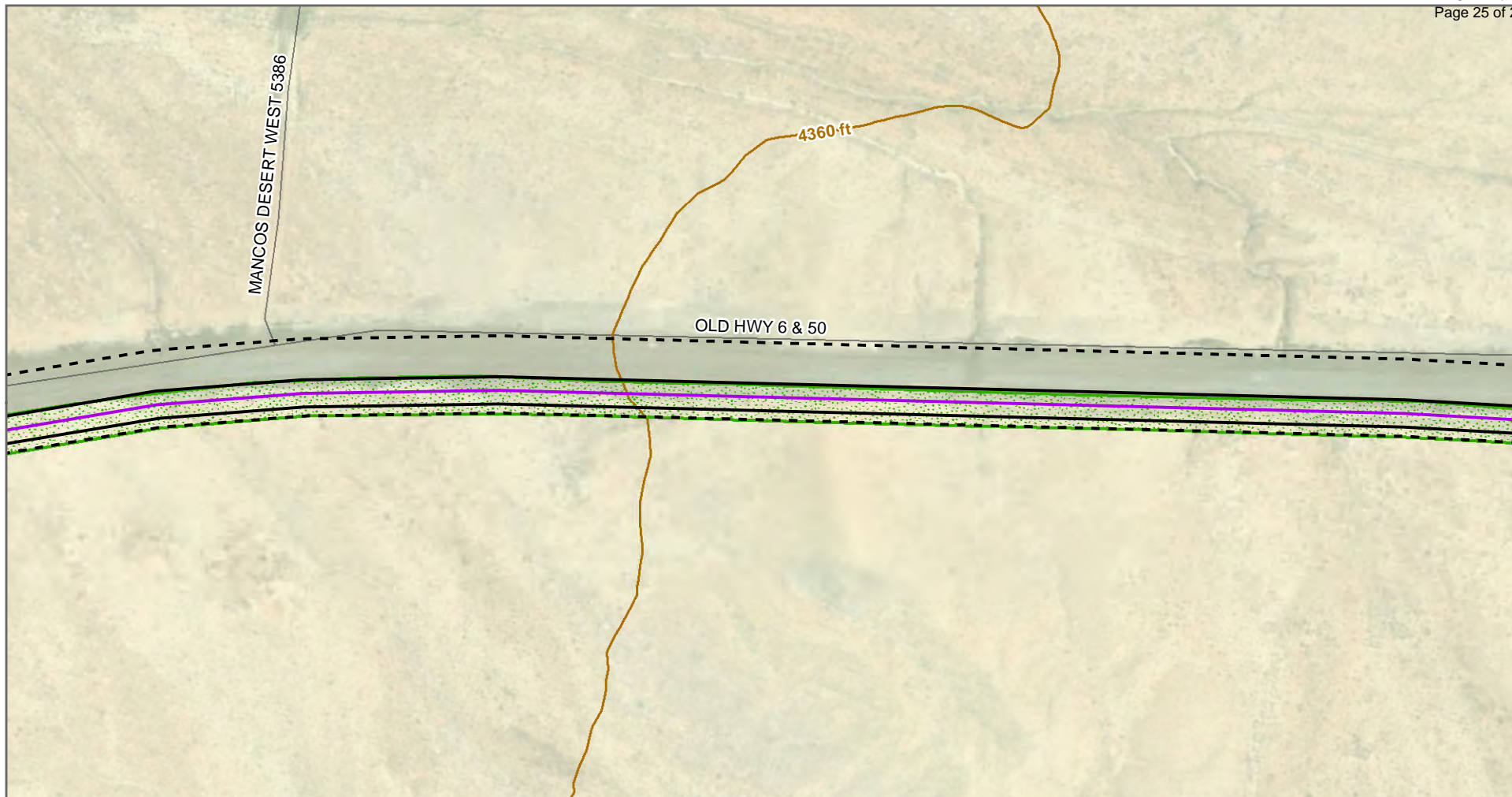


11/4/2022 NAD 1983 UTM Zone 12N

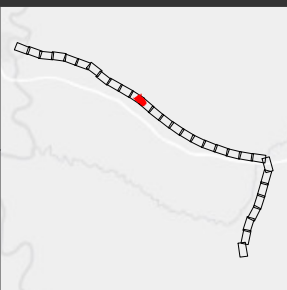
G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd



Planners &
Scientists



PANEL 22 of 61



- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 22 of 61

BMPs will be field fitted by
the construction contractor

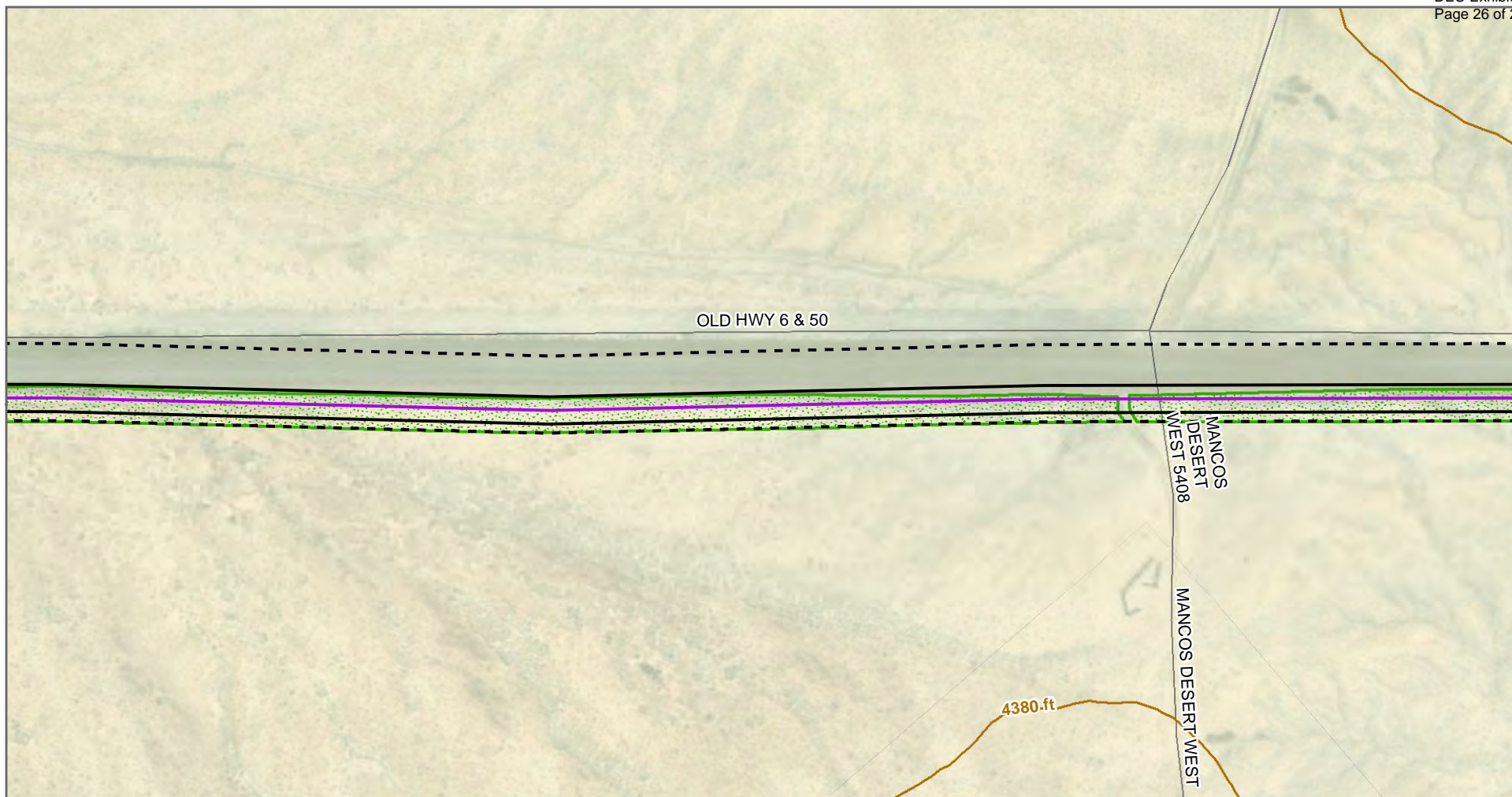
0 0.01 0.02 Miles
1:2,000

NORTH

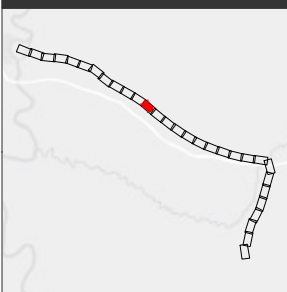
11/4/2022 NAD 1983 UTM Zone 12N






G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

Privileged and Confidential



PANEL 23 of 61

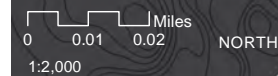


-  Permanent Easement
-  Project Centerline
-  Temporary Construction Workspace
-  Vegetation Disturbance
-  BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

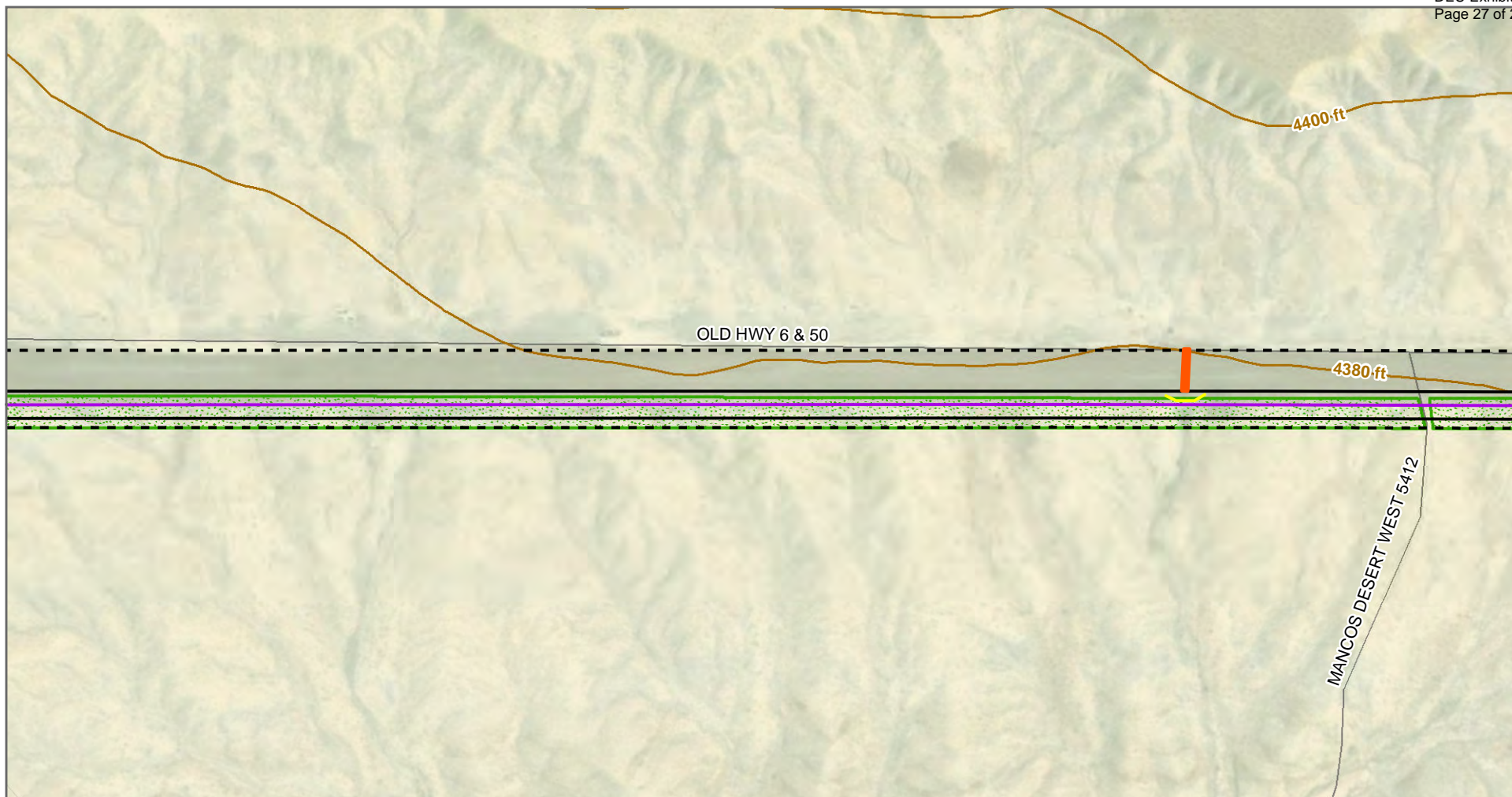
Panel Map 23 of 61

BMPs will be field fitted by
the construction contractor

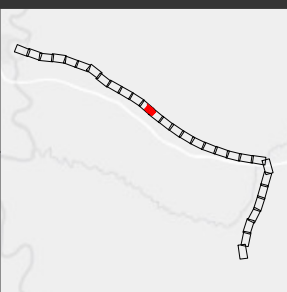


11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd



PANEL 24 of 61

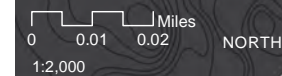


- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Straw Wattle
- Culvert
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 24 of 61

BMPs will be field fitted by
the construction contractor

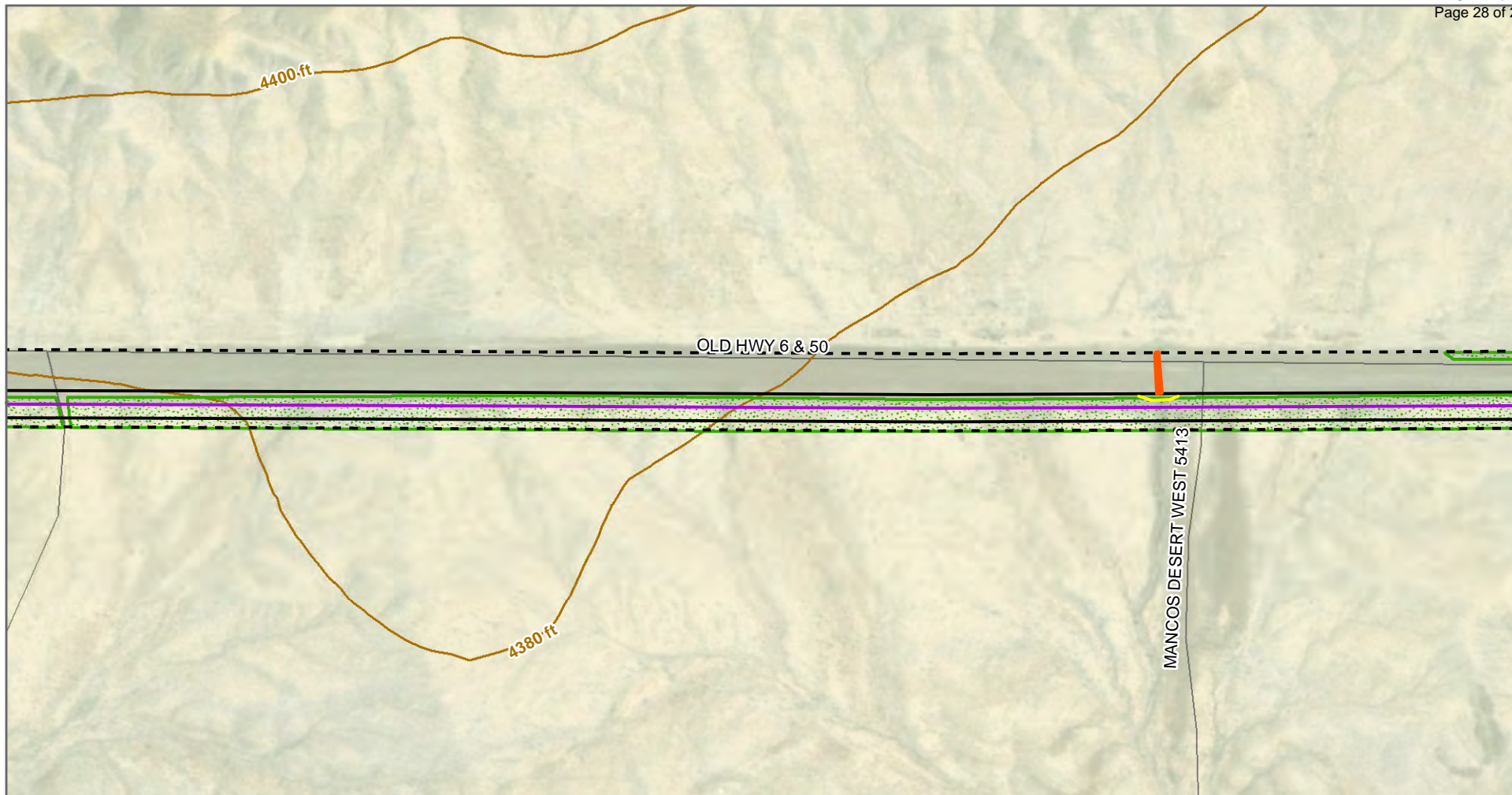


11/4/2022 NAD 1983 UTM Zone 12N

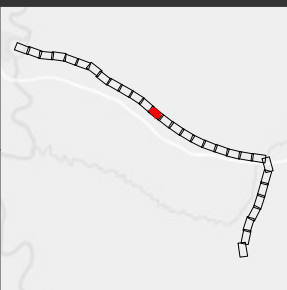
G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd










Planners &
Scientists



PANEL 25 of 61



-  Permanent Easement
-  Project Centerline
-  Temporary Construction Workspace
-  Straw Wattle
-  Culvert
-  Vegetation Disturbance
-  BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 25 of 61

BMPs will be field fitted by
the construction contractor

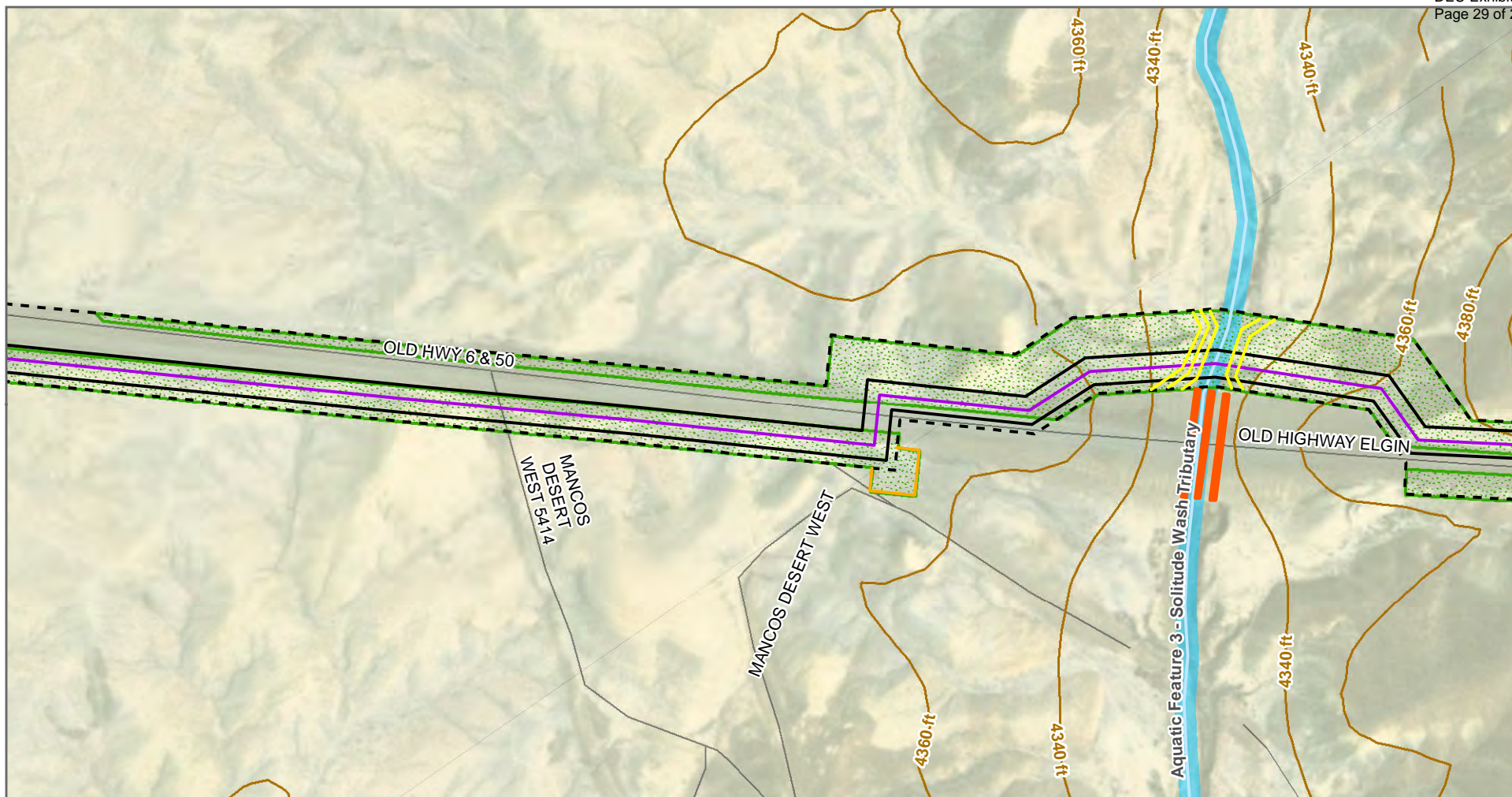
0 0.01 0.02 Miles
1:2,000

NORTH

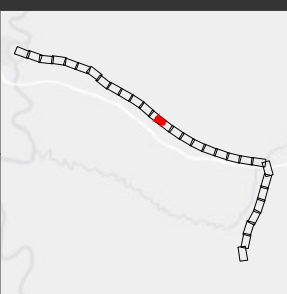
11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

Privileged and Confidential



PANEL 26 of 61

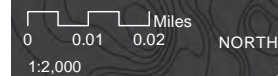


- Additional Temporary Construction Workspace
- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Straw Wattle
- NHD Waterway
- Culvert
- NWI - Riverine
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 26 of 61

BMPs will be field fitted by
the construction contractor

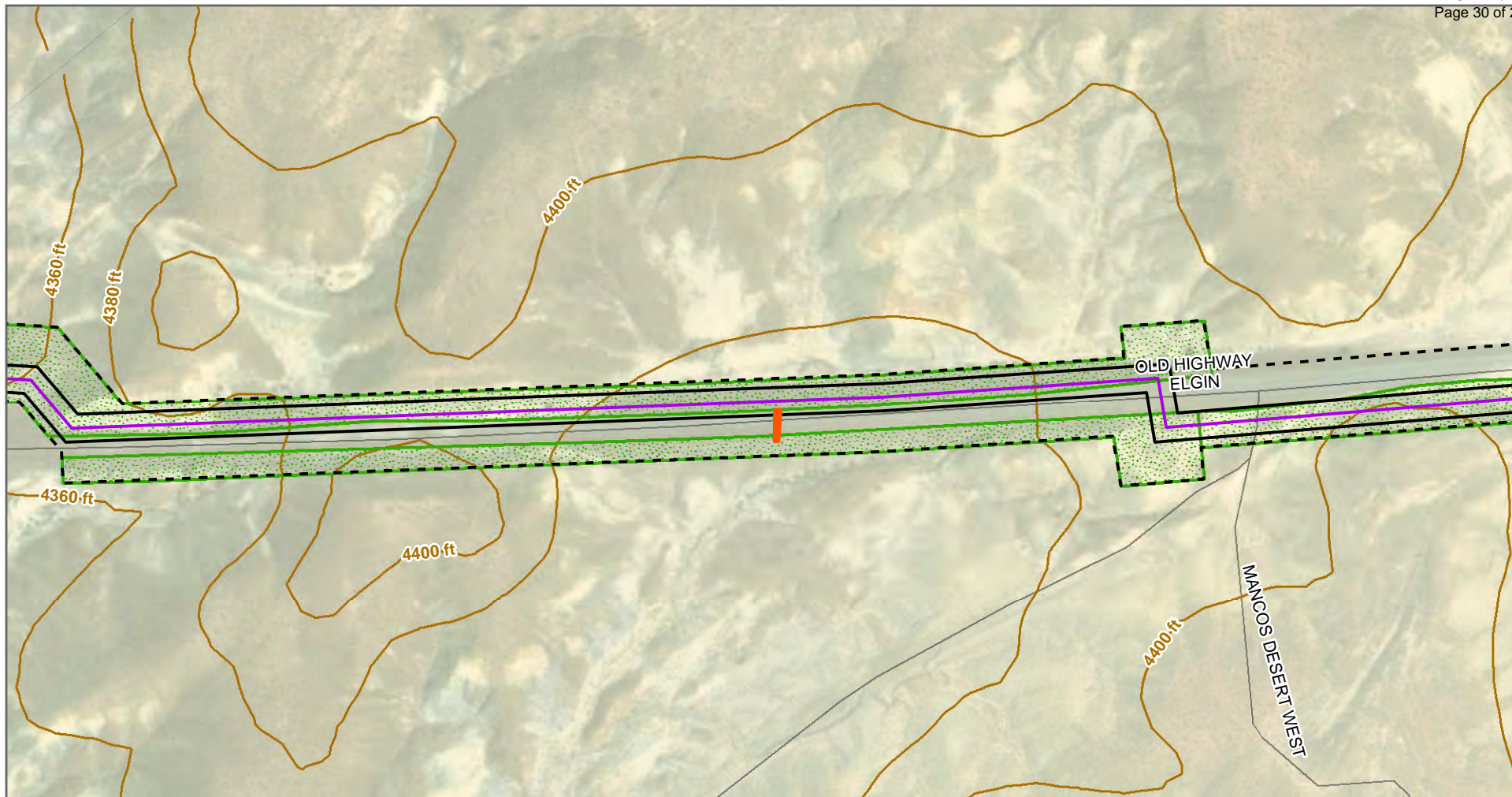


11/4/2022 NAD 1983 UTM Zone 12N

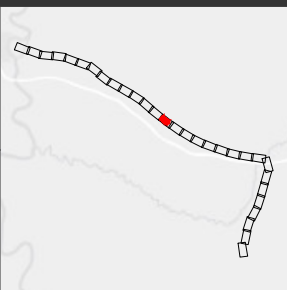
G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd



Planners &
Scientists



PANEL 27 of 61

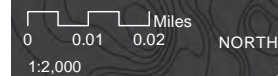


- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Culvert
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

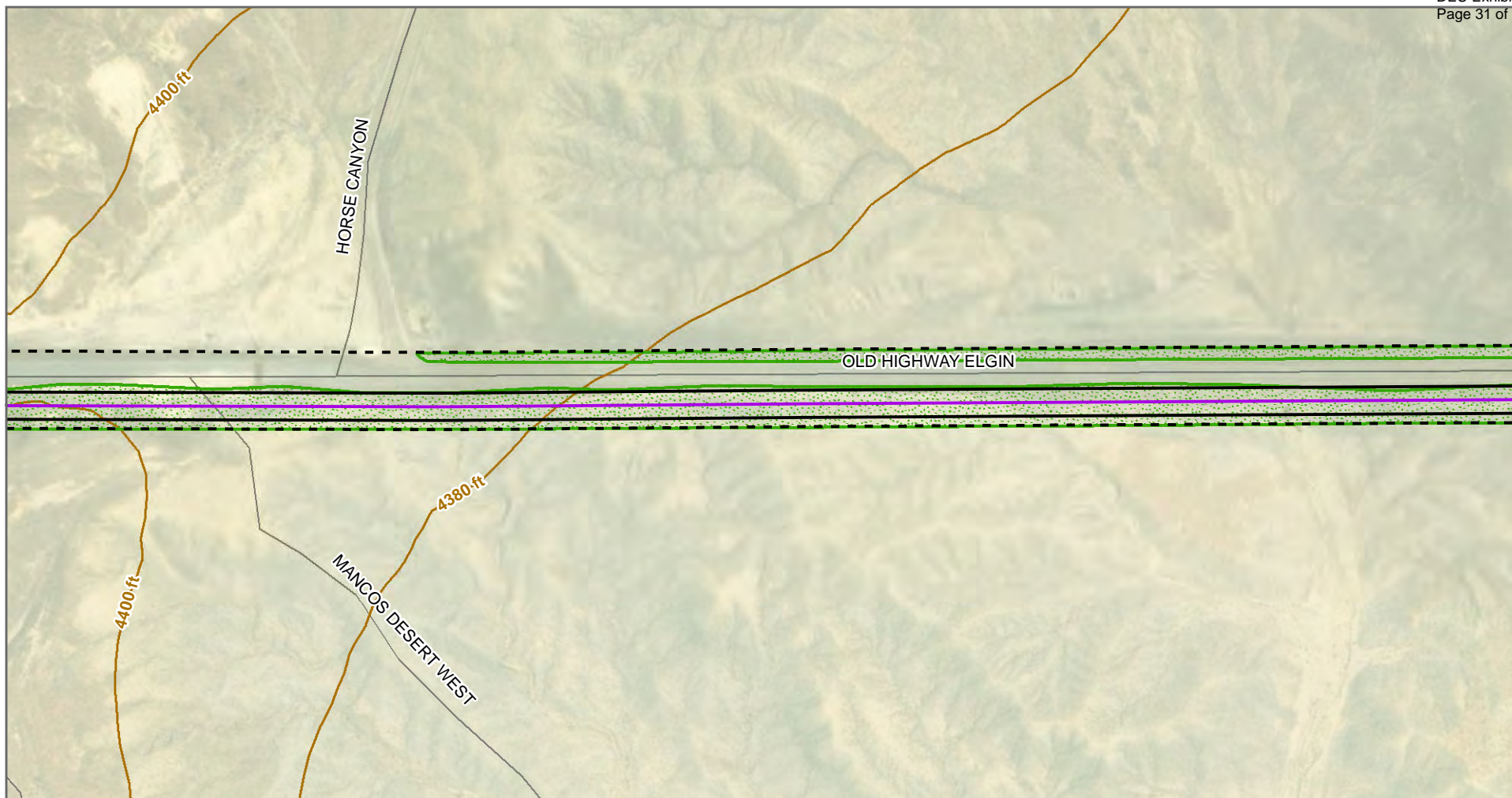
Panel Map 27 of 61

BMPs will be field fitted by
the construction contractor

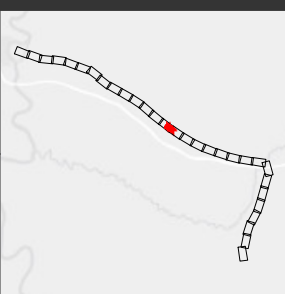


11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd



PANEL 28 of 61



- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 28 of 61

BMPs will be field fitted by
the construction contractor

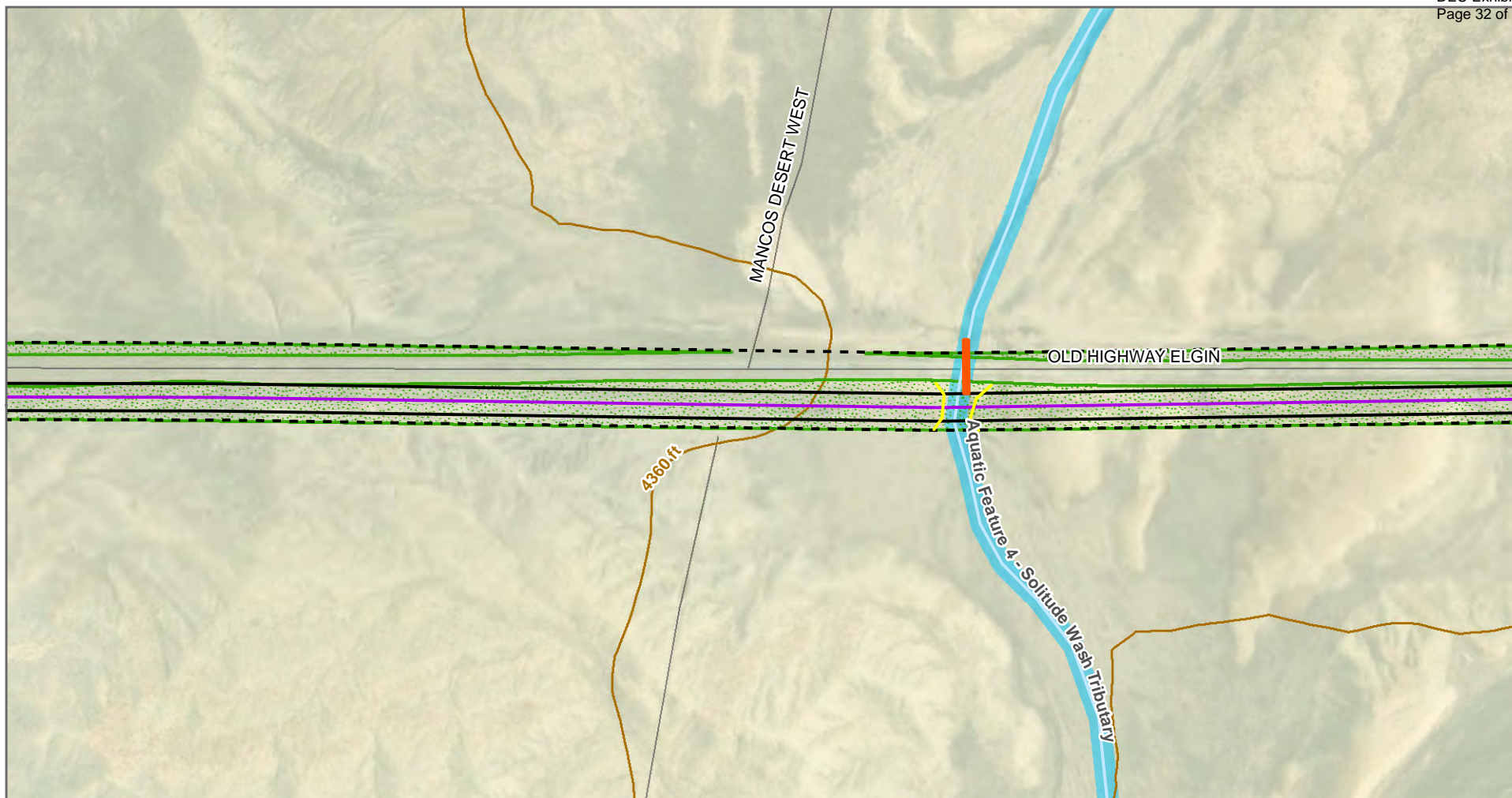
0 0.01 0.02 Miles
1:2,000

NORTH

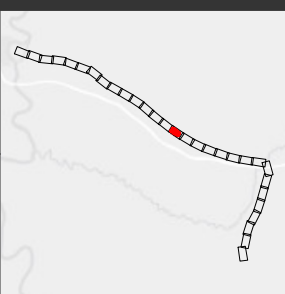
11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

Privileged and Confidential



PANEL 29 of 61



- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Straw Wattle
- NHD Waterway
- Culvert
- NWI - Riverine
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 29 of 61

BMPs will be field fitted by
the construction contractor

0 0.01 0.02 Miles
1:2,000 NORTH

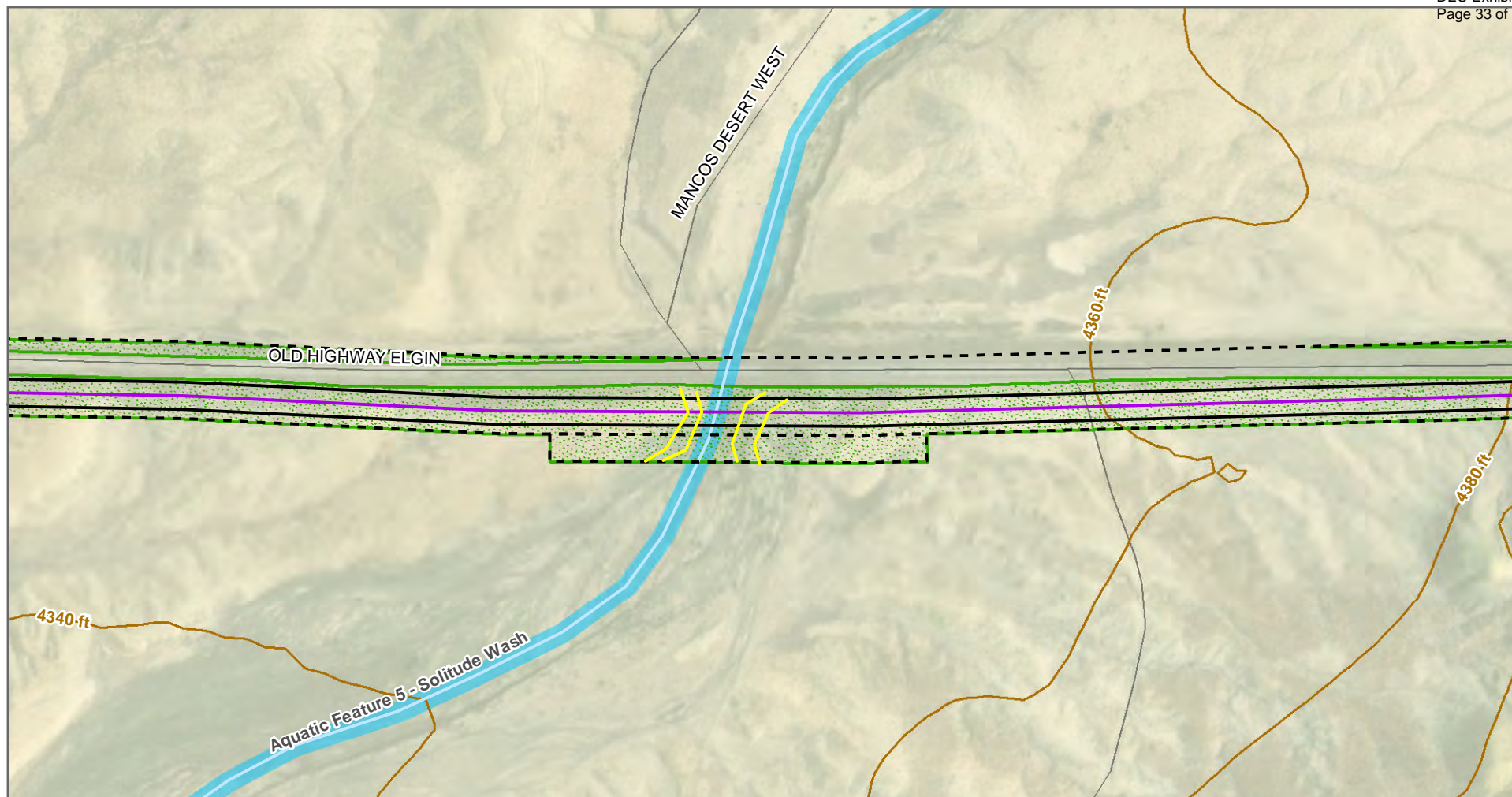
11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

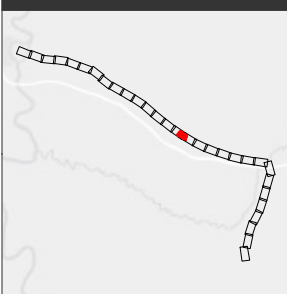
Privileged and Confidential



Planners &
Scientists



PANEL 30 of 61



- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Straw Wattle
- NHD Waterway
- NWI - Riverine
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 30 of 61

BMPs will be field fitted by
the construction contractor

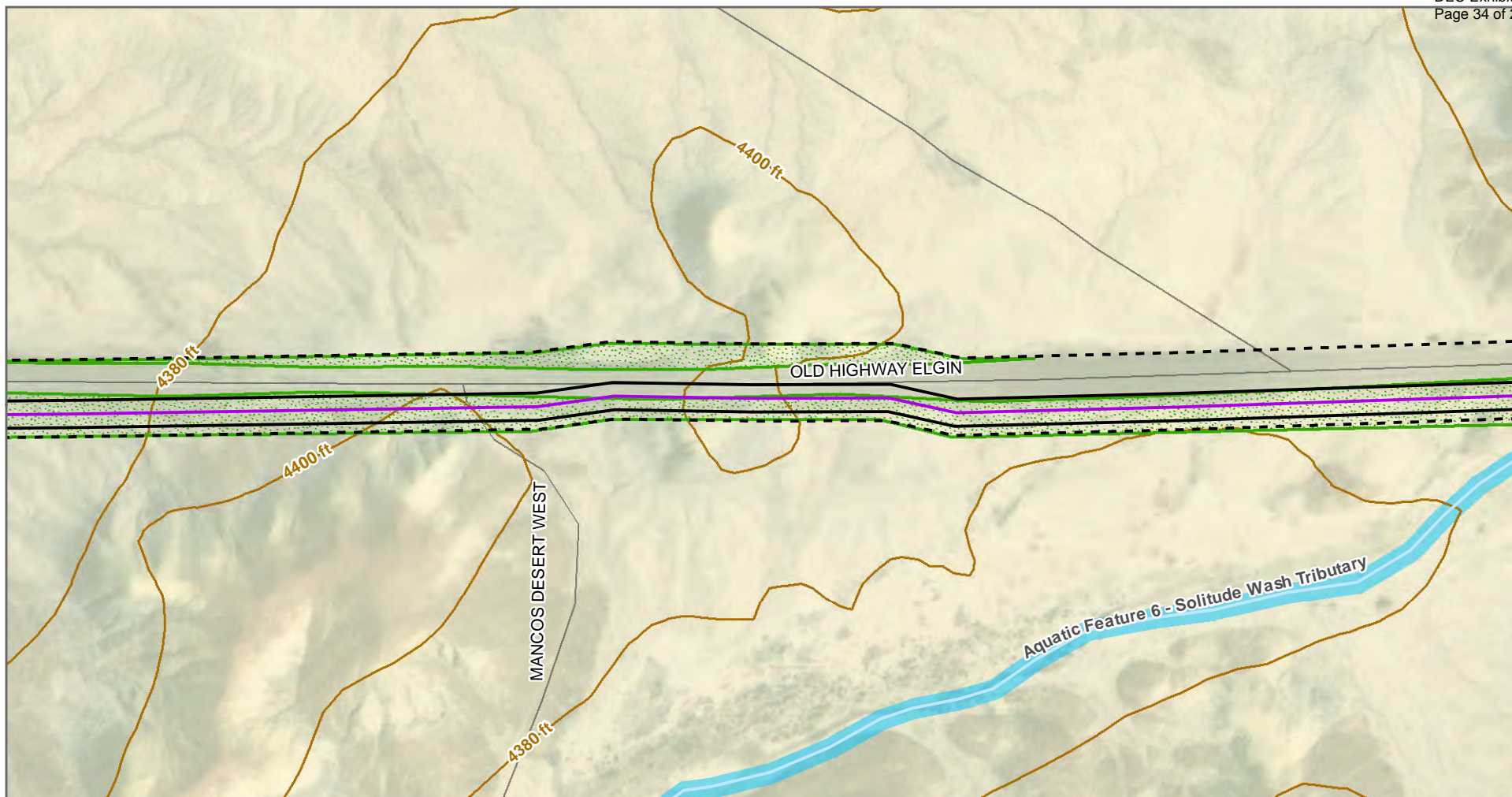
0 0.01 0.02 Miles
1:2,000

NORTH

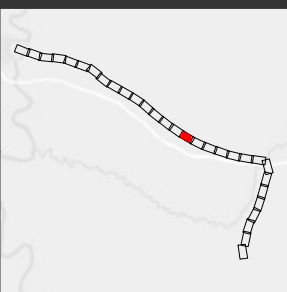
11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

Privileged and Confidential



PANEL 31 of 61



- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- NHD Waterway
- NWI - Riverine
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 31 of 61

BMPs will be field fitted by
the construction contractor

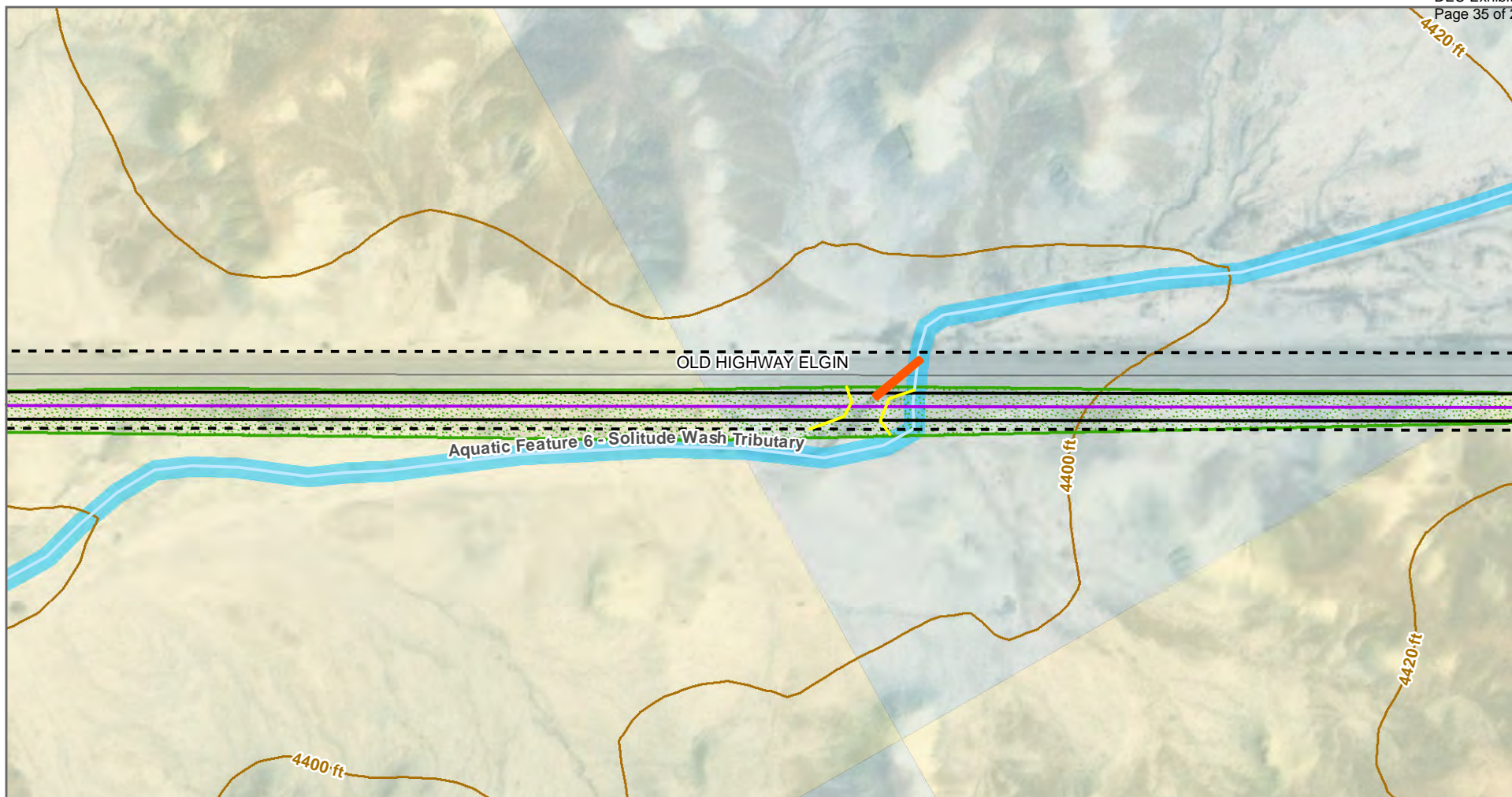
0 0.01 0.02 Miles
1:2,000
NORTH

11/4/2022 NAD 1983 UTM Zone 12N

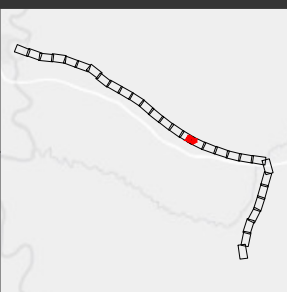
G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd



Planners &
Scientists



PANEL 32 of 61

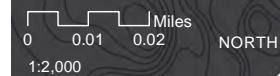


- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Straw Wattle
- NHD Waterway
- Culvert
- NWI - Riverine
- Vegetation Disturbance
- BLM
- SITLA

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 32 of 61

BMPs will be field fitted by
the construction contractor

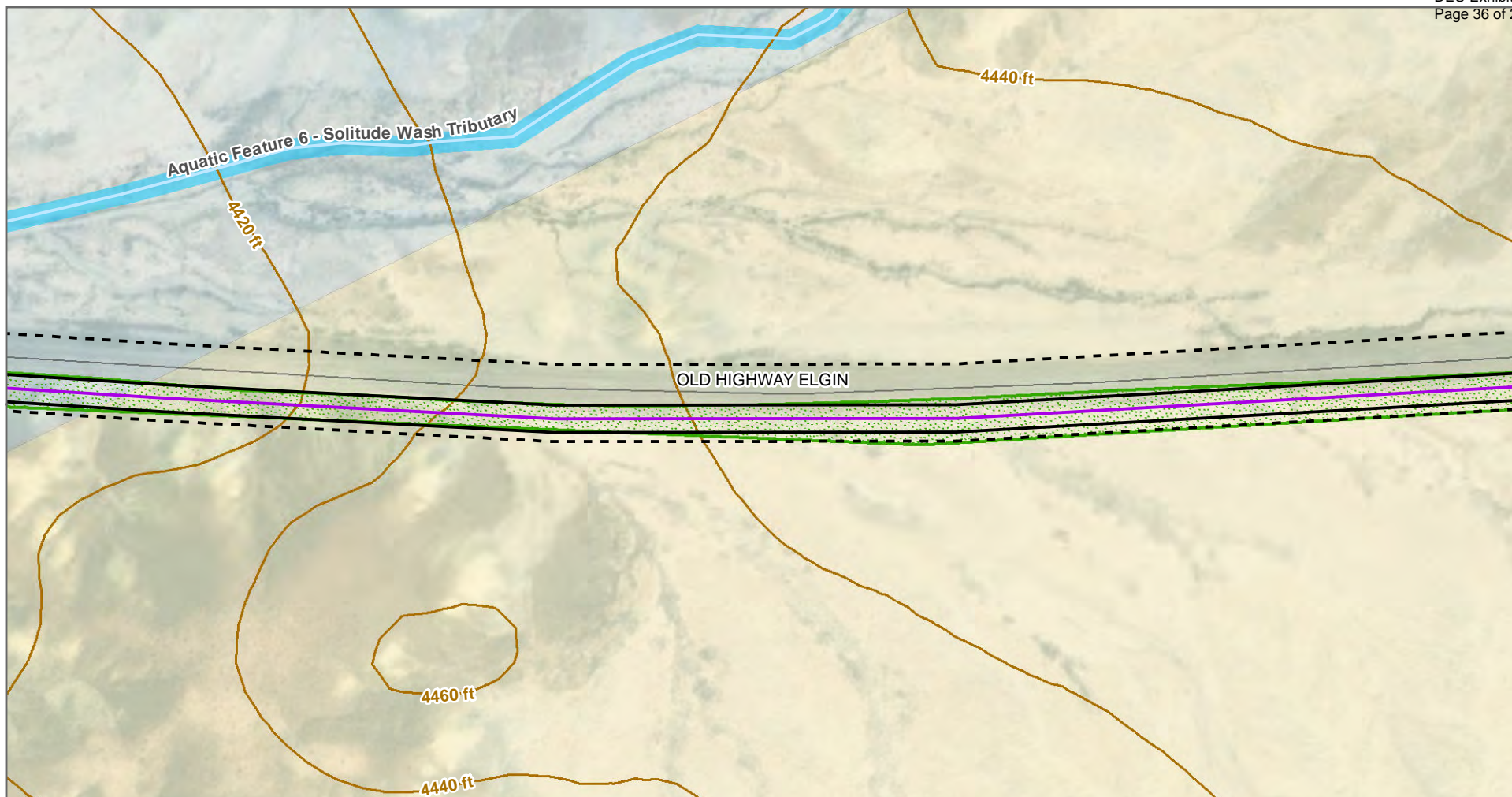


11/4/2022 NAD 1983 UTM Zone 12N

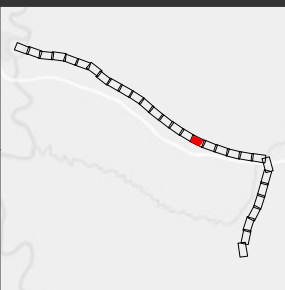
G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd



Planners &
Scientists



PANEL 33 of 61



- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- NHD Waterway
- NWI - Riverine
- Vegetation Disturbance
- BLM
- SITLA

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 33 of 61

BMPs will be field fitted by
the construction contractor

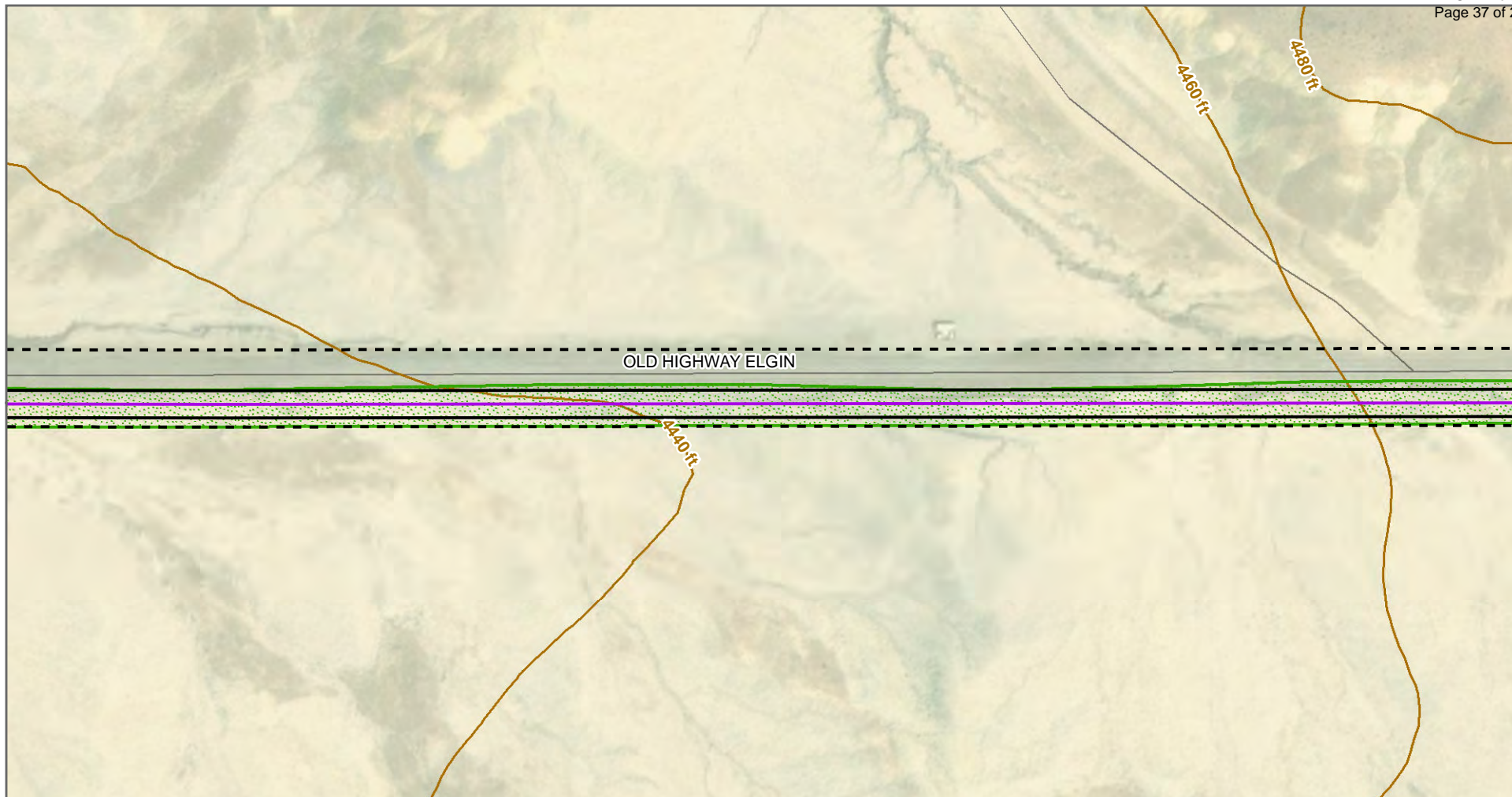
0 0.01 0.02 Miles
1:2,000

NORTH

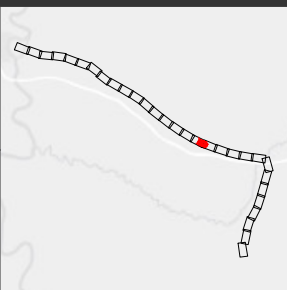
11/4/2022 NAD 1983 UTM Zone 12N






G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

Privileged and Confidential



PANEL 34 of 61

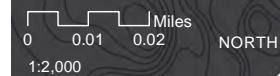


-  Permanent Easement
-  Project Centerline
-  Temporary Construction Workspace
-  Vegetation Disturbance
-  BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

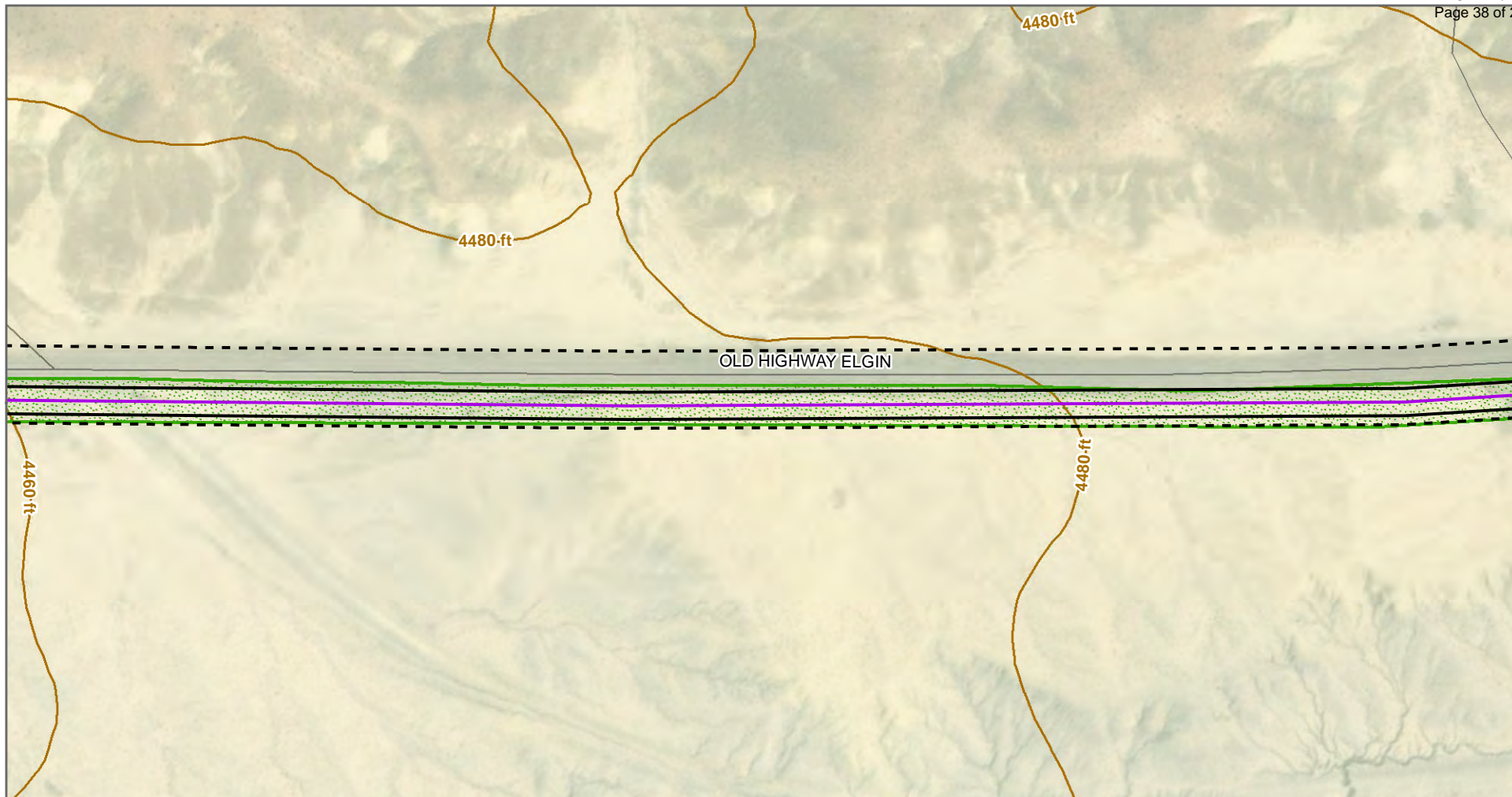
Panel Map 34 of 61

BMPs will be field fitted by
the construction contractor

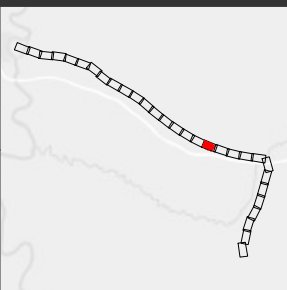


11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd



PANEL 35 of 61

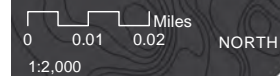


- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 35 of 61

BMPs will be field fitted by
the construction contractor

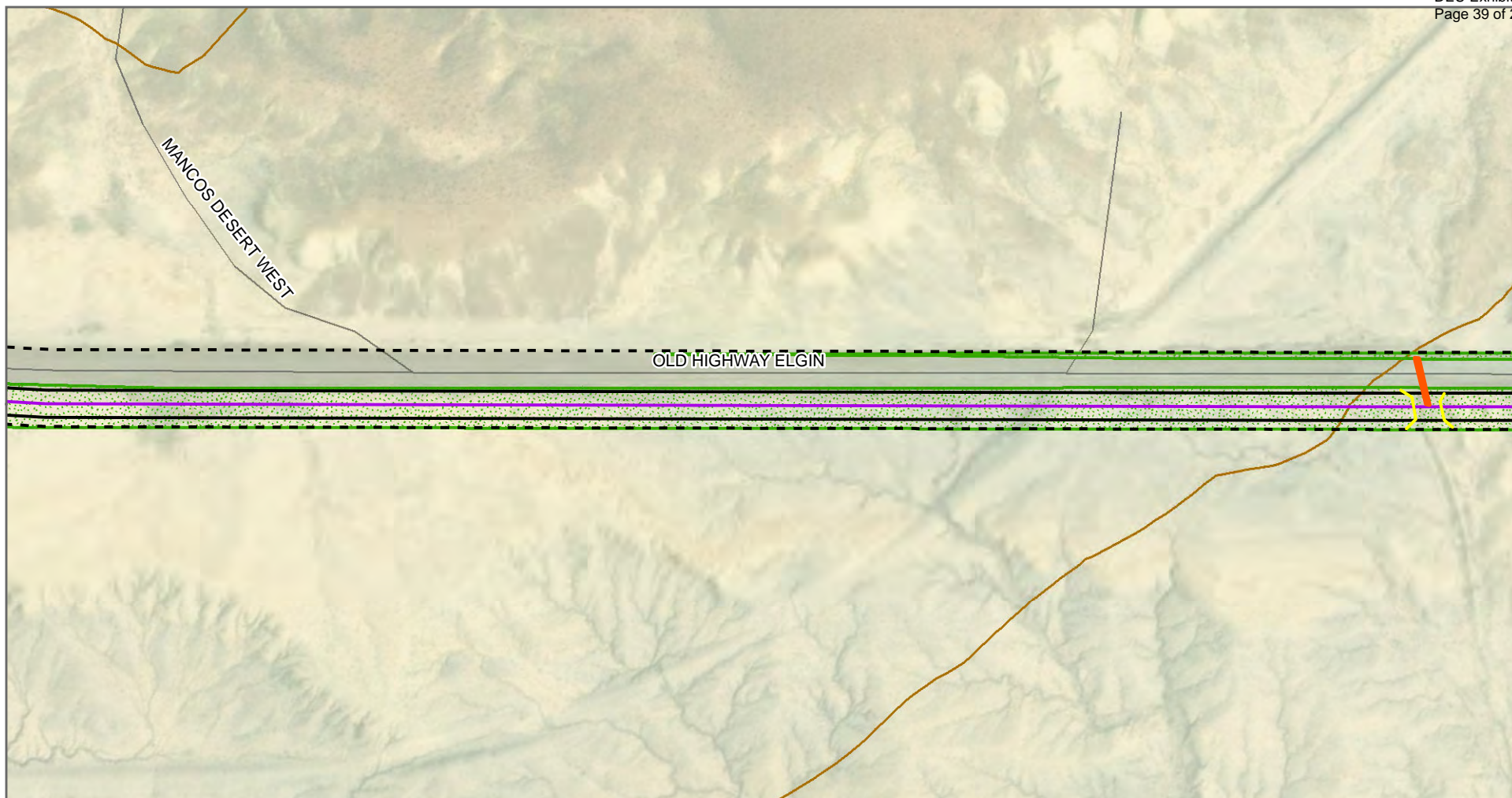


11/4/2022 NAD 1983 UTM Zone 12N

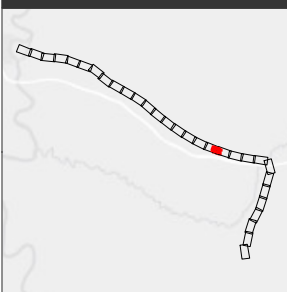
G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd



Planners &
Scientists



PANEL 36 of 61



- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Straw Wattle
- Culvert
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 36 of 61

BMPs will be field fitted by
the construction contractor

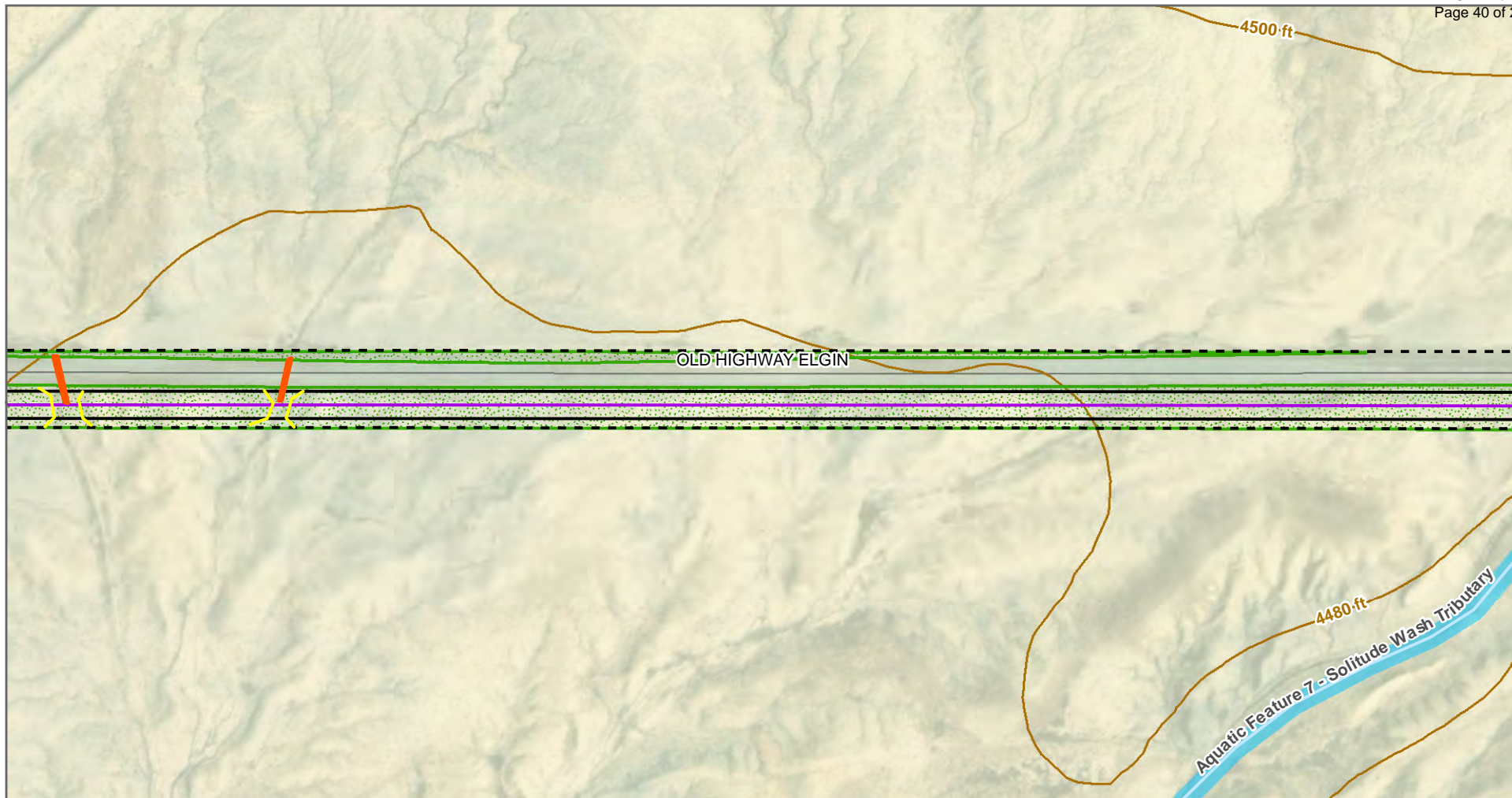
0 0.01 0.02 Miles
1:2,000

NORTH

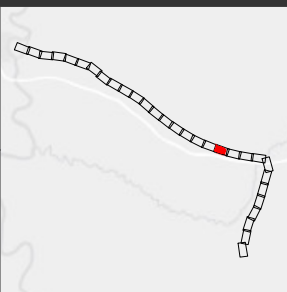
11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

Privileged and Confidential



PANEL 37 of 61

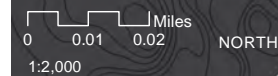


- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Straw Wattle
- NHD Waterway
- Culvert
- NWI - Riverine
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

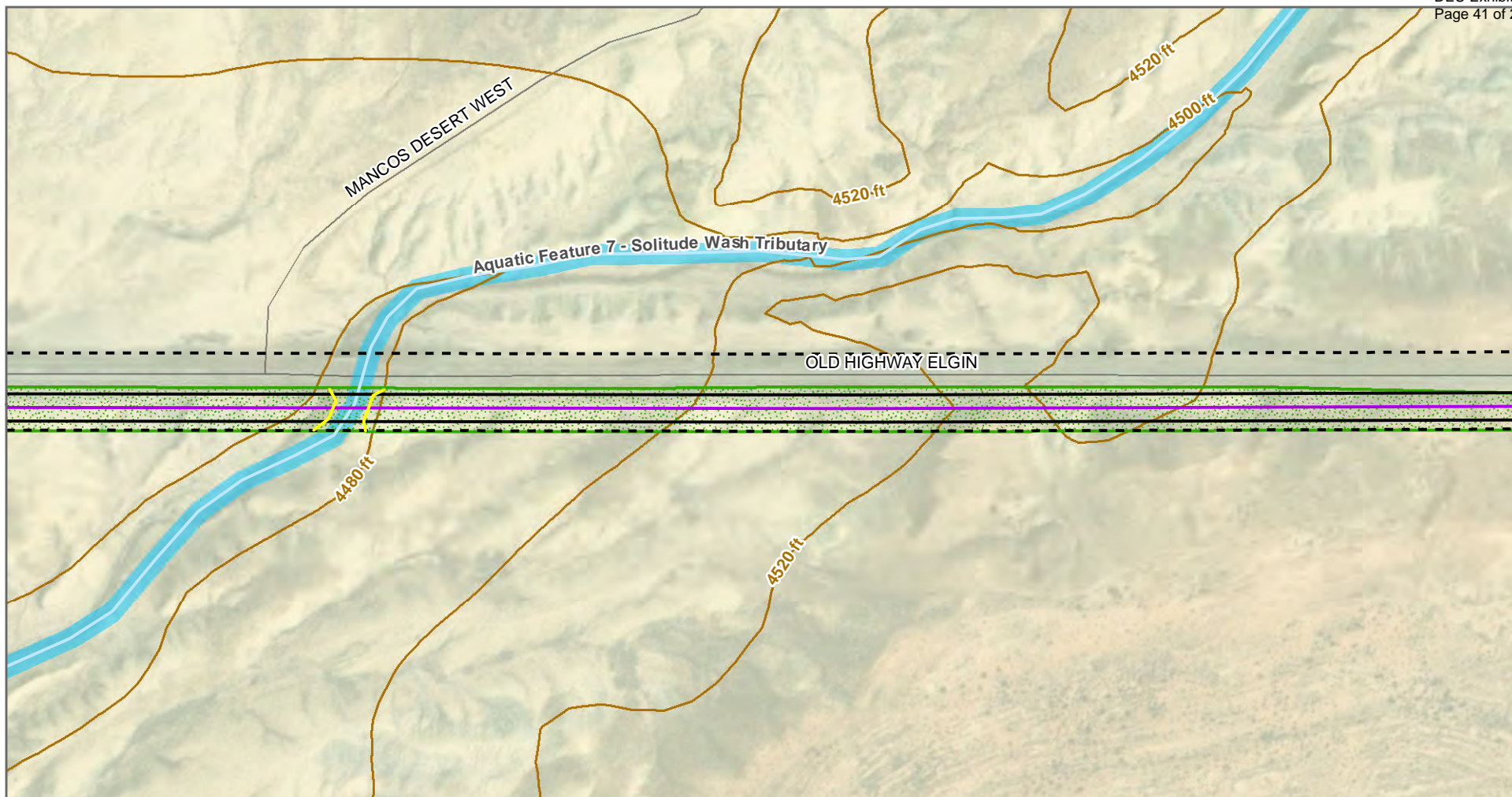
Panel Map 37 of 61

BMPs will be field fitted by
the construction contractor

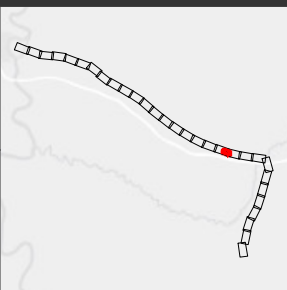


11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd



PANEL 38 of 61



- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Straw Wattle
- NHD Waterway
- NWI - Riverine
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 38 of 61

BMPs will be field fitted by
the construction contractor

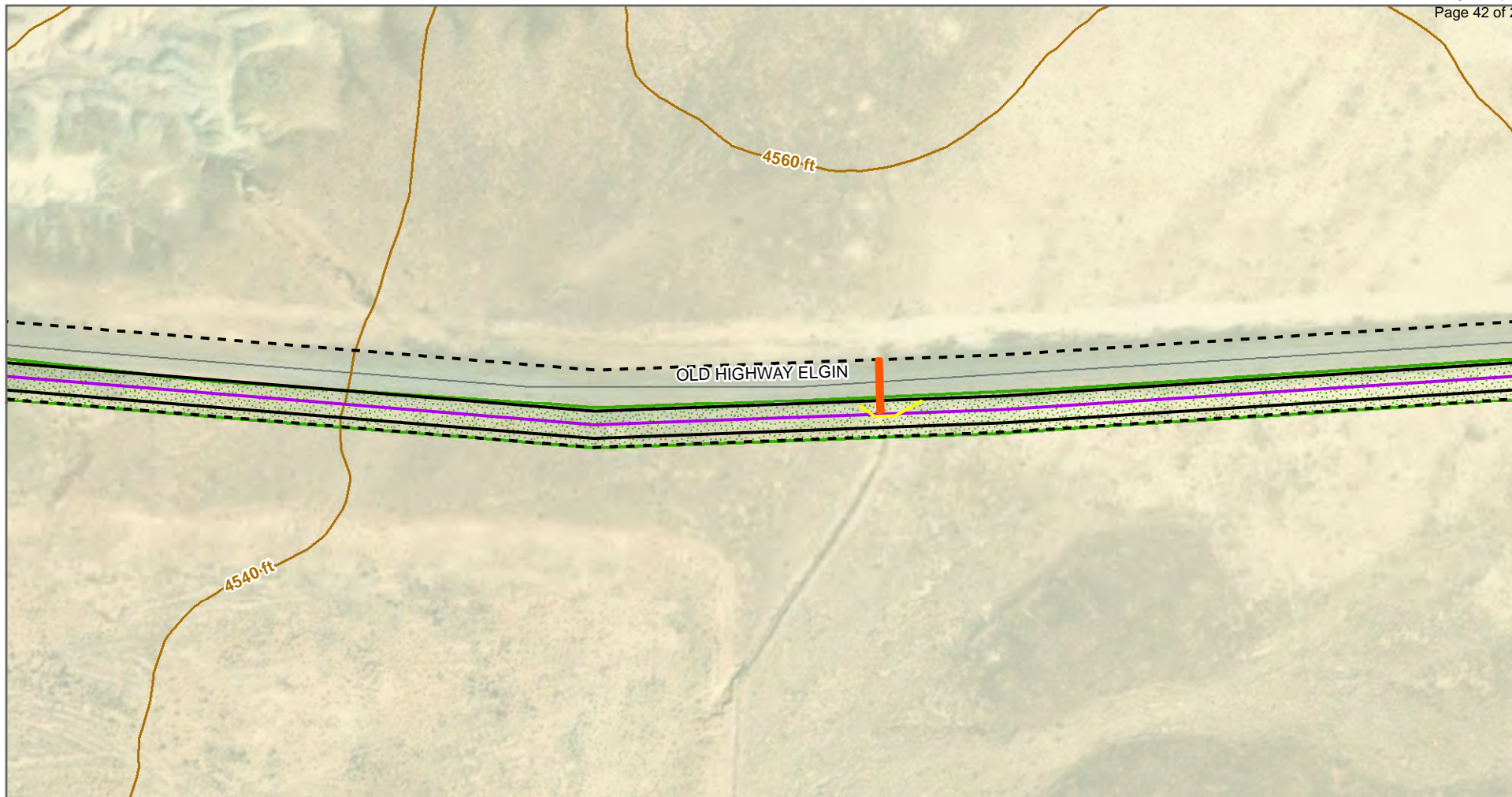
0 0.01 0.02 Miles
1:2,000

NORTH

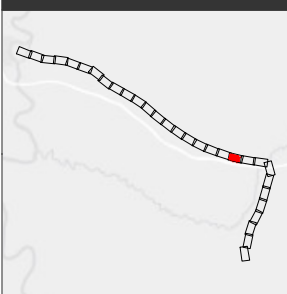
11/4/2022 NAD 1983 UTM Zone 12N








G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

Privileged and Confidential



PANEL 39 of 61

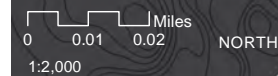


-  Permanent Easement
-  Project Centerline
-  Temporary Construction Workspace
-  Straw Wattle
-  Culvert
-  Vegetation Disturbance
-  BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 39 of 61

BMPs will be field fitted by
the construction contractor

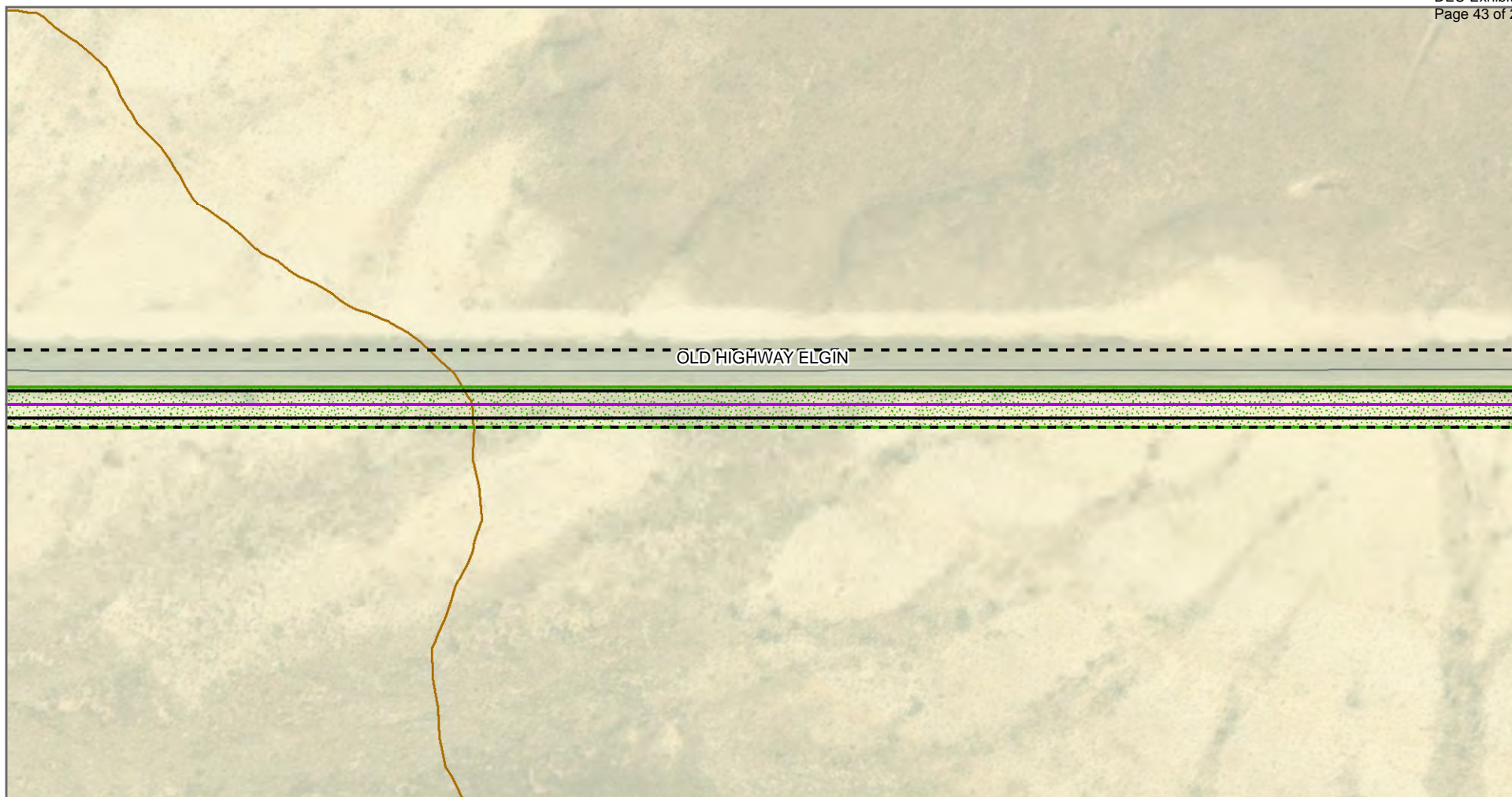


11/4/2022 NAD 1983 UTM Zone 12N

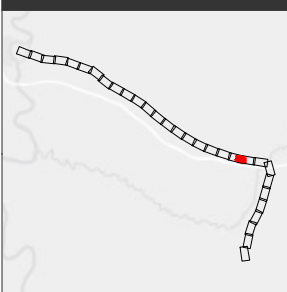
G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd



Planners &
Scientists



PANEL 40 of 61



- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 40 of 61

BMPs will be field fitted by
the construction contractor

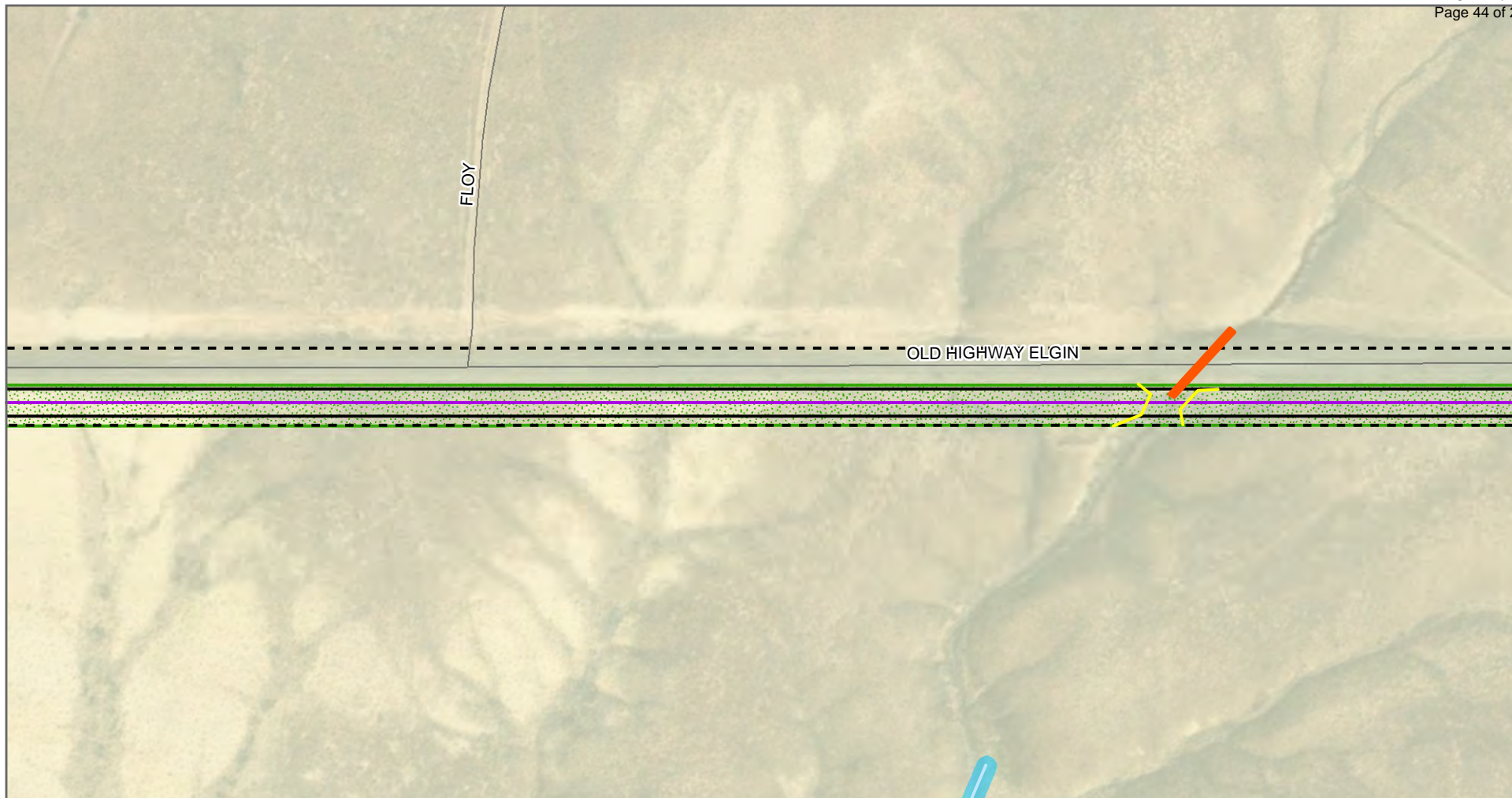
0 0.01 0.02 Miles
1:2,000
NORTH

11/4/2022 NAD 1983 UTM Zone 12N

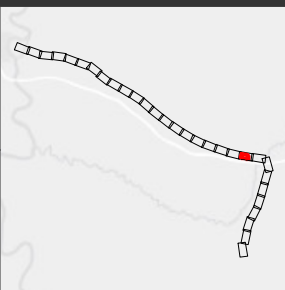
G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd



Planners &
Scientists



PANEL 41 of 61

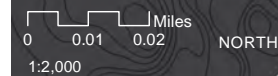


- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Straw Wattle
- NHD Waterway
- Culvert
- NWI - Riverine
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 41 of 61

BMPs will be field fitted by
the construction contractor

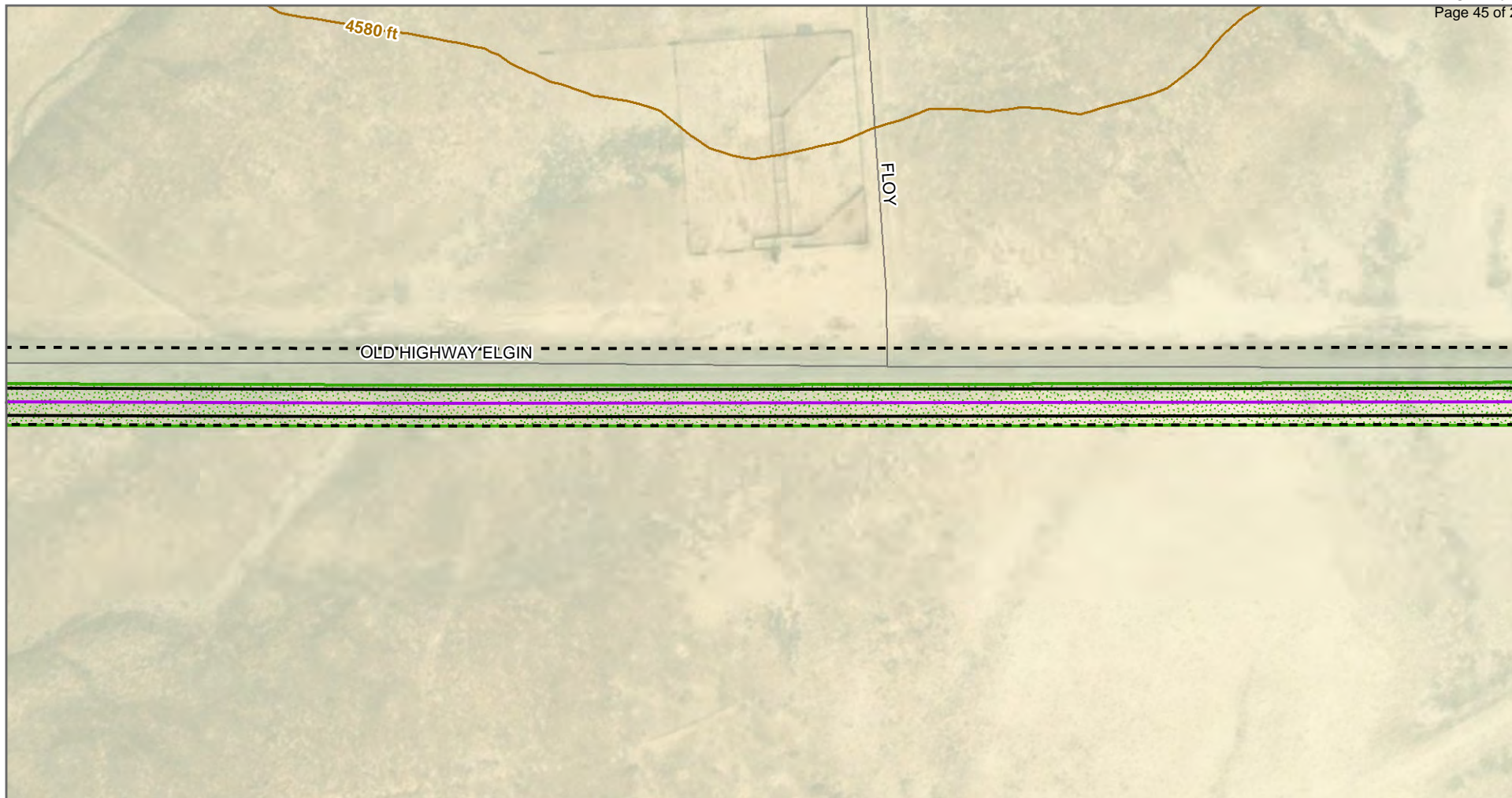


11/4/2022 NAD 1983 UTM Zone 12N

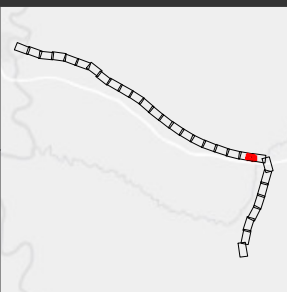
G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd








Planners &
Scientists



PANEL 42 of 61



-  Permanent Easement
-  Project Centerline
-  Temporary Construction Workspace
-  Vegetation Disturbance
-  BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 42 of 61

BMPs will be field fitted by
the construction contractor

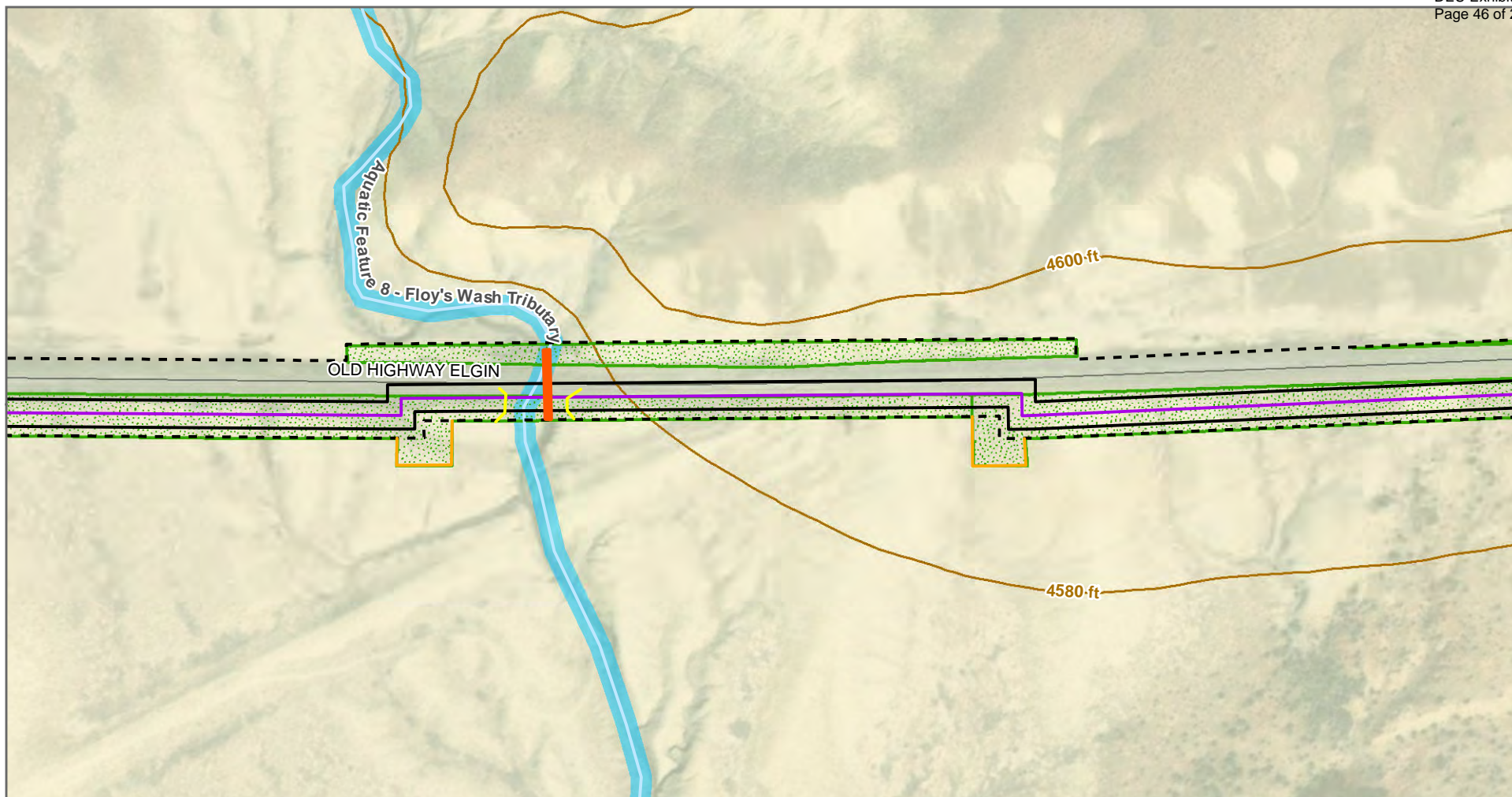
0 0.01 0.02 Miles
1:2,000

NORTH

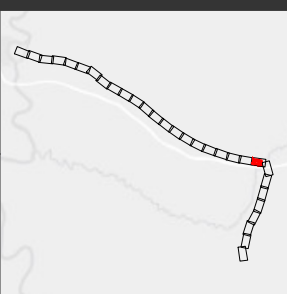
11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

Privileged and Confidential



PANEL 43 of 61

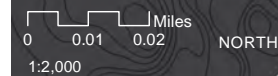


- Additional Temporary Construction Workspace
- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Straw Wattle
- NHD Waterway
- Culvert
- NWI - Riverine
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 43 of 61

BMPs will be field fitted by
the construction contractor

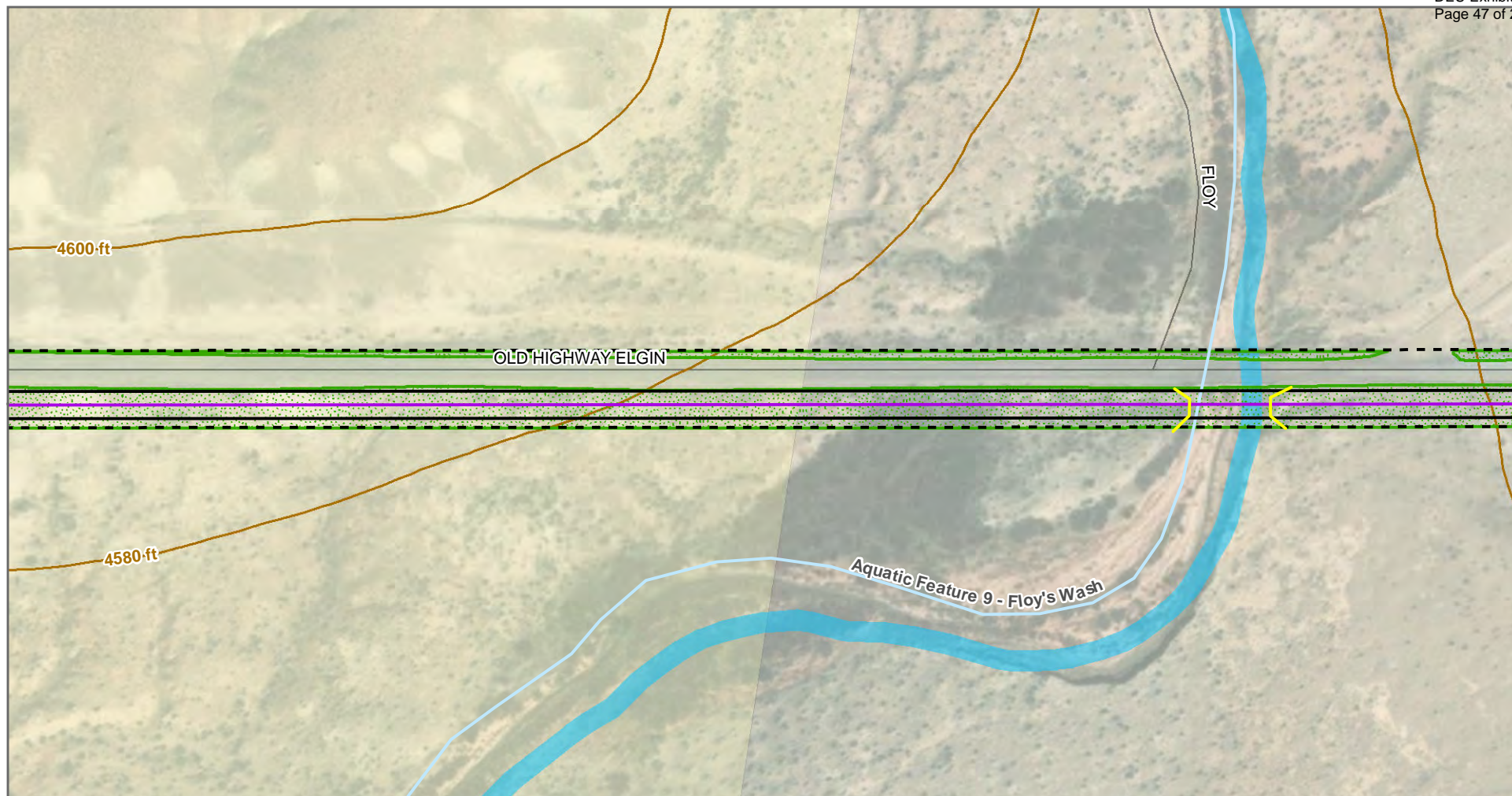


11/4/2022 NAD 1983 UTM Zone 12N

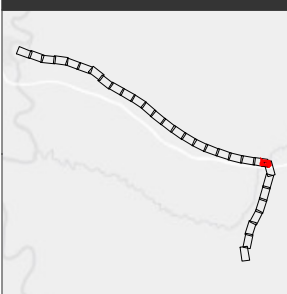
G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd



Planners &
Scientists



PANEL 44 of 61

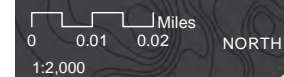


- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Straw Wattle
- NHD Waterway
- NWI - Riverine
- Vegetation Disturbance
- BLM
- Private

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 44 of 61

BMPs will be field fitted by
the construction contractor

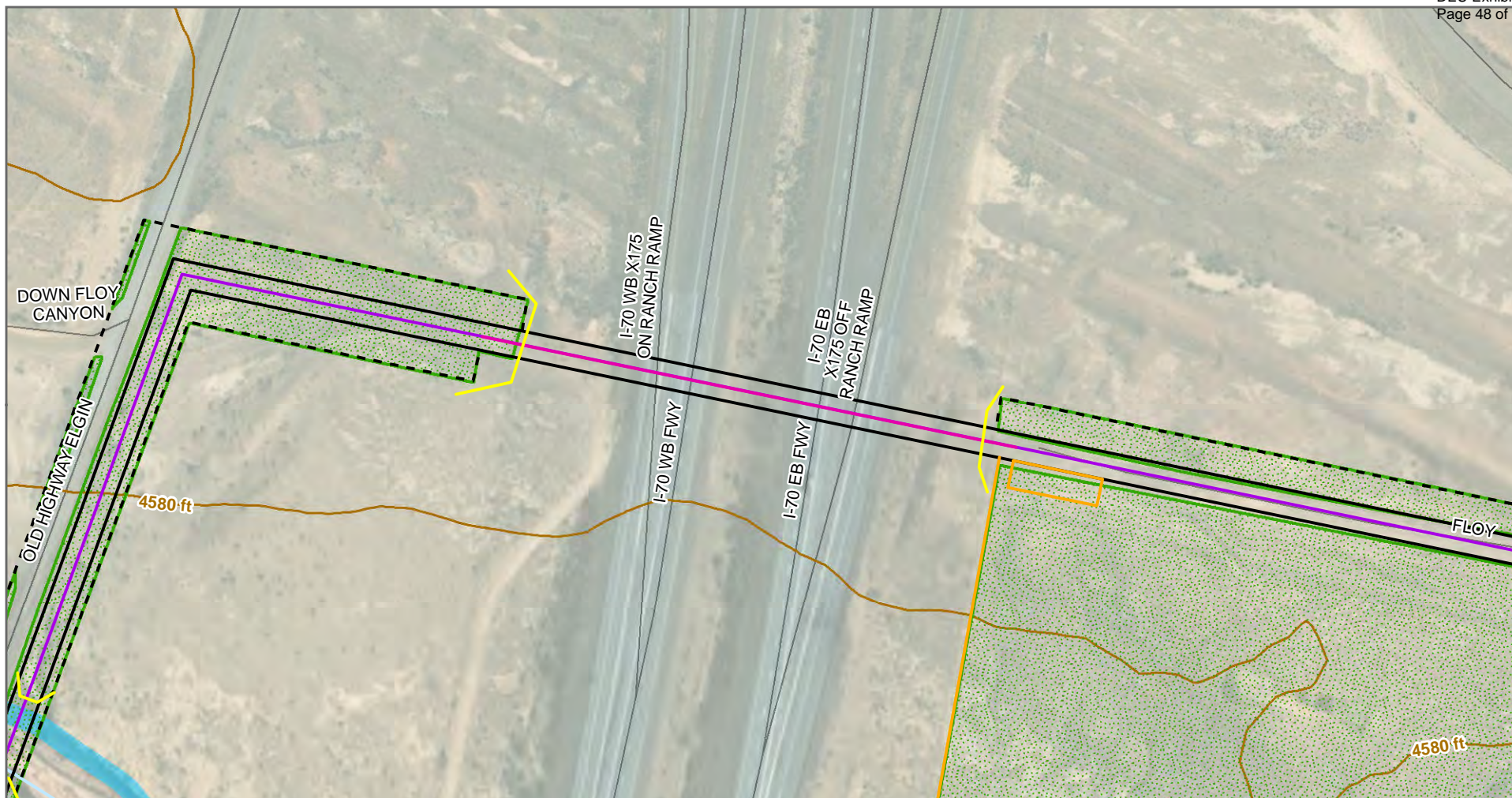


11/4/2022 NAD 1983 UTM Zone 12N

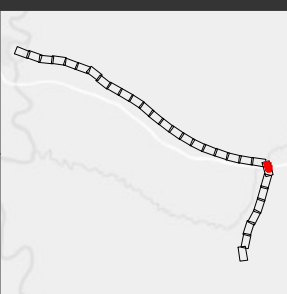
G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd



Planners &
Scientists



PANEL 45 of 61



- Additional Temporary Construction Workspace
- Boring
- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Straw Wattle
- NHD Waterway
- NWI - Riverine
- Vegetation Disturbance
- Private

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 45 of 61

BMPs will be field fitted by
the construction contractor

0 0.01 0.02 Miles
1:2,000 NORTH

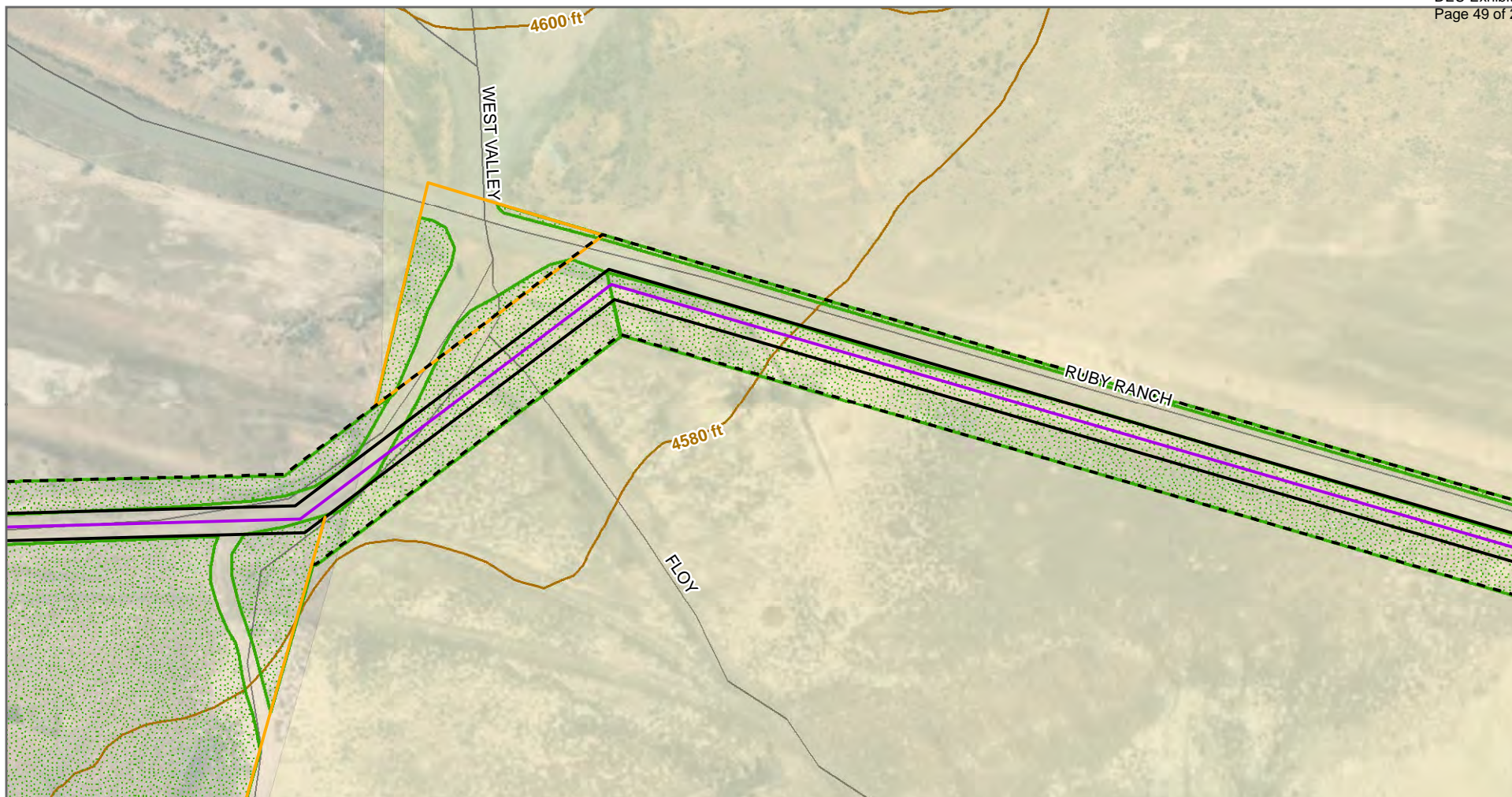
11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

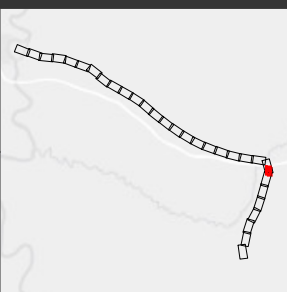
Privileged and Confidential



Planners & Scientists



PANEL 46 of 61

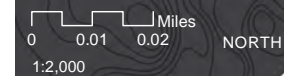


- Additional Temporary Construction Workspace
- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Vegetation Disturbance
- BLM
- Private

Green River Pipeline
 Dominion Energy
 SWPPP
 Site Map & Erosion Control Plan

Panel Map 46 of 61

BMPs will be field fitted by the construction contractor



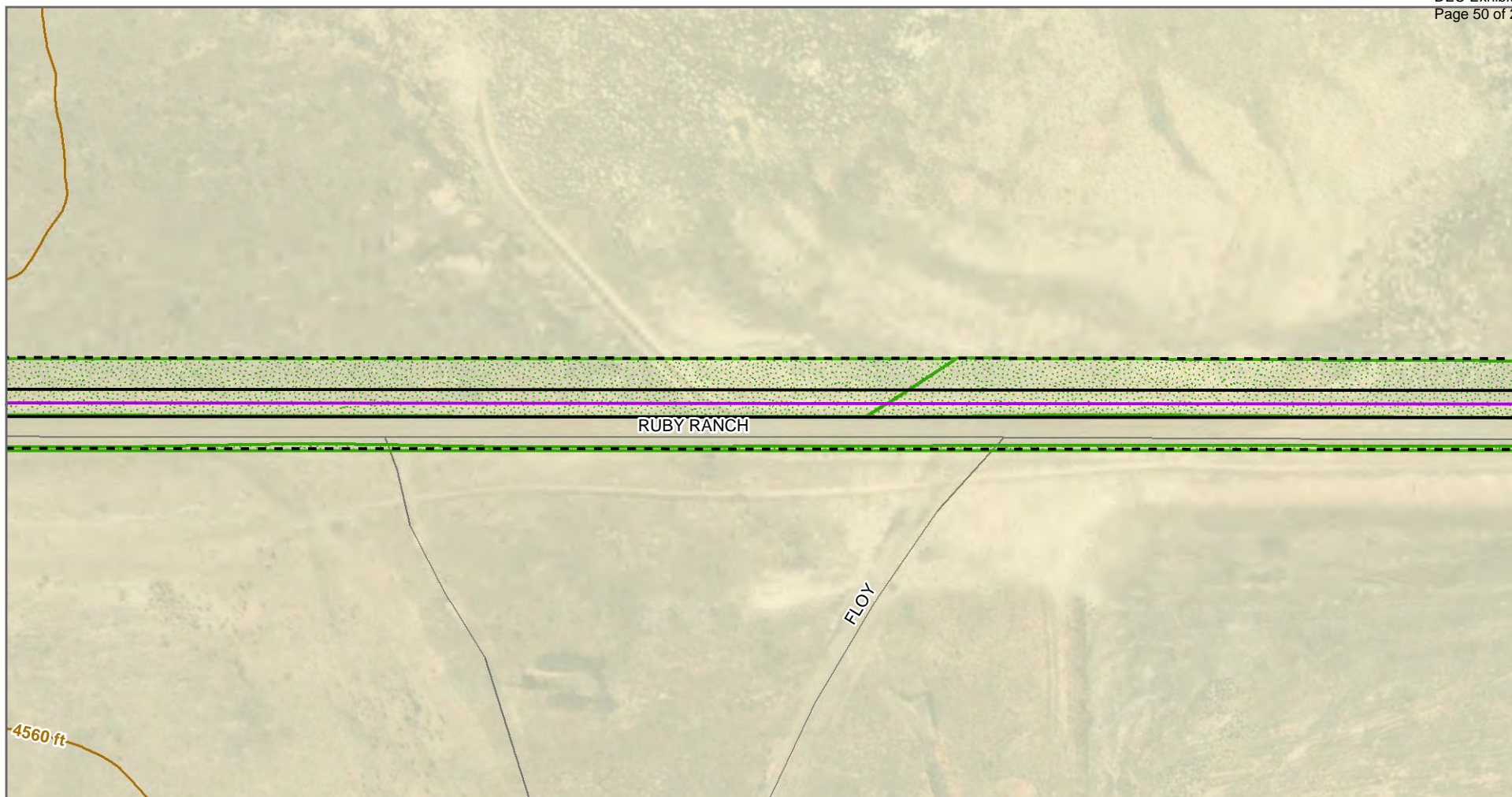
11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

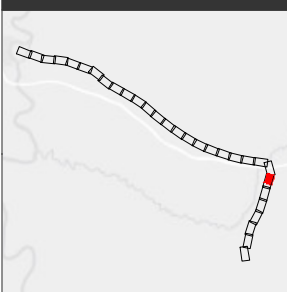
Privileged and Confidential



Planners & Scientists



PANEL 47 of 61



- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 47 of 61

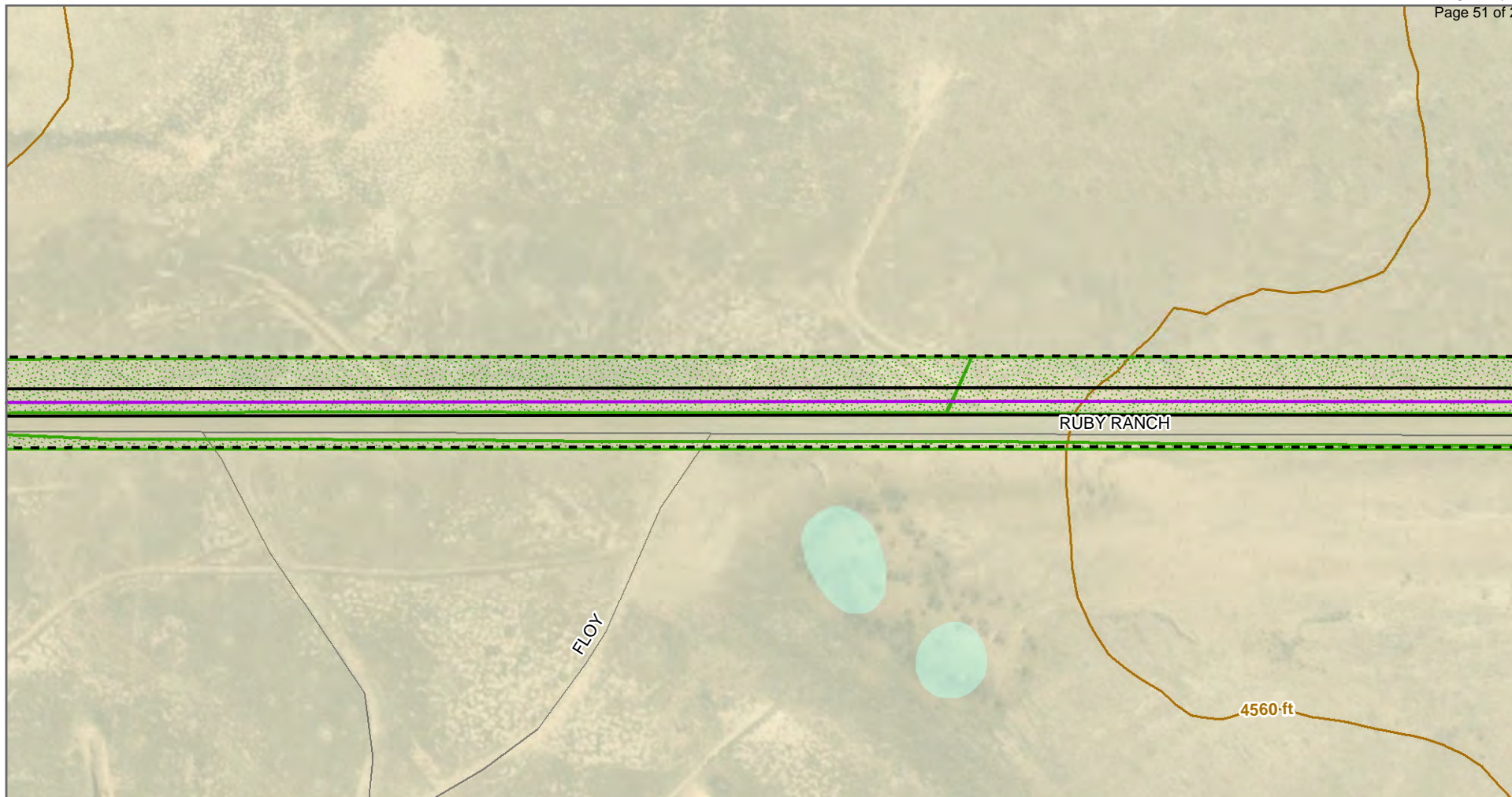
BMPs will be field fitted by
the construction contractor
→

0 0.01 0.02 Miles
1:2,000

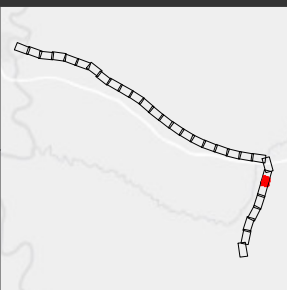
NORTH

11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd



PANEL 48 of 61



- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- NWI - Freshwater Pond
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 48 of 61

BMPs will be field fitted by
the construction contractor
→

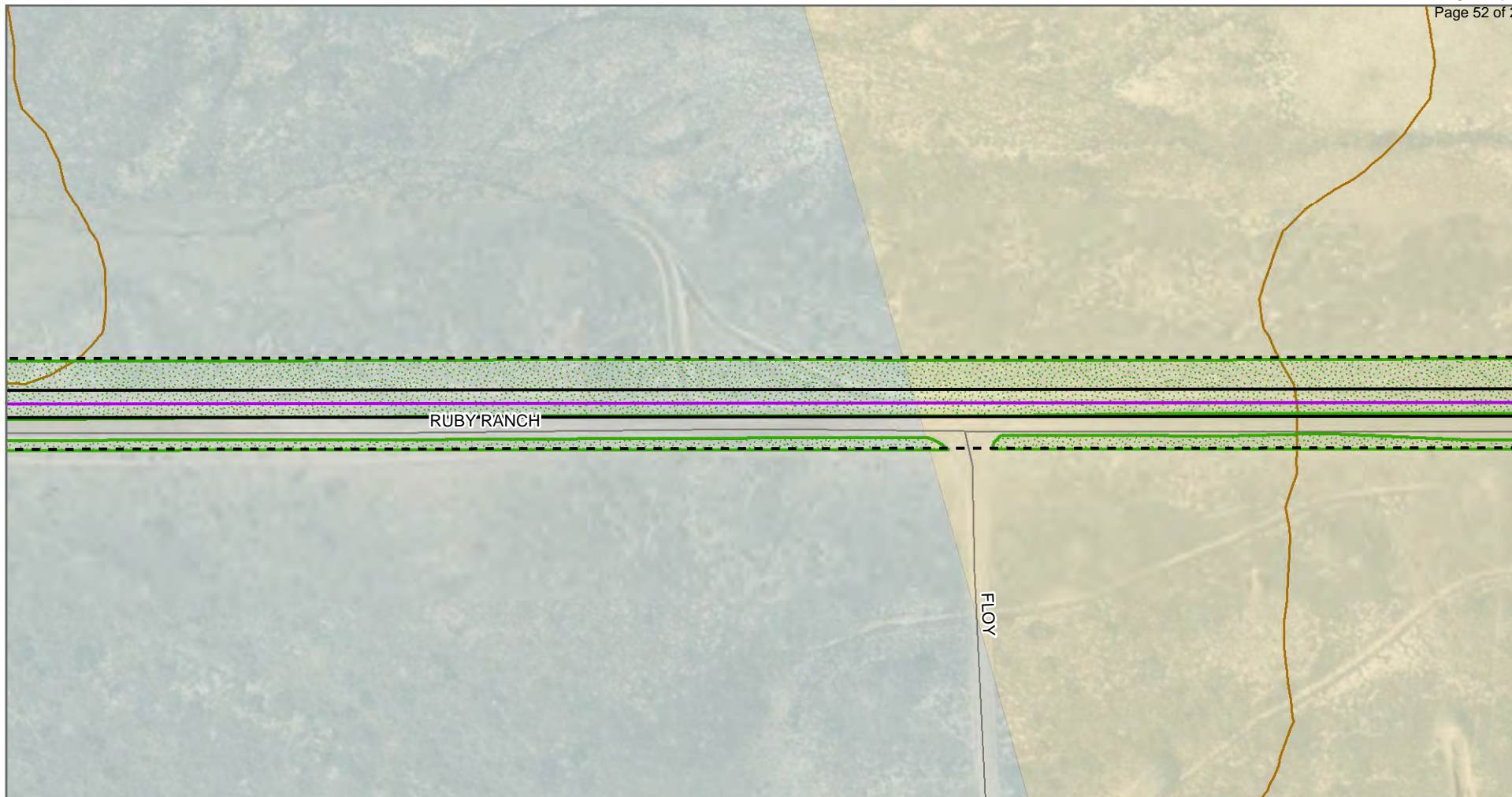
0 0.01 0.02 Miles
1:2,000

NORTH

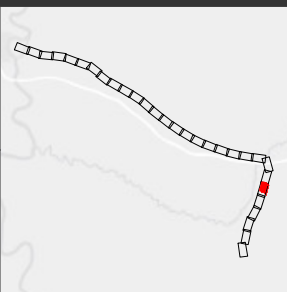
11/4/2022 NAD 1983 UTM Zone 12N







G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

Privileged and Confidential




PANEL 49 of 61

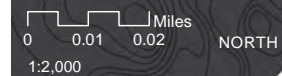


-  Permanent Easement
-  Project Centerline
-  Temporary Construction Workspace
-  Vegetation Disturbance
-  BLM
-  SITLA

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 49 of 61

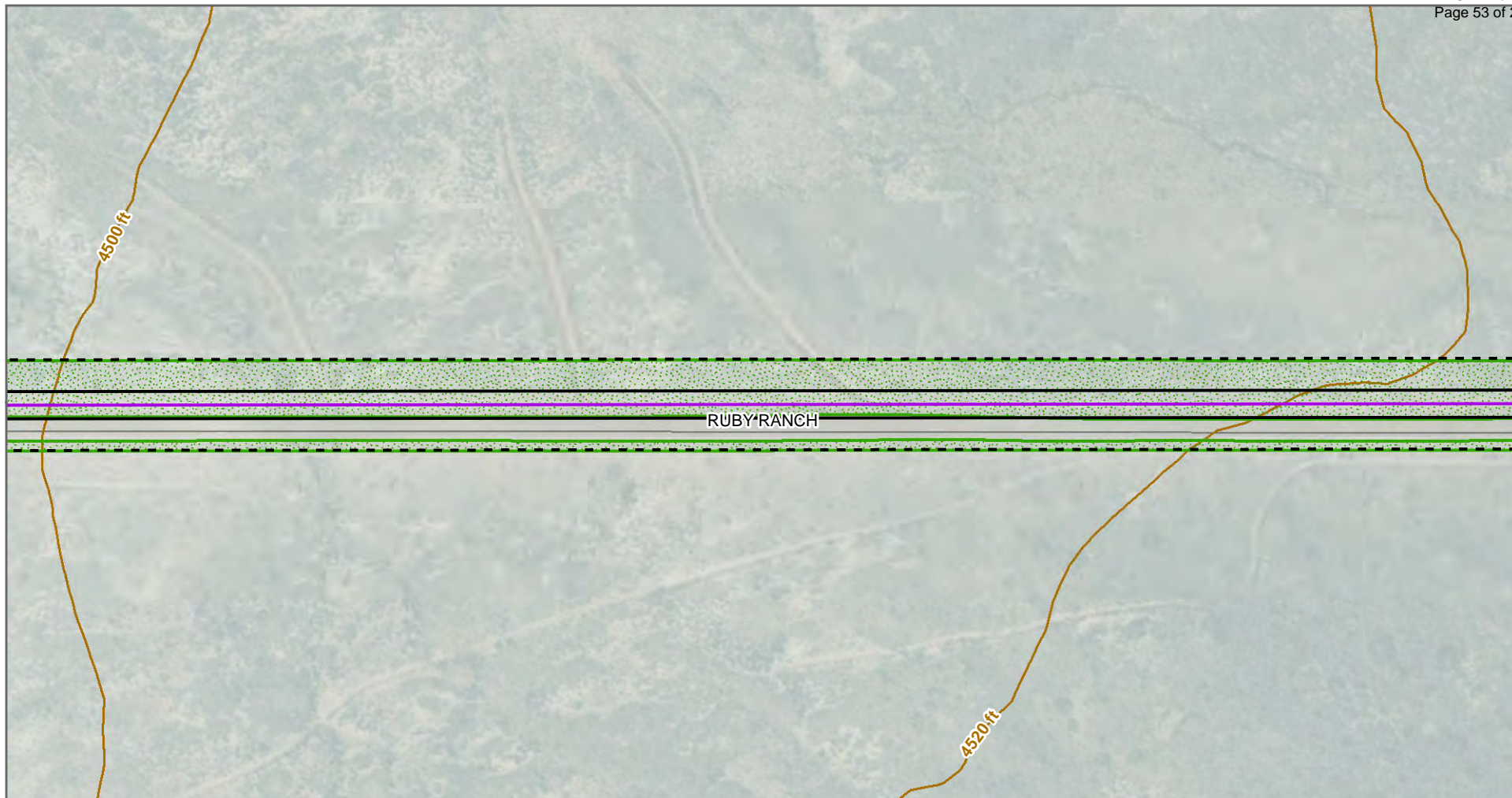
BMPs will be field fitted by
the construction contractor




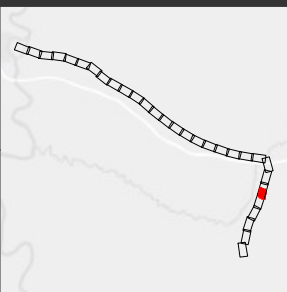
11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

Privileged and Confidential



PANEL 50 of 61



- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Vegetation Disturbance
- SITLA

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 50 of 61

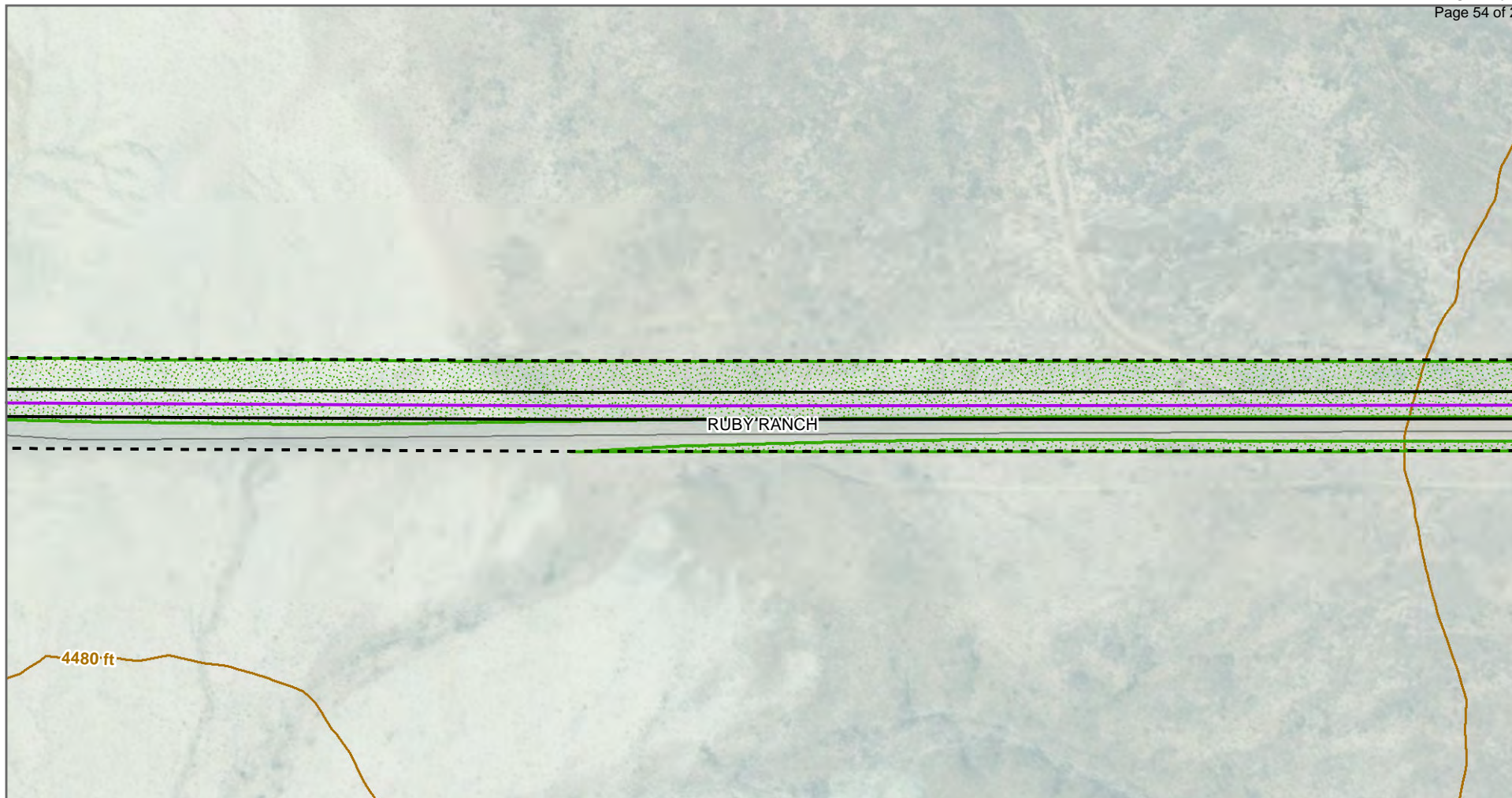
BMPs will be field fitted by
the construction contractor
→

0 0.01 0.02 Miles
1:2,000

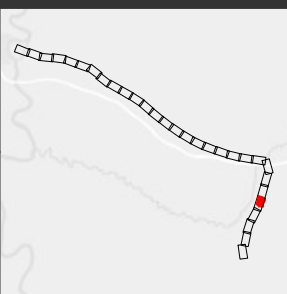
NORTH






11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd



PANEL 51 of 61

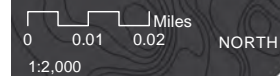


-  Permanent Easement
-  Project Centerline
-  Temporary Construction Workspace
-  Vegetation Disturbance
-  SITLA

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 51 of 61

BMPs will be field fitted by
the construction contractor
→

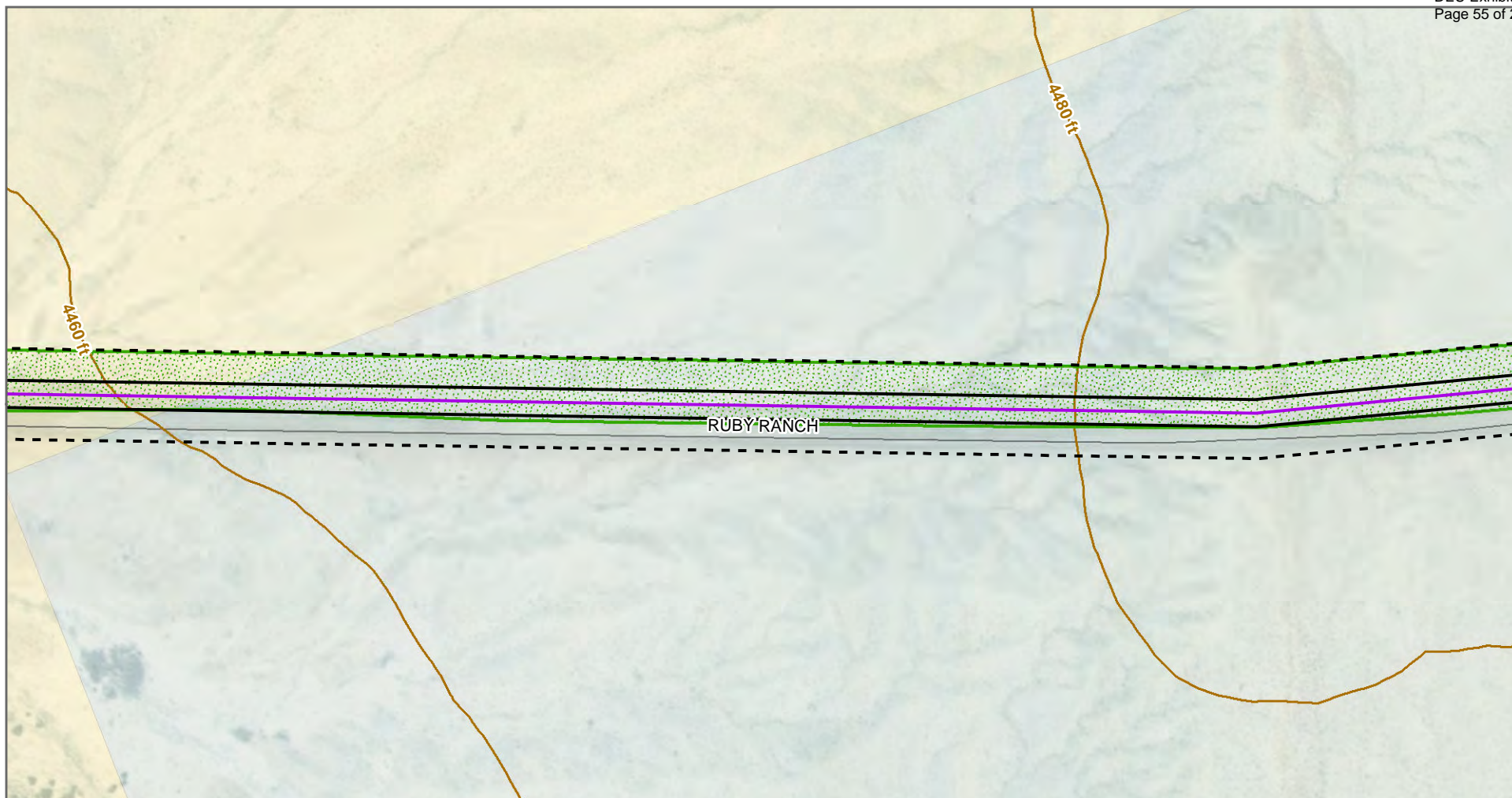


11/4/2022 NAD 1983 UTM Zone 12N

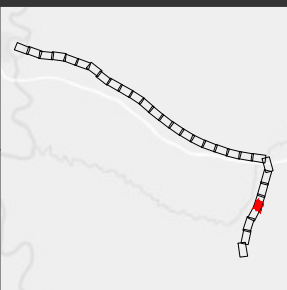
G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd



Planners &
Scientists



PANEL 52 of 61



- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Vegetation Disturbance
- BLM
- SITLA

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 52 of 61

BMPs will be field fitted by
the construction contractor

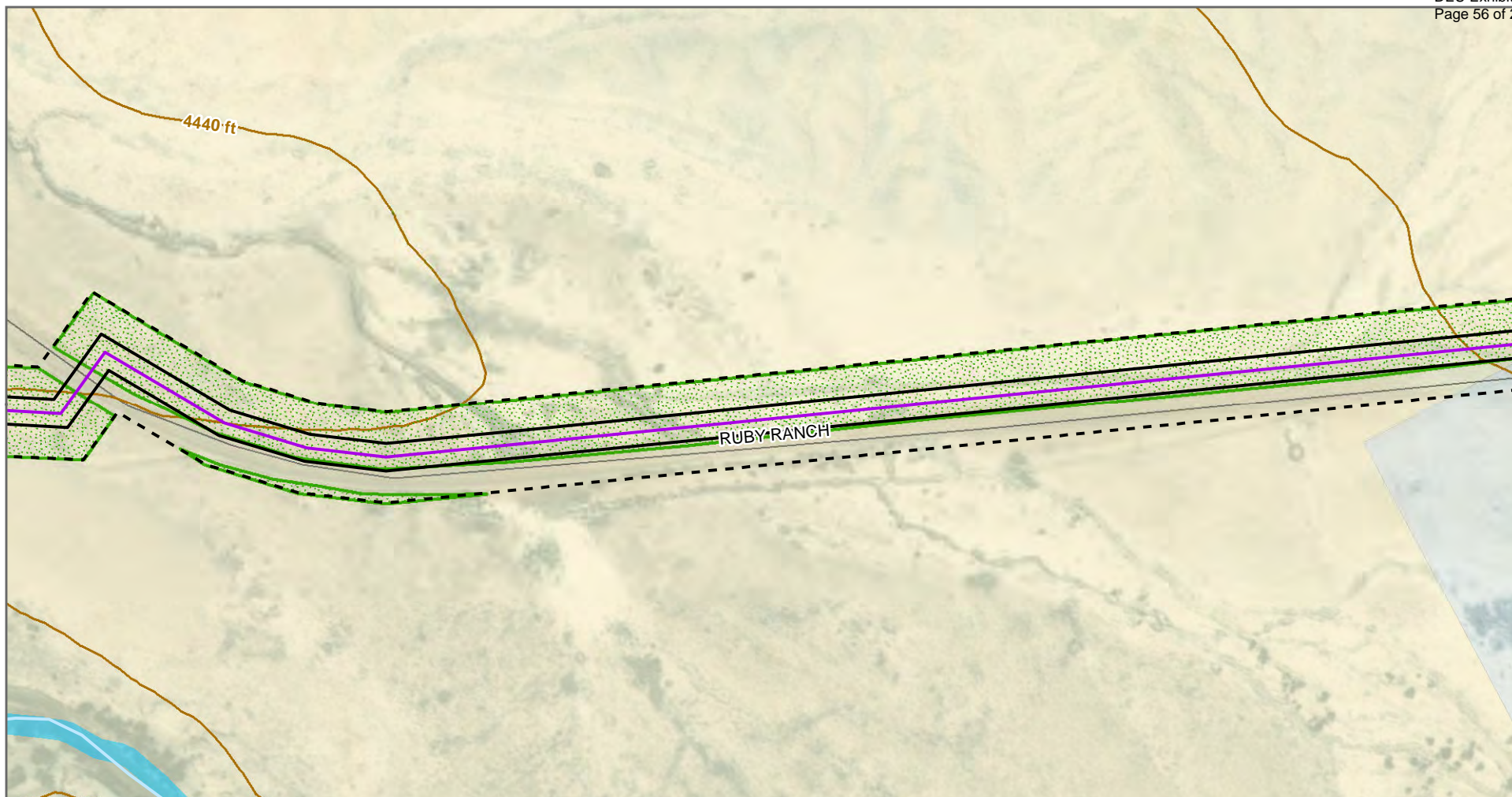
0 0.01 0.02 Miles
1:2,000

NORTH

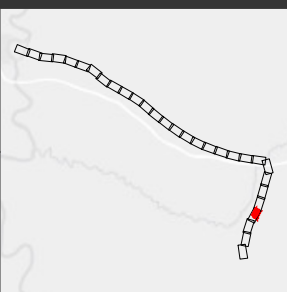
11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

Privileged and Confidential



PANEL 53 of 61

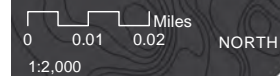


- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- NHD Waterway
- NWI - Riverine
- Vegetation Disturbance
- BLM
- SITLA

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 53 of 61

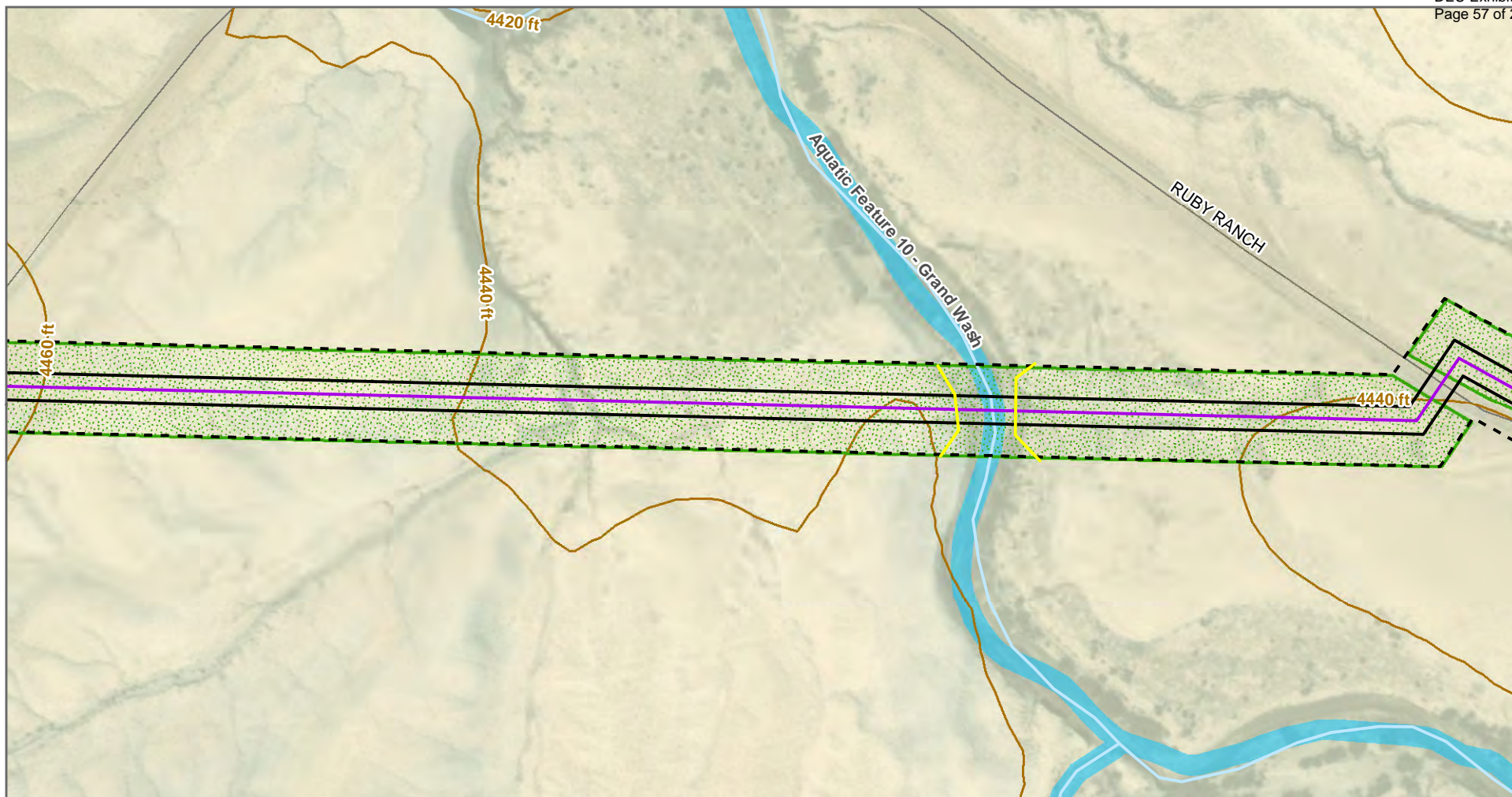
BMPs will be field fitted by
the construction contractor



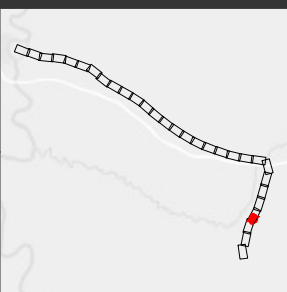
11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

Privileged and Confidential



PANEL 54 of 61

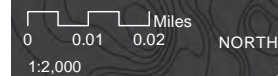


- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Straw Wattle
- NHD Waterway
- NWI - Riverine
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 54 of 61

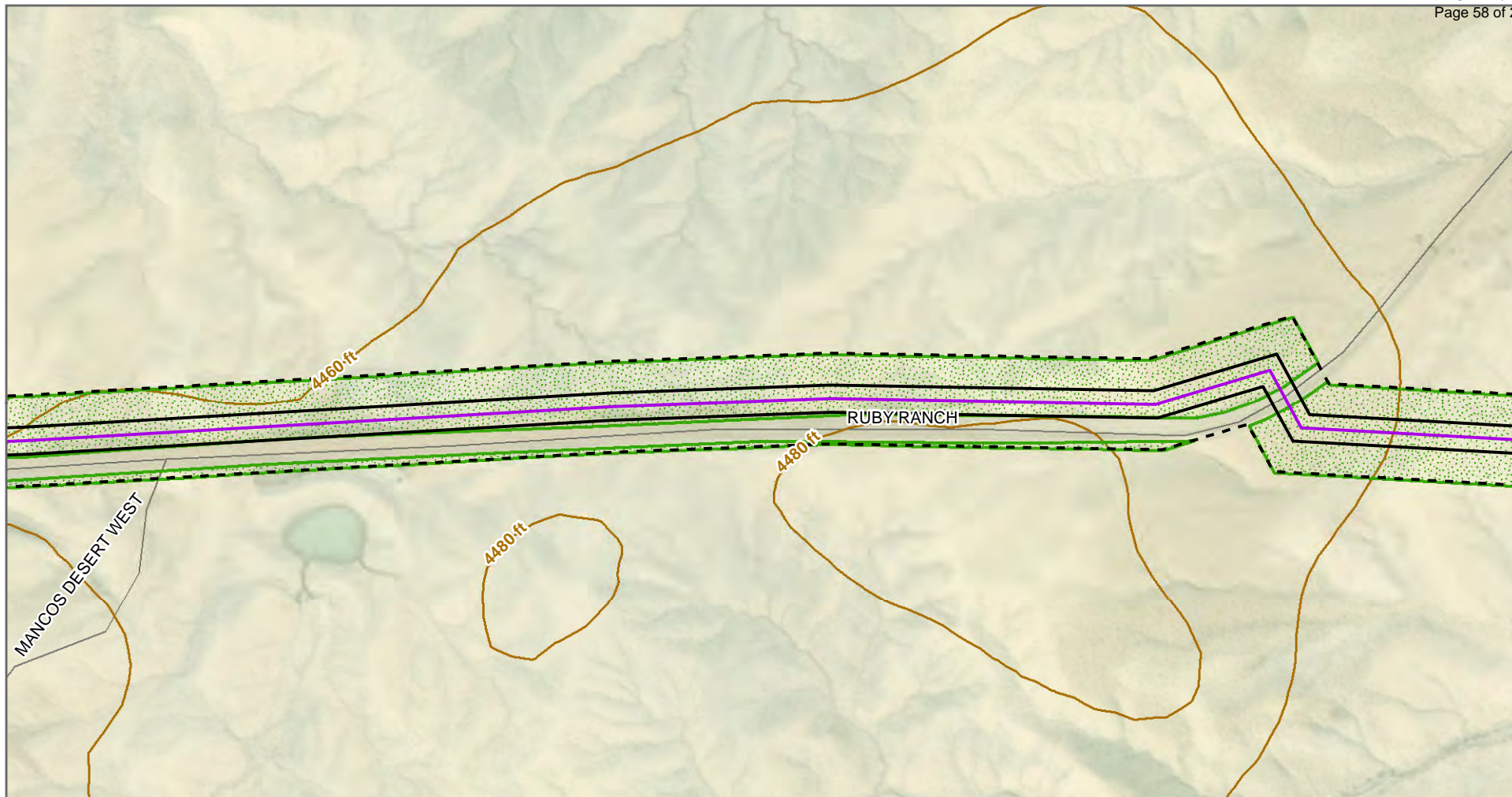
BMPs will be field fitted by
the construction contractor



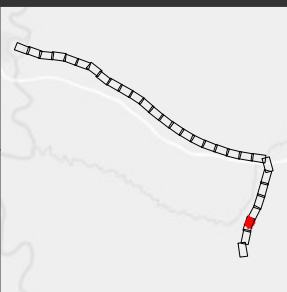
11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

Privileged and Confidential



PANEL 55 of 61

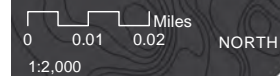


- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

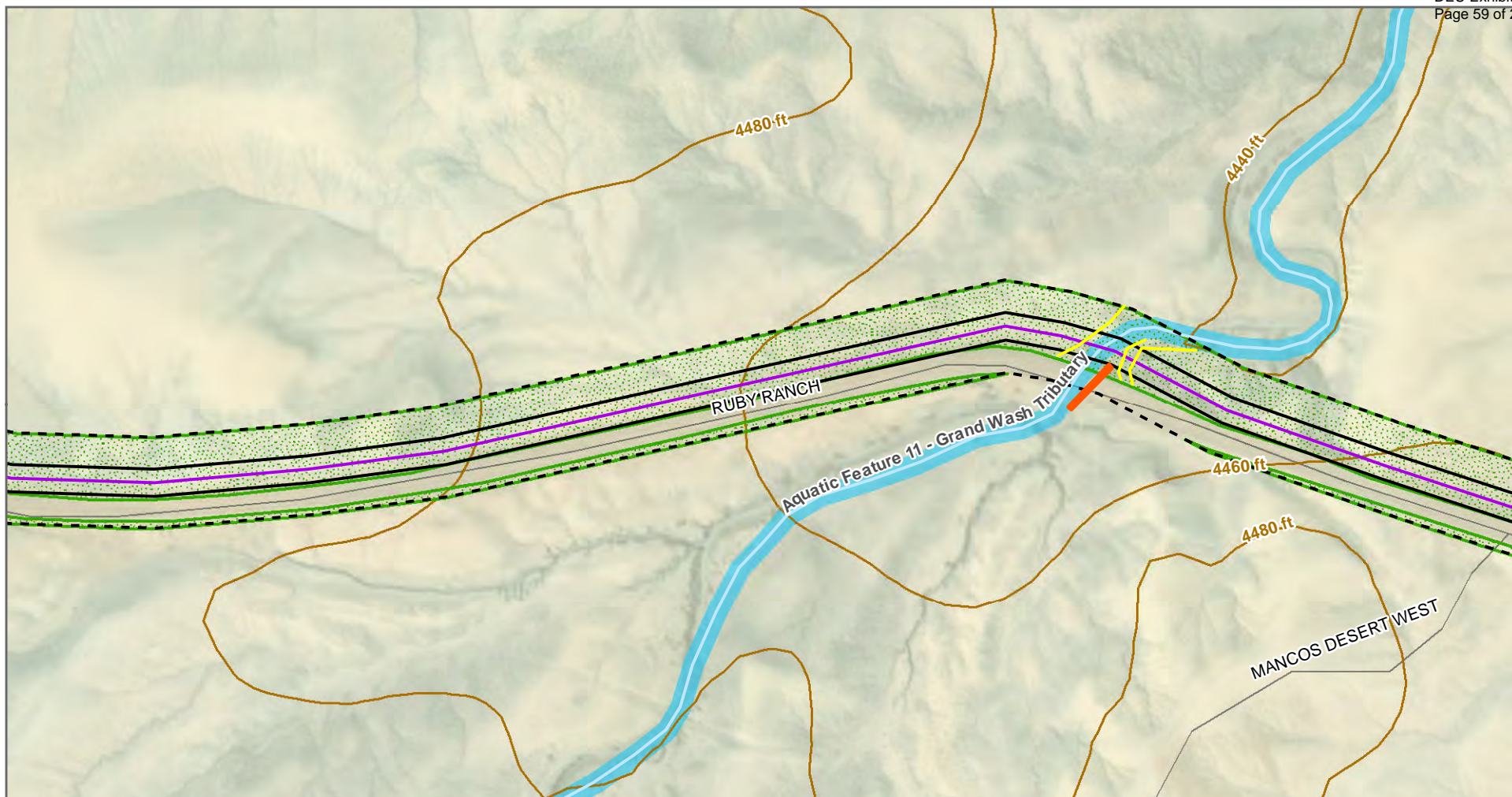
Panel Map 55 of 61

BMPs will be field fitted by
the construction contractor

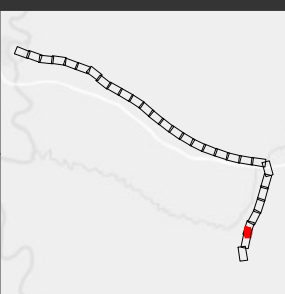


11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd



PANEL 56 of 61



- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Straw Wattle
- NHD Waterway
- Culvert
- NWI - Riverine
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 56 of 61

BMPs will be field fitted by
the construction contractor
→

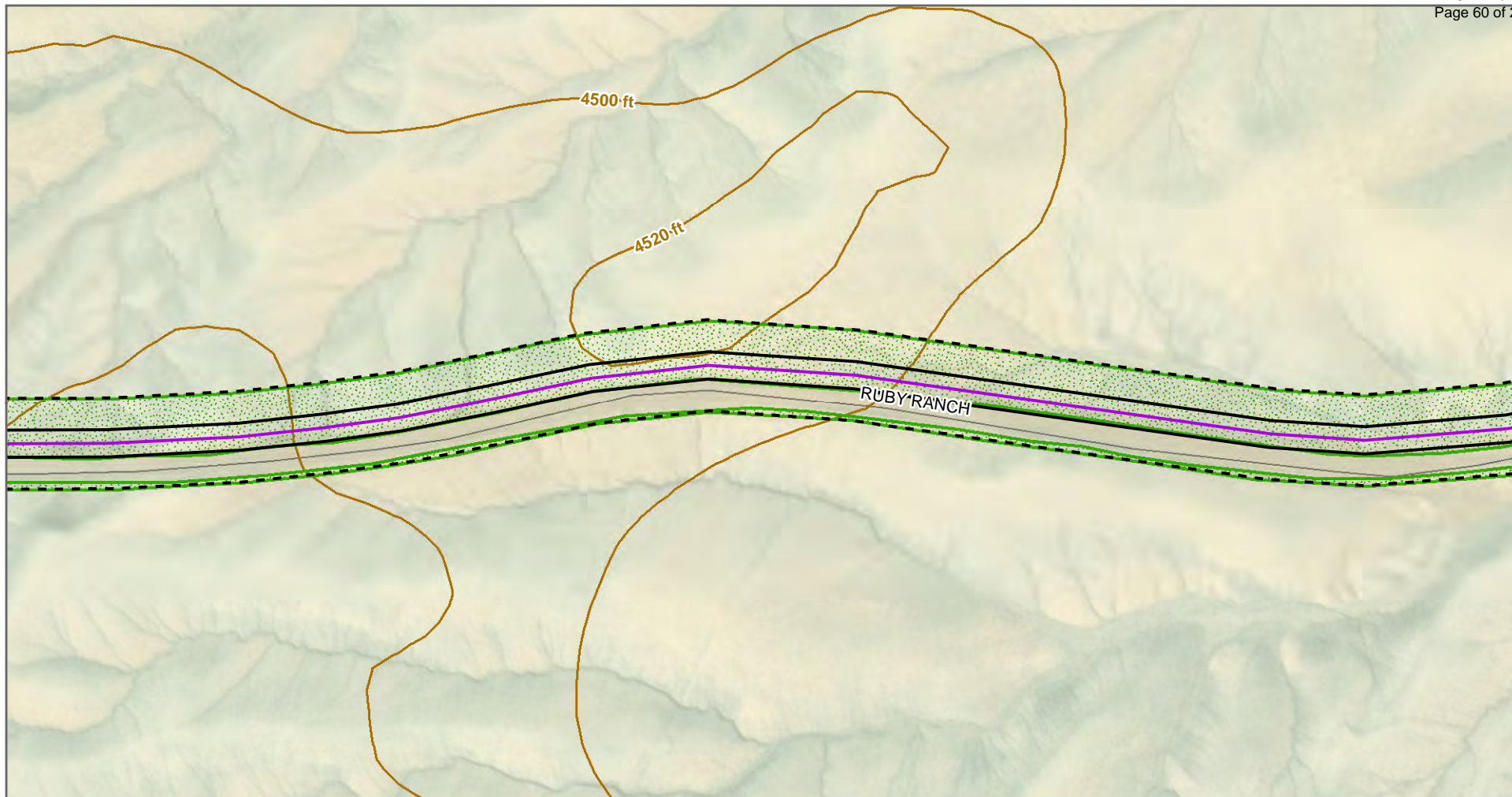
0 0.01 0.02 Miles
1:2,000 NORTH

11/4/2022 NAD 1983 UTM Zone 12N

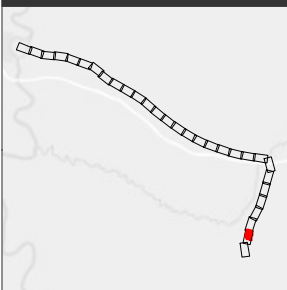
G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd



Planners &
Scientists



PANEL 57 of 61



- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 57 of 61

BMPs will be field fitted by
the construction contractor

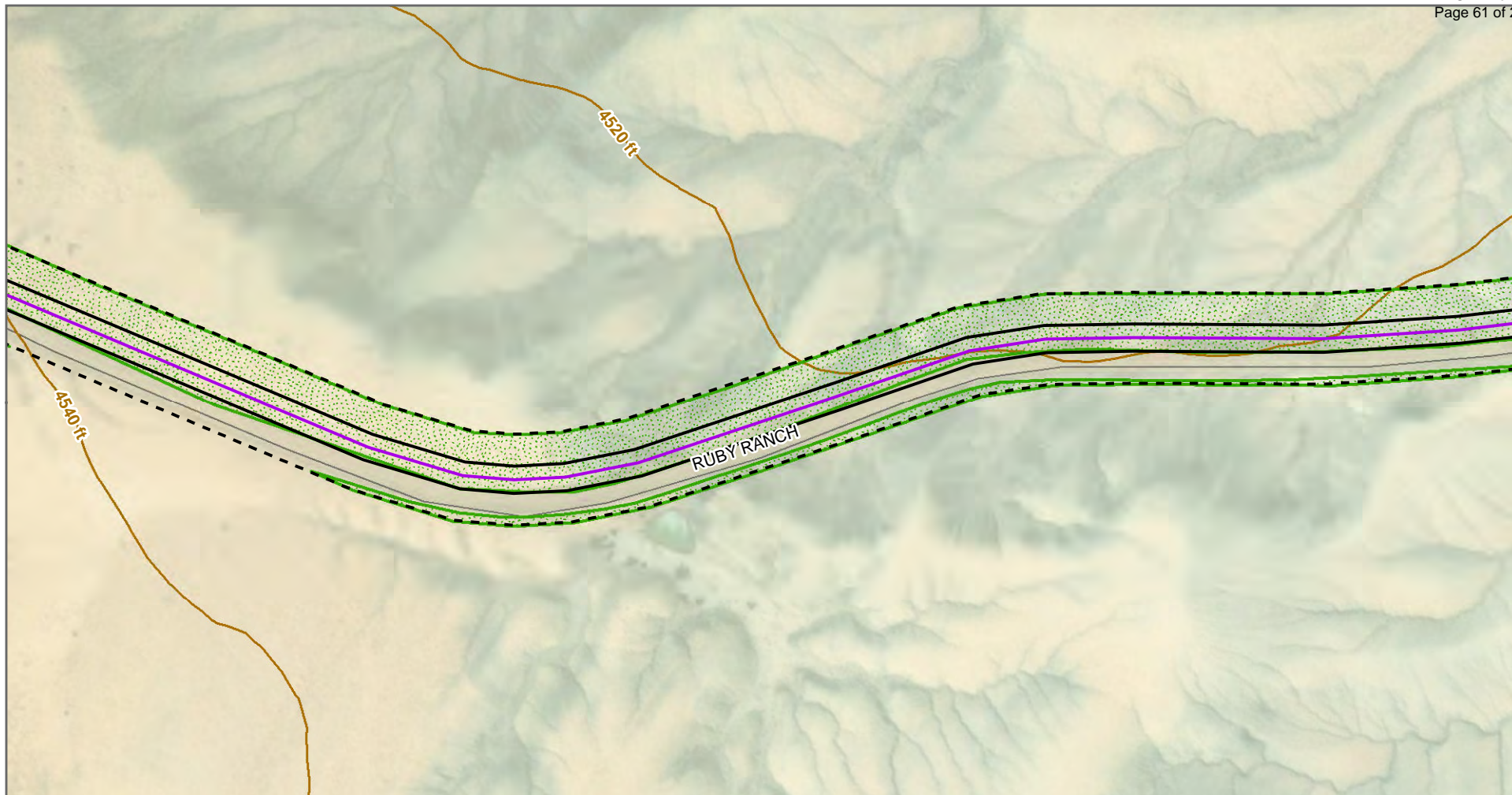
0 0.01 0.02 Miles
1:2,000
NORTH

11/4/2022 NAD 1983 UTM Zone 12N

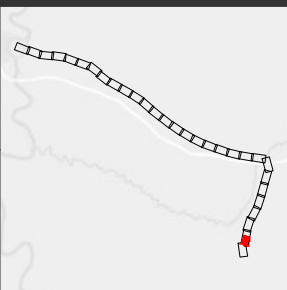
G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd



Planners &
Scientists



PANEL 58 of 61



- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 58 of 61

BMPs will be field fitted by
the construction contractor

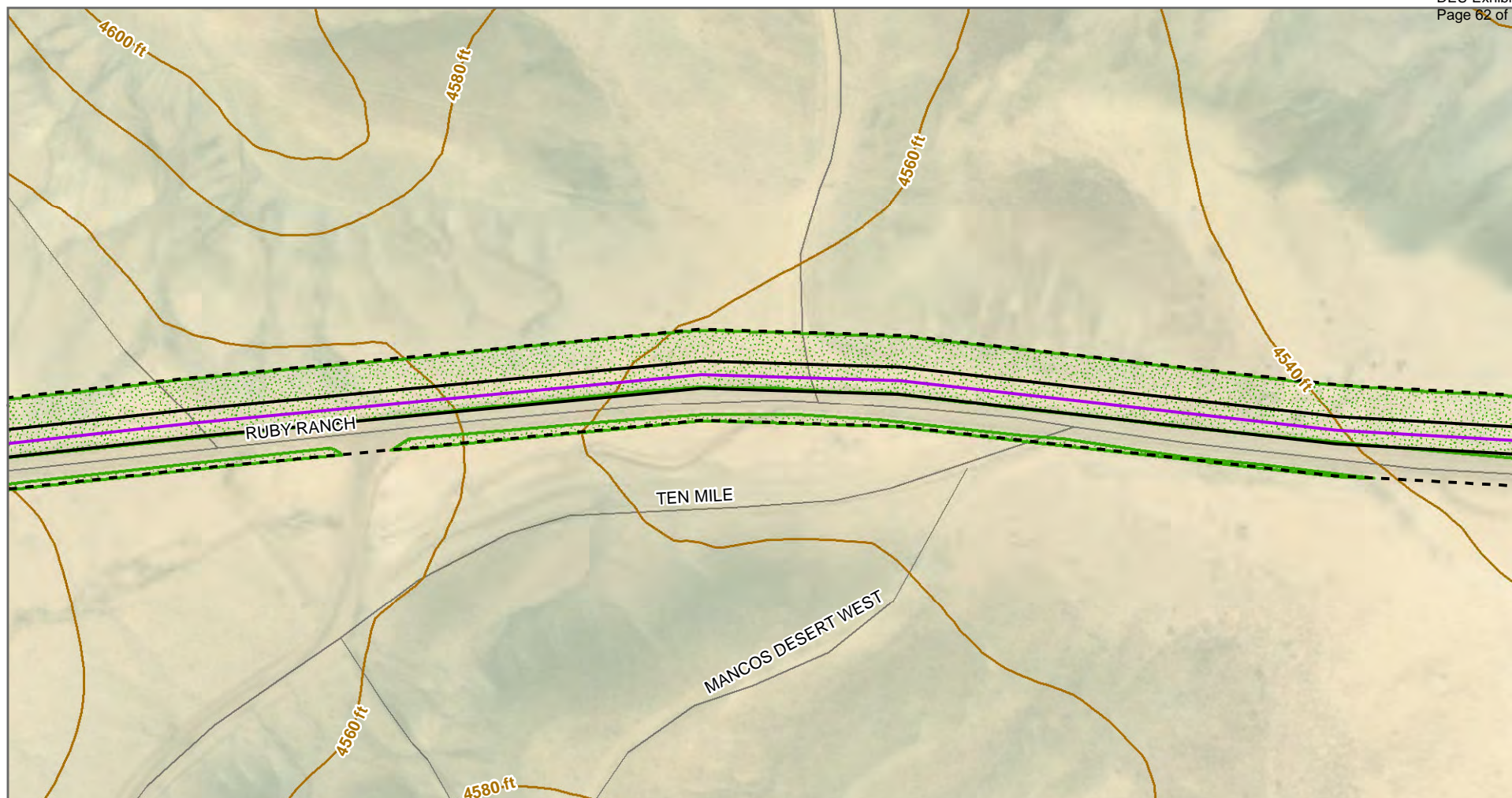
0 0.01 0.02 Miles
1:2,000

NORTH

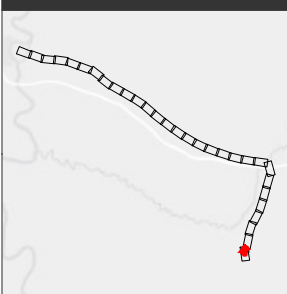
11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

Privileged and Confidential



PANEL 59 of 61



- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Vegetation Disturbance
- BLM

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 59 of 61

BMPs will be field fitted by
the construction contractor

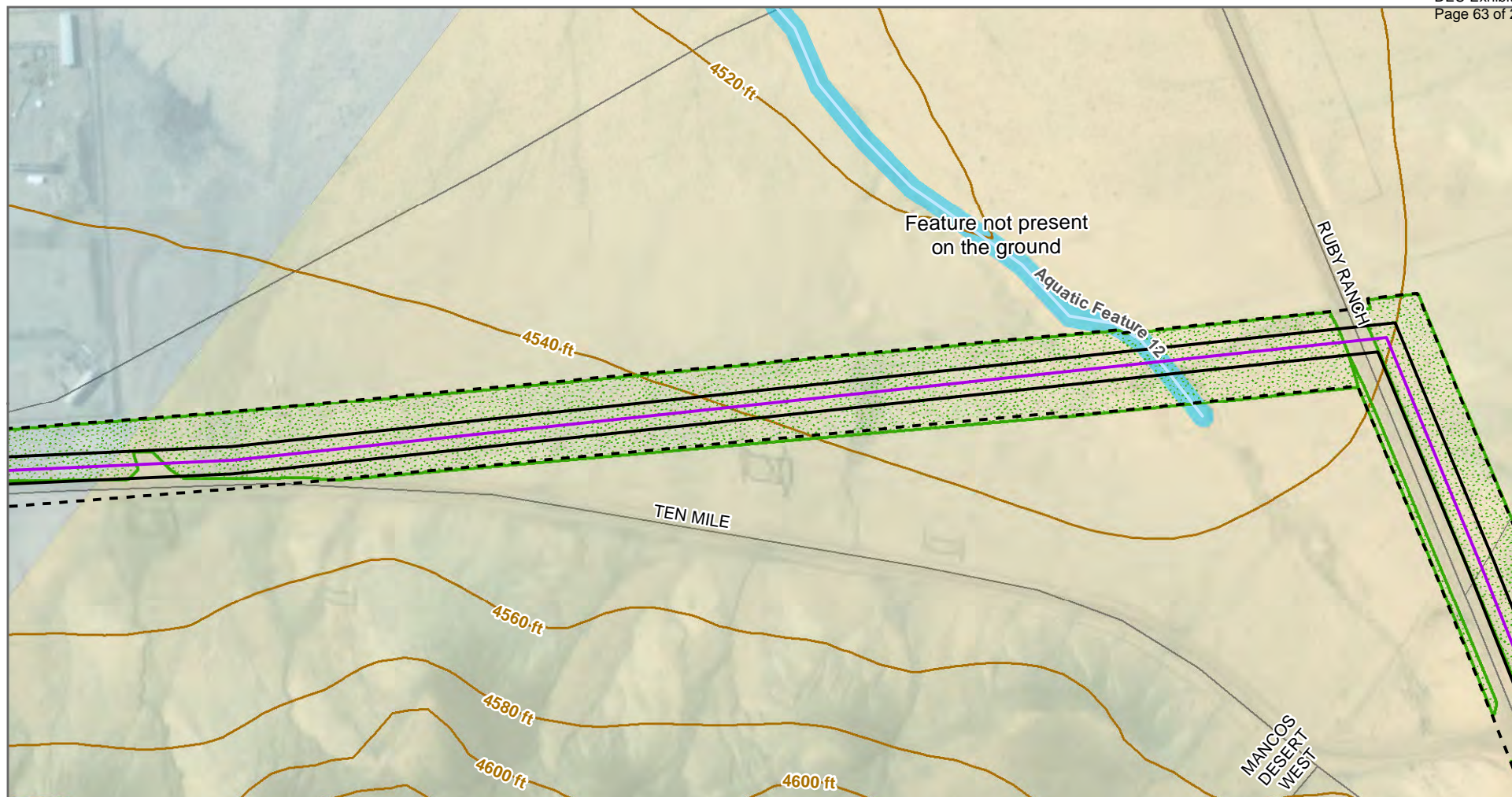
0 0.01 0.02 Miles
1:2,000

NORTH

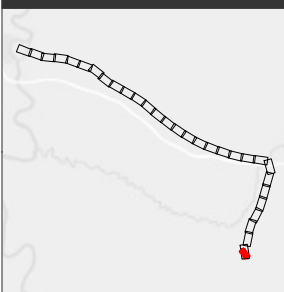
11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

Privileged and Confidential



PANEL 60 of 61

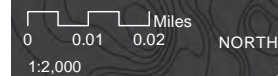


- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- NHD Waterway
- NWI - Riverine
- Vegetation Disturbance
- BLM
- SITLA

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 60 of 61

BMPs will be field fitted by
the construction contractor

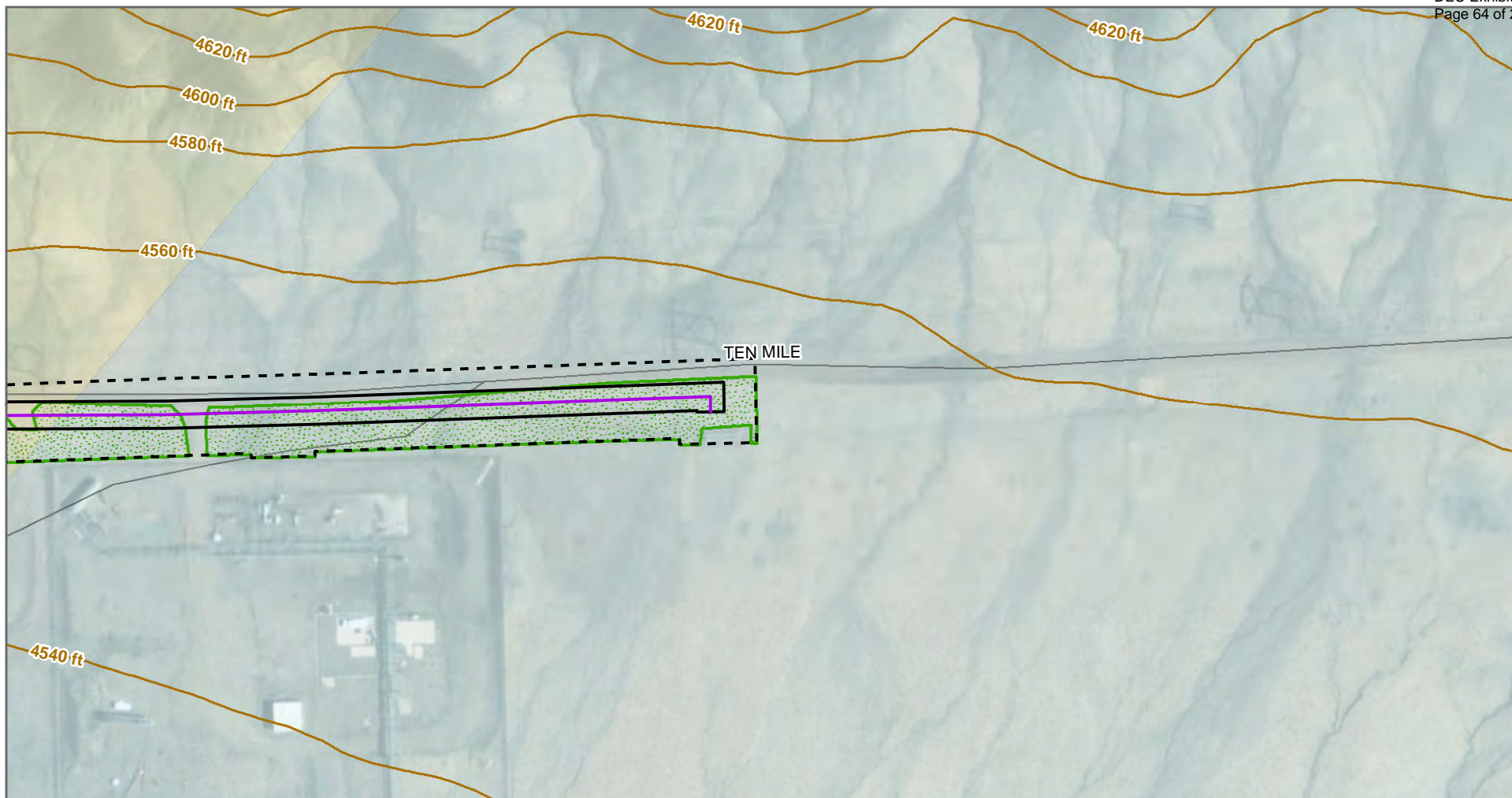


11/4/2022 NAD 1983 UTM Zone 12N

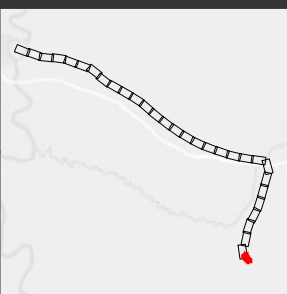
G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd



Planners &
Scientists



PANEL 61 of 61

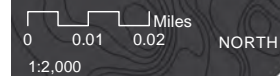


- Permanent Easement
- Project Centerline
- Temporary Construction Workspace
- Vegetation Disturbance
- BLM
- SITLA

Green River Pipeline
Dominion Energy
SWPPP
Site Map & Erosion Control Plan

Panel Map 61 of 61

BMPs will be field fitted by
the construction contractor



11/4/2022 NAD 1983 UTM Zone 12N

G:\Projects\Dominion Energy\Green_River\Map_Files\MXD\SWPPP_MXD\Green_River_SWPPP_Panels.mxd

Privileged and Confidential

Appendix B

UDOT's Erosion and Sediment Control Standard Drawings and Specifications

(Include project specific erosion control details and specifications)



MATERIAL QUANTITY CHART

EXAMPLE: A CUT DITCH WITH A 6:1 FORE SLOPE AND A 2:1 BACK SLOPE WOULD REQUIRE A 9.5 (7.0 + 2.5) FT MIN. FIBER ROLL OR 0.62 (0.45 + 0.17) CUBIC YARD MIN. OF STONE.



CHECK DAM - STONE

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

TEMPORARY
EROSION CONTROL
(CHECK DAMS)

STD. DWG. NO.

EN 1

STANDARD DRAWING TITLE

[illegible]

JAN.01, 2017	DATE	CHAIRMAN STANDARDS COMMITTEE	JAN.01, 2017	DATE
		APPROVED		

REMARKS

NO.	DATE	APPR.
-----	------	-------

DEPUTY DIRECTOR

JAN.01, 2017

DATE _____

DATE JAN.01, 2017

Kanabelf Park

CHAIRMAN STANDARDS COMMITTEE
APPROVED

DEPUTY DIRECTOR

K and

CHAIRMAN STANDARDS COMMITTEE
APPROVED

DEPUTY DIRECTOR

1
 2
 3
 4
 5
 6
 7
 8
 9
 10
 11
 12
 13
 14
 15
 16
 17
 18
 19
 20
 21
 22
 23
 24
 25
 26
 27
 28
 29
 30
 31
 32
 33
 34
 35
 36
 37
 38
 39
 40
 41
 42
 43
 44
 45
 46
 47
 48
 49
 50
 51
 52
 53
 54
 55
 56
 57
 58
 59
 60
 61
 62
 63
 64
 65
 66
 67
 68
 69
 70
 71
 72
 73
 74
 75
 76
 77
 78
 79
 80
 81
 82
 83
 84
 85
 86
 87
 88
 89
 90
 91
 92
 93
 94
 95
 96
 97
 98
 99
 100
 101
 102
 103
 104
 105
 106
 107
 108
 109
 110
 111
 112
 113
 114
 115
 116
 117
 118
 119
 120
 121
 122
 123
 124
 125
 126
 127
 128
 129
 130
 131
 132
 133
 134
 135
 136
 137
 138
 139
 140
 141
 142
 143
 144
 145
 146
 147
 148
 149
 150
 151
 152
 153
 154
 155
 156
 157
 158
 159
 160
 161
 162
 163
 164
 165
 166
 167
 168
 169
 170
 171
 172
 173
 174
 175
 176
 177
 178
 179
 180
 181
 182
 183
 184
 185
 186
 187
 188
 189
 190
 191
 192
 193
 194
 195
 196
 197
 198
 199
 200
 201
 202
 203
 204
 205
 206
 207
 208
 209
 210
 211
 212
 213
 214
 215
 216
 217
 218
 219
 220
 221
 222
 223
 224
 225
 226
 227
 228
 229
 230
 231
 232
 233
 234
 235
 236
 237
 238
 239
 240
 241
 242
 243
 244
 245
 246
 247
 248
 249
 250
 251
 252
 253
 254
 255
 256
 257
 258
 259
 260
 261
 262
 263
 264
 265
 266
 267
 268
 269
 270
 271
 272
 273
 274
 275
 276
 277
 278
 279
 280
 281
 282
 283
 284
 285
 286
 287
 288
 289
 290
 291
 292
 293
 294
 295
 296
 297
 298
 299
 300
 301
 302
 303
 304
 305
 306
 307
 308
 309
 310
 311
 312
 313
 314
 315
 316
 317
 318
 319
 320
 321
 322
 323
 324
 325
 326
 327
 328
 329
 330
 331
 332
 333
 334
 335
 336
 337
 338
 339
 340
 341
 342
 343
 344
 345
 346
 347
 348
 349
 350
 351
 352
 353
 354
 355
 356
 357
 358
 359
 360
 361
 362
 363
 364
 365
 366
 367
 368
 369
 370
 371
 372
 373
 374
 375
 376
 377
 378
 379
 380
 381
 382
 383
 384
 385
 386
 387
 388
 389
 390
 391
 392
 393
 394
 395
 396
 397
 398
 399
 400
 401
 402
 403
 404
 405
 406
 407
 408
 409
 410
 411
 412
 413
 414
 415
 416
 417
 418
 419
 420
 421
 422
 423
 424
 425
 426
 427
 428
 429
 430
 431
 432
 433
 434
 435
 436
 437
 438
 439
 440
 441
 442
 443
 444
 445
 446
 447
 448
 449
 450
 451
 452
 453
 454
 455
 456
 457
 458
 459
 460
 461
 462
 463
 464
 465
 466
 467
 468
 469
 470
 471
 472
 473
 474
 475
 476
 477
 478
 479
 480
 481
 482
 483
 484
 485
 486
 487
 488
 489
 490
 491
 492
 493
 494
 495
 496
 497
 498
 499
 500
 501
 502
 503
 504
 505
 506
 507
 508
 509
 510
 511
 512
 513
 514
 515
 516
 517
 518
 519
 520
 521
 522
 523
 524
 525

CHAIRMAN STANDARDS
APPROVED

DEPUTY DIRECTOR

Quasi-

CHAIR
APPR

DEPU

(CHECK DAMS)

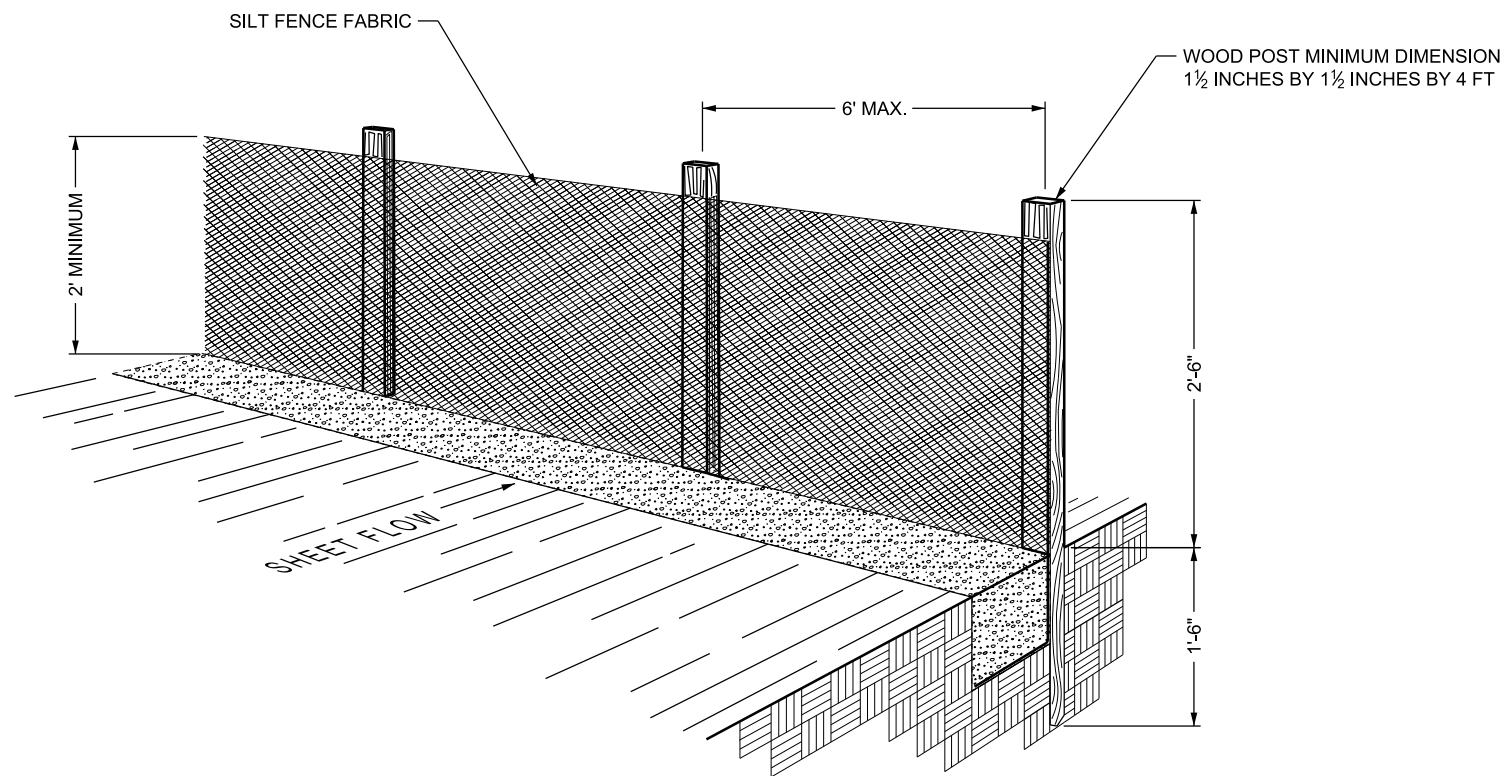
AND DRAWING TITLE

FIG. 10.

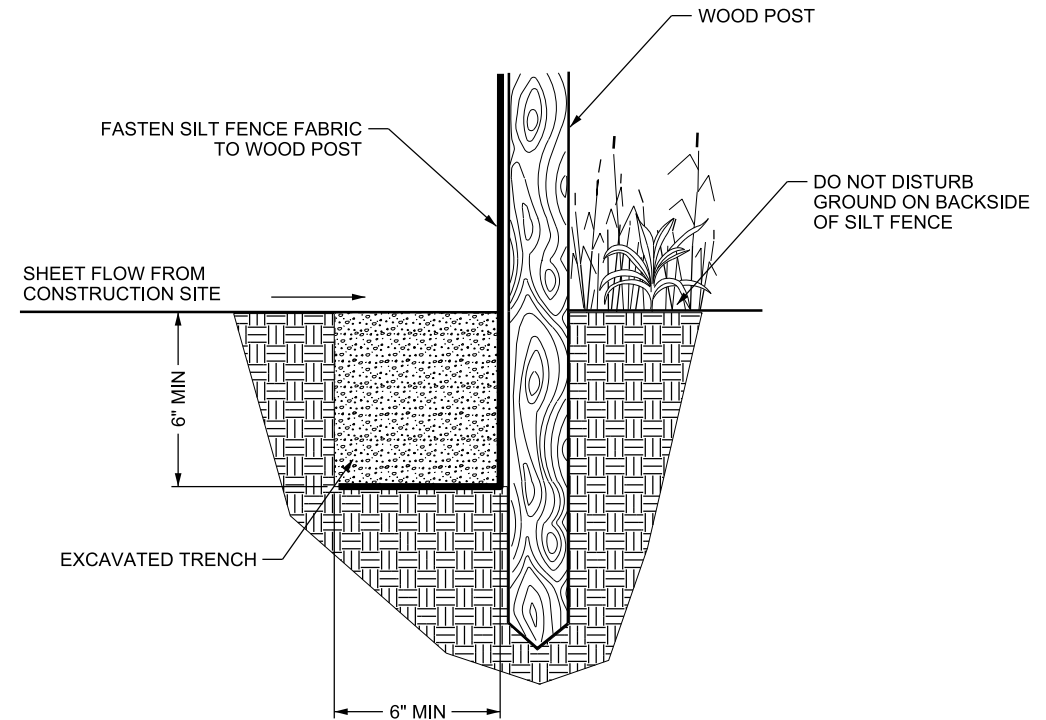
O.

1

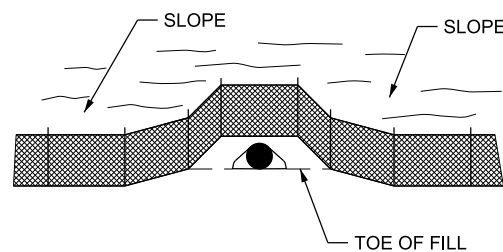
1



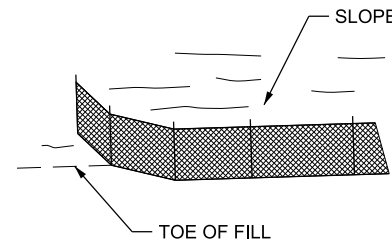
PERSPECTIVE VIEW



SECTION

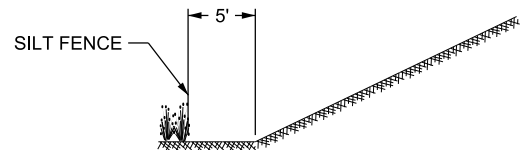


AROUND A PIPE OUTLET



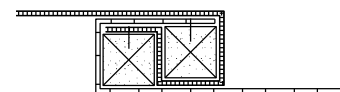
AT END OF SILT FENCE

SEE NOTE 6



AT TOE OF FILL SLOPE

SEE NOTE 1



SPLICES (TOP VIEW)

SEE NOTE 8

SILT FENCE INSTALLATIONS

NOTES:

1. POSITION THE SILT FENCE 5 FT BEYOND THE TOE OF SLOPE. INSTALL SILT FENCE AT TOE OF SLOPE WHEN PLACING WITHIN OR IMMEDIATELY ADJACENT TO A WETLAND.
2. ALIGN THE FENCE ALONG THE CONTOUR AS MUCH AS POSSIBLE TO AVOID CREATING LOW POINTS ALONG THE SILT FENCE. PROVIDE AN OPENING IN THE FENCE AND INSTALL A SEDIMENT TRAP WHERE EXCESSIVE RUNOFF WILL ACCUMULATE AT A LOW POINT.
3. SECURE FIRMLY INTO GROUND BY EXCAVATING TRENCH, PLACING SILT FENCE FABRIC THEN BACKFILLING WITH EXCAVATED TRENCH MATERIAL.
4. SECURE SILT FENCE FABRIC TO WOOD POST ACCORDING TO MANUFACTURER RECOMMENDATIONS.
5. MINIMIZE DISTURBANCE WHEN EXCAVATING THE TRENCH.
6. SILT FENCE INSTALLATION EQUIPMENT MAY BE USED AS AN ALTERNATIVE INSTALLATION METHOD IF BOTTOM 6 INCHES OF SILT FENCE FABRIC IS TRENCHED FIRMLY INTO GROUND AND MEETS ALL OTHER REQUIREMENTS.
7. RUN THE ENDS OF THE FENCE SLIGHTLY UP SLOPE TO PREVENT RUNOFF FROM FLOWING AROUND THE ENDS OF THE SILT FENCE.
8. DO NOT PLACE SILT FENCE ACROSS AREAS OF CONCENTRATED FLOWS.
9. AVOID USING SPLICES ALONG THE FENCE AS MUCH AS POSSIBLE. OVERLAP THE END POSTS AND TWIST 180 DEGREES BEFORE STAKING THE WOOD POSTS WHEN NECESSARY.

REVISIONS

NO.	DATE	APPR.	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION

STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION

SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL
CHAIRMAN STANDARDS COMMITTEE
APPROVED
DEPUTY DIRECTOR

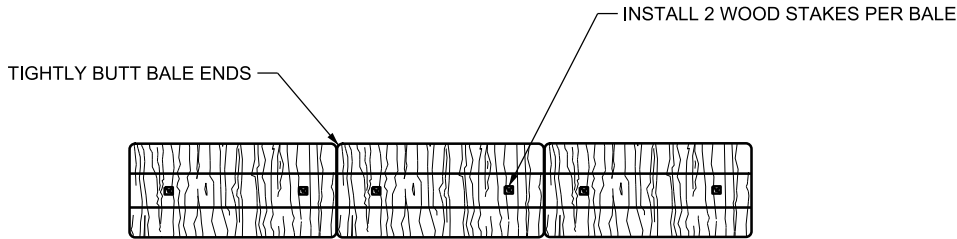
JAN.01, 2017
DATE
JAN.01, 2017
DATE

**TEMPORARY
EROSION CONTROL
(SILT FENCE)**

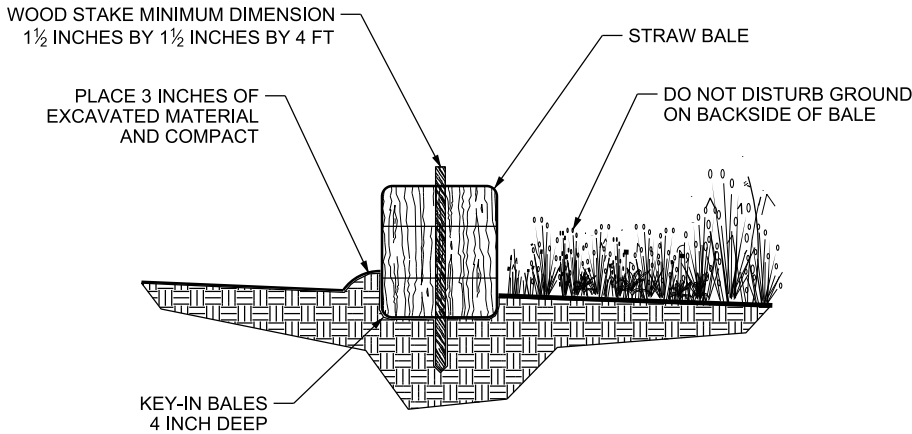
STD. DWG. NO.

EN 2

STANDARD DRAWING TITLE



STRAW BALE BARRIER PLAN



SECTION

NOTES FOR STRAW BALEBARRER:

1. PLACE STRAW BALE BARRIERS BEFORE EARTH DISTURBING ACTIVITIES.
2. DO NOT PLACE STRAW BALE BARRIERS ACROSS AREAS OF CONCENTRATED FLOW.
3. REMOVE BALES AND WOOD STAKES, LEVEL AND SEED THE AREA. BALES MAY BE BUSTED APART AND SPREAD AS MULCH.

REVISIONS

NO.	DATE	APPR.	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION

STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION

SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL
CHAIRMAN STANDARDS COMMITTEE
APPROVED

DEPUTY DIRECTOR

JAN.01, 2017

DATE

JAN.01, 2017

DATE

TEMPORARY
EROSION CONTROL
(STRAW BALE BARRIER)

STANDARD DRAWING TITLE

STD. DWG. NO.

EN 7

SECTION 01355

ENVIRONMENTAL COMPLIANCE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Compliance with federal and state environmental regulations.

1.2 RELATED SECTIONS Not Used

1.3 REFERENCES

- A. Clean Water Act
- B. Code of Federal Regulations (CFR)
- C. Rivers and Harbors Act
- D. U.S. Environmental Protection Agency (EPA) Regulations
- E. Utah Administrative Code (UAC)
- F. Utah Department of Environmental Quality (DEQ) Regulations
- G. Utah Pollutant Discharge Elimination System, Utah Construction General Permit (CGP) and UDOT Municipal Separate Storm Sewer System (MS4) Permit
- H. Utah State Stream Alteration Program

1.4 DEFINITIONS

- A. Fugitive Dust – Small particles originating primarily from soil that are suspended in the air by the wind and by human activities.

1.5 SUBMITTALS

- A. Stormwater Pollution Prevention Plan (SWPPP) for approval before construction on projects with one or more acres of soil disturbance.
- B. Municipal Separate Storm Sewer System (MS4) Compliance Plan for approval on projects with less than one acre of soil disturbance.

- C. Signed copy of the Notice of Intent (NOI) for information.
- D. Signed copy of the Notice of Termination (NOT) for information.
- E. UDOT Environmental Control Supervisor (ECS) Certificate of Training for information.
- F. Fugitive Dust Control Plan for information.
- G. Documentation of environmental compliance for areas not previously cleared for review.
- H. SWPPP with final documentation such as modifications and completed inspection forms before project close-out for information.

1.6 DISINCENTIVES

- A. Disincentives are assessed against the Contractor in the amount of \$1,000 for each calendar day or portion thereof the project is not in compliance with required permits and regulations.
 - 1. The disincentives assessed increase to \$2,000 per day if the Contractor remains in non-compliance after three days and increase to \$3,000 per day if the Contractor remains in non-compliance after seven days.
- B. Fines issued by regulatory agencies against the Department are added to the disincentives assessed to the Contractor.

1.7 HAZARDOUS WASTE

- A. Suspend work immediately in an area if abnormal conditions are encountered or exposed during construction that indicates the presence of a hazardous waste.
 - 1. Notify the Engineer.
- B. Do the following if a waste discovered or spilled on-site is suspected of being considered hazardous according to the reportable quantity (RQ) limits identified in Title 40 CFR 302.4.
 - 1. Take appropriate actions to minimize the threat to human health and the environment.
 - 2. Contact the Engineer immediately.
 - 3. Follow appropriate testing measures to determine if waste is hazardous.
 - 4. Do the following if waste is determined to be hazardous:

- a. Contact DEQ, 24-hour Answering Service at (801) 536-4123, and the National Response Center at (800) 424-8802.
 - b. Follow requirements in UAC R315.
- C. Coordinate with the Engineer to initiate development of a remediation plan according to DEQ and the EPA regulations and requirements.
 - 1. Pay for costs to address hazardous waste discovery or spill cleanup when caused by Contractor's activities.
 - 2. Cost to test and remedy waste not caused by Contractor to be considered as contract change order by Engineer.
- D. Complete the work required by the remediation plan before resuming operations in the affected area.

1.8 SPILL OF PETROLEUM-BASED PRODUCT AND USED OIL

- A. Contact the Engineer if a spill occurs that exceeds 25 gallons, or that poses a potential threat to human health or the environment, such as discharging to groundwater, surface water, or a storm drain.
 - 1. Send notice following the discovery of the spill.
 - 2. Notify DEQ, 24-hour Answering Service, at (801) 536-4123.
 - 3. Coordinate with the Engineer to develop a remediation plan for spilled used oil or petroleum-based product according to UAC R315-15-8 and R315-15-9.
- B. Cleanup petroleum-based or used oil product when caused by Contractor's activities.

1.9 WATER RESOURCE PERMITS

- A. Comply with the Utah State Stream Alteration Program.
- B. Comply with Section 10 of the Rivers and Harbors Act.
- C. Comply with Section 404 of the Clean Water Act.
- D. Comply with the National Flood Insurance Program for a project within a Special Flood Hazard Area (SFHA), as defined by the Federal Emergency Management Agency (FEMA).

1.10 OPEN BURNING

- A. Do not conduct open burning within the site of work without approval from the Utah Department of Air Quality (DAQ).

1.11 FUGITIVE DUST

- A. Submit a Fugitive Dust Control Plan (FDCG) to DAQ for construction activities as defined in UAC R30, such as:
 - 1. Disturbing a ground surface greater than ¼ acre in size.
 - 2. Demolition activities including razing homes, buildings, or other structures.
 - 3. Material storage, hauling, or handling operations.
- B. Minimize fugitive dust from construction activities using methods such as watering and chemical stabilization of potential fugitive dust sources or other methods approved by the DAQ.
 - 1. Do not exceed 10 percent opacity caused by fugitive dust at the project boundary and 20 percent within the project site. This requirement does not apply when wind speeds exceed 25 MPH and the operator is taking appropriate actions to control fugitive dust.
 - 2. Conduct opacity observations according to EPA Method 9 for stationary sources. Refer to <http://www.udot.utah.gov/go/standardsreferences>.
 - 3. Use procedures similar to EPA Method 9 to conduct opacity observations for intermittent and mobile sources.
 - a. The requirement for observations to be made at 15 second intervals over a six minute period does not apply.
- C. Minimize fugitive dust from material storage, handling, or hauling operations through the use of covers, stabilization, or other methods approved by the DAQ.

1.12 ENVIRONMENTAL COMPLIANCE BY THE CONTRACTOR

- A. Comply with applicable environmental regulations as part of a ground disturbing activity not previously evaluated in the project environmental document such as wasting project-generated material, excavating borrow material, locating equipment, storage areas, office sites, utility lines, or holding ponds.
 - 1. Comply with the Endangered Species Act.
 - 2. Comply with regulations governing Waters of the United States and Waters of the State of Utah.
 - 3. Comply with the National Flood Insurance Program's floodplain management regulations if the activity is in a Special Flood Hazard Area.
 - 4. Comply with National (NPDES) and Utah (UPDES) Pollutant Discharge Elimination System regulations.

1.13 DISCOVERY OF HISTORICAL, ARCHAEOLOGICAL, OR PALEONTOLOGICAL OBJECTS, FEATURES, SITES, OR HUMAN REMAINS

- A. Suspend work within the vicinity if historical, archaeological or paleontological objects, features, sites or human remains are discovered during construction:
 - 1. Provide a 100 ft minimum buffer around the perimeter of the discovery.
 - 2. Protect the discovery area.
 - 3. Contact the Engineer and send notice of the nature and exact location of the discovery.
 - 4. Provide written documentation to the Engineer within two calendar days of discovery.
- B. Do not recommence work within the area of discovery until the Engineer provides written notice.

1.14 STORMWATER MANAGEMENT COMPLIANCE

- A. Comply with CGP requirements for projects with one or more acres of soil disturbances (clearing, grading or excavating).
 - 1. Designate an individual, other than the Superintendent, as the Environmental Control Supervisor (ECS) with the following responsibilities:
 - a. Maintain current certifications for UDOT Environmental Control Supervisor training.
 - b. Coordinate with the Engineer regarding CGP requirements and environmental commitments.
 - c. Manage implementation, modification and record keeping of the project SWPPP.
 - d. Supervise the installation, maintenance and removal of Best Management Practices (BMPs).
 - e. Conduct SWPPP inspections.
 - f. Be available 24 hours a day, seven days a week, and be on-site within a reasonable amount of time from notification as determined by the Engineer.
 - 2. Complete the SWPPP for the project using the draft provided by the Engineer.
 - 3. Complete the Notice of Intent (NOI) to the Utah Division of Water Quality (DWQ), after the SWPPP has been signed by the Engineer.
 - 4. Conduct SWPPP inspections at least once a week and within 24 hours following a storm event with a total rainfall amount of ½ inch or greater once earth-disturbing activities have begun.
 - a. Use the Department SWPPP Inspection Forms.

5. Coordinate with the Engineer to determine if the project has met CGP requirements before submitting the Notice of Termination (NOT) to DWQ.
- B. Comply with the UDOT MS4 Permit for projects with less than one acre of soil disturbances.
1. Coordinate with the Engineer regarding MS4 permit requirements and environmental commitments.
 2. Obtain approved MS4 Compliance Plan before start of construction activities.
 3. Install, maintain, and remove Best Management Practices (BMPs) as required in the site of work.
- C. Implement at least the following Pollution Prevention and Good Housekeeping Practices:
1. Concrete Washout
 - a. Provide a watertight container on-site before concrete placement activities begin and where concrete trucks, tools and equipment are to be washed.
 - 1) Do not exceed 75 percent of total storage capacity
 - 2) Do not place within 50 feet of storm drain inlets, open ditches or watercourses.
 - b. Remove and properly dispose of concrete waste and washout water.
 2. Street sweeping debris generated from construction track-out.
 - a. Sweep debris back onto disturbed pervious project areas
 - 1) Remove trash and litter
 - b. Store debris collected by sweeping equipment on disturbed pervious project areas where it cannot enter into waterway or storm drain system.
 3. Waste collected from cleaning pipes, inlets, culverts or ponds.
 - a. Dispose of waste at a solid waste disposal facility currently regulated by the State of Utah, as follows:
 - 1) Coordinate with facility in advance to determine disposal requirements
 - 2) Comply with facility acceptance requirements.
 - 3) Document waste collection and disposal using Department's waste disposal tracking form. Refer to <http://www.udot.utah.gov/go/standardsreferences>.
 - b. Waste may be temporarily stored within a contained and impervious surface that prevents runoff to adjacent areas and seepage into the ground until disposal.
 - c. Coordinate with Engineer for the disposal of waste that is not accepted at a solid waste disposal facility.

4. Prevent material from entering into stormwater conveyances, such as storm drain inlets and drainage pipes, ditches, natural waterways, and wetlands.
5. Maintain site of work in a clean condition through proper disposal and clean-up of sanitary waste, trash, spills, chemicals, and other waste materials.
6. Use drip pans and absorbent materials to mitigate discharges from leaking equipment until repairs can be made. Maintain a spill kit within the site of work.

END OF SECTION

SECTION 01571

TEMPORARY ENVIRONMENTAL CONTROLS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Temporary environmental controls to control erosion and prevent sediment laden runoff from leaving the construction site and areas under the Contractor's control.

1.2 RELATED SECTIONS

- A. Section 02075: Geotextiles

1.3 REFERENCES

- A. AASHTO M 288: Geotextile Specifications for Highway Applications
- B. AASHTO Construction Stormwater Field Guide
- C. ASTM D 4355: Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus
- D. ASTM D 4491: Water Permeability of Geotextiles by Permittivity
- E. ASTM D 4751: Determining Apparent Opening Size of a Geotextile
- F. Utah Pollutant Discharge Elimination System, Utah Construction General Permit (UCGP)

1.4 DEFINITIONS

- A. Check Dam – A fiber roll or stone structure placed across a roadside ditch to temporarily protect ditch from channel erosion by slowing velocity of stormwater runoff and intercepting and trapping sediment.
- B. Disturbed Area – Areas within a construction site where existing vegetative cover, or existing stabilized areas, have been removed or altered and exposed soils are susceptible to increased erosion and sedimentation.

- C. Drop-Inlet Barrier – A barrier placed around a storm drain inlet grate, situated outside of roadway pavement condition, that is designed to intercept and trap sediment-laden runoff before entering the storm drain system.
- D. Fiber Roll – Wood excelsior, rice or wheat straw or coconut fibers rolled or bound netting to form a tube-like structure used to intercept and trap sediment.
- E. Final Stabilization – Procedures and controls completed as the final measure to protect disturbed areas of a construction site from erosion and sedimentation until vegetation regrowth occurs to provide ultimate erosion protection.
 - 1. Includes work within areas to be vegetated such as establishing final grades, placing topsoil, incorporating seed; roughening slopes by walking track-mounted equipment up and down slopes; applying mulch, erosion control blanket, flexible channel liner; and installing other landscape treatments to protect exposed soils from erosion.
 - 2. Includes work within areas intended to remain unvegetated such as placing final pavement; installing stone, gravel and other stable material that will prevent erosion of underlying soil.
- F. Gutter-Inlet Barrier – A device designed and prefabricated to secure to the top, envelop or hang below a storm drain inlet grate, situated within roadway pavement condition, that keeps sediment and debris from entering the storm drain system.
- G. Pipe-Inlet Barrier – A barrier placed at a pipe inlet that intercepts and traps sediment before entering the pipe.
- H. Sediment Trap – A small temporary excavated basin installed at low points on a construction site designed to trap sediment-laden runoff to allow sediment to settle out before leaving site.
- I. Silt Fence – A geotextile fabric fence used to intercept and trap sediment in a sheet flow situation, along the perimeter of a disturbed area.
- J. Slope Drain – A polyethylene pipe temporarily placed on a slope to collect and transport storm runoff down the face of a slope until permanent drainage facilities are installed or vegetation growth is adequate.
- K. Stabilized Construction Entrance – A layer of stone, underlined with a geotextile fabric, placed at a construction site entrance or exit used to reduce the amount of sediment or mud tracked onto adjacent paved roadways by vehicles leaving the construction site.

- L. Straw-Bale Barrier – Temporary barrier installed by placing straw bales end to end along perimeter of a disturbed area designed to intercept and slow sediment laden runoff before it leaves a construction site.
- M. Temporary Berm – A ridge of compacted soil with or without a shallow ditch that diverts stormwater runoff from a slope to a controlled release point.
- N. Temporary Environmental Fence – A high-visibility fence barrier used to delineate and prevent encroachment on sensitive areas.

1.5 SUBMITTALS

- A. Manufacturer's product data sheets and recommended installation instructions.

PART 2 PRODUCTS

2.1 TEMPORARY ENVIROMENTAL CONTROLS

- A. Fiber Roll
 - 1. Diameter (minimum weight per linear foot)
 - a. 18 inch (3 lb per linear foot)
 - b. 12 inch (2 lb per linear foot)
 - c. 9 inch (1 lb per linear foot)
 - 2. Functional Longevity – 24 months minimum (includes netting material).
 - 3. Matrix material – Wood excelsior, rice or wheat straw, and coconut fibers (coir) or in combination.
 - a) Material must be weed free.
 - 4. Netting – UV stabilized synthetic or coir material, with 1 inch maximum opening size, secured at end for matrix containment.
 - 5. Wood Stakes
 - a. 18 inch Fiber Roll – ¾ inches and 1½ inches by 3 feet minimum dimensions.
 - b. 12 inch Fiber Roll – ¾ inches and 1½ inches by 18 inch minimum dimensions.
 - c. 9 inch Fiber Roll – ¾ inches and 1½ inches 18 inch minimum dimensions.
- B. Silt Fence. Refer to EN Series Standard Drawings.
 - 1. Silt Fence Fabric – 3 foot minimum width, conforming to Table 7 of AASHTO M 288.
 - 2. Wood Post – 1½ inches by 1½ inches by 4 feet minimum dimensions.

3. Fasteners – Staples, wire, cable ties, or nails sufficient to maintain fabric attachment to post.
- C. Check Dam. Refer to EN Series Standard Drawings
1. Fiber Roll – 12 inch diameter, or
 2. Stone – Angular, well-graded 2 to 6 inch diameter.
- D. Drop-Inlet Barrier. Refer to EN Series Standard Drawings
1. Fiber Roll – 18 inch diameter, or
 2. Silt Fence
 - a. Wooden Support Frame – 2 by 4 inch (nominal) wood studs.
- E. Gutter-Inlet Barrier
1. Apparent Opening Size (ASTM D 4751) – between 20 and 40 sieve.
 2. UV Resistance (ASTM D 4355) – 65percent minimum.
 3. Flow Rate (ASTM D 4491) – 100 gpm/ft² minimum.
 4. Filter Material – Monofilament, woven or nonwoven geotextile.
 5. Provide protection to entire inlet opening.
 6. Types:
 - a. Above Inlet Gate
 - 1) Mount securely to the top side of the inlet grate at each corner with cable ties, wire or similar.
 - b. Inlet Cover Gate
 - 1) Sewn geotextile fabric that envelopes entire inlet grate.
 - 2) Must have built-in lifting straps or other device to allow removal of inlet grate and barrier.
 - c. Below Inlet Gate
 - 1) Mount device securely to the inlet grate or have independent frame that allows geotextile bag to hang below grate to capture runoff.
 - 2) Must be designed with a bypass feature that allows stormwater to be conveyed into the conveyance system when geotextile is filled to capacity.
 - 3) Must be able to remove from storm drain inlet and maintain device without dumping captured sediment into the storm drain system.
- F. Pipe-Inlet Barrier. Refer to EN Series Standard Drawings.
1. Fiber Roll – 18 inch diameter, or
 2. Stone – Angular, well-graded 2 to 6 inch diameter.

- G. Temporary Berm. Refer to EN Series Standard Drawings.
 - 1. Compacted existing soil.
 - 2. Free of debris, such as trees, brush, obstructions and other objectionable material that will not allow for compaction of berm material.
- H. Temporary Environmental Fence
 - 1. Fence Fabric
 - a. Polyethylene, high-density (HDPE) and UV stabilized
 - b. Height – 4 ft minimum
 - c. Color – Orange
 - 2. Posts
 - a. Wood Post – 1½ inches by 1½ inches by 4 feet minimum dimensions.
 - b. Fasteners – Staples, wire, cable ties or nails sufficient to maintain fabric attachment to post.
- I. Sediment Trap. Refer to EN Series Standard Drawings.
 - 1. Stone – Angular, well-graded 6 to 12 inch diameter
- J. Slope Drain. Refer to EN Series Standard Drawings.
 - 1. 12 inch diameter single wall polyethylene pipe
 - 2. Polyethylene pipe end section
 - 3. Stone – Angular, well-graded 6 to 12 inch diameter
 - 4. Wood Stakes – 1½ inches by 1½ inches by 3 feet minimum dimensions.
- K. Stabilized Construction Entrance. Refer to EN Series Standard Drawings.
 - 1. Stone – Crushed aggregate, well-graded 2 to 3 inch diameter.
 - 2. Geotextile Fabric (Separation) – Refer to Section 02075.
- L. Straw-Bale Barrier. Refer to EN Series Standard Drawings.
 - 1. Straw Bales – Certified weed free straw bales by the Utah Department of Agriculture.
 - 2. Wood Stakes – 1½ inches by 1½ inches by 4 feet minimum dimensions.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install appropriate controls as shown before beginning earth disturbing activities.

- B. Refer to installation procedures outlined in EN Series Standard Drawings and the AASHTO Construction Stormwater Field Guide.
- C. Install temporary environmental fence in the required locations before construction activities begin.
 - 1. Install posts at a 12 ft maximum spacing so the fence does not sag more than 2 inches between posts.
 - 2. Weave the fence over the support posts alternating every two loops and secure it to the posts with fasteners.
- D. Install Gutter-Inlet Barrier according to manufacturer's recommendations.

3.2 INSPECTION

- A. Check installed controls before and after each rain event to verify proper working function and compliance with the UCGP.
- B. Replace controls that are not properly working to prevent erosion and sedimentation.

3.3 MAINTENANCE

- A. Maintain controls to function properly until surrounding disturbed areas have met final stabilization measures.
- B. Remove accumulated sediments from controls when depth reaches 50 percent of the control height or when it interferes with the performance of the control.
- C. Properly dispose of accumulated sediment.

3.4 REMOVAL

- A. Remove temporary environmental controls when surrounding disturbed areas have met final stabilization measures, except as follows:
 - 1. Do not remove perimeter controls, such as silt fence, fiber rolls or straw bales, when they protect a wetland or waterway unless the surrounding area meets final stabilization requirements identified within the UCGP.
 - 2. When the Engineer determines that controls should remain in place.
- B. Remove temporary environmental fence and posts upon completion of construction.

END OF SECTION

SECTION 01572

DUST CONTROL AND WATERING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Provide and apply water for dust control and pre-wetting, mixing, or compacting materials.

1.2 RELATED SECTIONS Not Used

1.3 REFERENCES Not Used

1.4 DEFINITIONS Not Used

1.5 SUBMITTALS Not Used

1.6 PAYMENT

- A. All costs associated with Dust Control and Watering are incidental to other items of work and no separate measurement or payment will be made unless otherwise specified.

PART 2 PRODUCTS

2.1 WATER

- A. Free of dirt, silt, and other detrimental matter in adequate quantities for dust control and watering requirements.

2.2 EQUIPMENT

- A. Water distribution system – Self-propelled, pressure distributor with a spray system, equipped with a positive shut-off control.
 - 1. Pressure pump must have the capacity to apply the whole load uniformly.
- B. Water truck – 1,000 U.S. gallons minimum capacity, with the capacity clearly and permanently marked on the tank.
 - 1. Engineer may require Contractor to verify capacity.

PART 3 EXECUTION

3.1 APPLICATION

- A. Apply water for dust control in quantities and locations as directed by the Engineer and to maintain environmental compliance.
 - 1. Dust control may be required at any time.
 - 2. Do not waste water.

END OF SECTION

SECTION 02911

HYDRAULIC EROSION CONTROL PRODUCTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Hydraulic Erosion Control Products (HECP) used to stabilize disturbed areas of a construction project.

1.2 RELATED SECTIONS Not Used

1.3 REFERENCES

- A. ASTM D 6459: Determination of Rolled Erosion Control Product (RECP) Performance in Protecting Hillslopes from Rainfall-Induced Erosion
- B. ASTM D 6566: Measuring Mass per Unit Area of Turf Reinforcement Mats
- C. ASTM D 6567: Measuring the Light Penetration of a Turf Reinforcement Mat (TRM)
- D. ASTM D 7322: Determination of Rolled Erosion Control Product (RECP) Ability to Encourage Seed Germination and Plant Growth Under Bench-Scale Conditions
- E. ASTM D 7367: Determining Water Holding Capacity of Fiber Mulches for Hydraulic Planting

1.4 DEFINITIONS

- A. Hydraulic Erosion Control Products (HECP) – Biodegradable manufactured thermally processed natural or reinforced interlocking fibers and pre-mixed with a tackifier.
 - 1. Mixed with water and hydraulically applied as a slurry on recently constructed areas.

1.5 SUBMITTALS

- A. Manufacturer's product data sheets and installation instructions.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver material and products in original ultra violet (UV) and weather-resistant factory labeled packages showing the name of the manufacturer and product description.

PART 2 PRODUCTS

2.1 HYDRAULIC EROSION CONTROL PRODUCTS (HECP)

- A. Furnish HECP according to Table 1 and the following:
1. HECP Type 1
 - a. Add a tackifier when not pre-mixed into manufacturer package, see this Section, 2.3.
 2. HECP Type 2
 3. HECP Type 3

Table 1

Requirements for Hydraulic Erosion Control Products				
Product Composition	Test Method (ASTM)	Type 1	Type 2	Type 3
Thermally Processed Fiber		85% ±10%	80% ±10%	75% ±10%
Tackifier		5% ±2%	N/A	N/A
Crosslinked Hydro-Colloidal Tackifier		N/A	10% ±2%	10% ±2%
Crimped Interlocking Fibers		N/A	N/A	5% ±2%
Moisture Content		12% ±3%	10% ±3%	10% ±3%
Organic Matter (minimum)		90%	90%	90%
Colored To Contrast Application Area		Yes	Yes	Yes
Physical Properties				
Mass per Unit Area (minimum)	D 6566	8 oz/yd ²	11 oz/yd ²	11.5 oz/yd ²
Ground Cover (minimum)	D 6567	90%	95%	97%
Water Holding Capacity (minimum)	D 7367	600%	1000%	1400%
Performance Properties				
Functional Longevity		3-6 months	6-12 months	12-18 months
Cover Factor (maximum)	D 6459	0.10	0.05	0.01
Vegetation Establishment (minimum)	D 7322	300%	400%	500%

2.2 WATER

- A. Free of dirt, silt and other detrimental matter.

2.3 TACKIFIER

- A. General
 - 1. Free from growth or germination inhibiting factors.
 - 2. Nonflammable
 - 3. Nontoxic to aquatic organisms.
 - 4. Functional for a minimum of 180 days.
- B. Guar-based tackifier
 - 1. Derived from ground endosperm of guar seeds (*Cyamopsis tetragonolobus*) and treated with dispersant agents.
 - 2. Apply at a rate of 50 lbs per acre.
- C. Psyllium-based tackifier
 - 1. Manufactured from the finely ground muciloid coating of *Plantago ovata* or *Plantago ispaghula* seeds.
 - 2. Will hydrate when mixed with water to form a slurry and produces a firm, resilient and rewettable membrane on the soil surface after application.
 - 3. Apply at a rate of 100 lb per acre.
- D. Starch-based tackifier
 - 1. Typically derived from corn or potatoes in a non-ionic, cold-water soluble (pre-gelatinized) granular form.
 - 2. Apply at a rate of 150 lb/acre.

PART 3 EXECUTION

3.1 PREPARATION

- A. Complete required grading, topsoil placement, and seeding in designated areas before applying HECP.
- B. Apply HECP within 24 hours after seeding.
- C. Provide sufficient time for HECP to cure according to manufacturer's recommendation before precipitations falls.

3.2 HECP APPLICATION

- A. Use HECP components pre-packed by the manufacturer.
 - 1. Do not field mix materials unless using a HECP Type 1 product that does not include a pre-mixed tackifier into manufacturer package.
- B. Mix water and HECP according to the manufacturer's recommendation.
- C. Apply HECP at the rates in Table 2, unless otherwise specified.

Table 2

HECP Application Rates	
HECP Type	Minimum Rates (lbs per acre)
Type 1	2,000
Type 2	3,500
Type 3	3,500

- D. Apply a uniform layer of HECP slurry to targeted areas from both the top and bottom of the slope to meet manufacturer's recommendation for installed thickness and ground coverage.
 - 1. Remove overspray before the HECP slurry dries.

END OF SECTION

SECTION 02922

SEED, TURF SEED, AND TURF SOD

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Seed, turf seed, and turf sod requirements and application.
- B. Surface preparation.

1.2 RELATED SECTIONS

- A. Section 02912: Topsoil

1.3 REFERENCES

- A. Utah Seed Law

1.4 DEFINITIONS Not Used

1.5 SUBMITTALS

- A. Submit for information, copy of the purchase order documenting that all seeds, including substitutions, have been acquired before the seeding window begins.
 - 1. Refer to this Section, article 1.6 for seeding information.
 - 2. List the common and botanical name for each seed species on the purchase order.
- B. Submit for information, certification that turf sod is nursery grown and contains a minimum of three varieties of Kentucky Blue Grass.
- C. Submit for information, certification indicating the date and time sod was cut at the nursery.
- D. Submit for information, fertilizer labels.
- F. Submit for information legible copy of Seed Certification – Include the following on seed certification reports and labels:
 - 1. Botanical name (include variety if applicable)
 - 2. Common name
 - 3. Name of seed testing laboratory

4. Lot number and address of the seed company
5. Weed seed (percent)
6. Other crop seed (percent)
7. Inert matter (percent)
8. Pure live seed (percent)
9. Noxious weed seed (name and rate of occurrence)
10. Date tested (month and year)
11. Germination (percent)
12. Hard seed (percent)
13. Net weight (do not include container weight)
14. Pure live seed weight
15. Collection locations for native shrub and tree species (state, county, elevation)

- G. Submit for information manufacturer's directions on drill calibration two working days before seeding. Refer to this Section, Article 3.3.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Mixing Seed
1. Notify Engineer seven calendar days before mixing seed.
 2. Engineer will verify that the seed certification report or label represents the seed lot from which the seed is furnished.
 3. Mix the different seed varieties to provide an even blend.
 4. Bag the mixed seed, seal the container, and attach a signed Department label to the exterior.
- B. Deliver seed or turf seed to job site in original containers showing analysis of seed mixture, net weight, and date and location of packaging. Damaged packages are not acceptable.
- C. Strip turf sod from nursery no more than 24 hours before laying.
- D. Deliver fertilizer in containers showing weight, chemical analysis, and name of manufacturer. Store fertilizer in a weatherproof location.

1.7 SCHEDULE

- A. Pre-measure the area to be seeded before ordering seed from supplier. The Engineer must approve the measuring technique and determined quantity.
- B. Seeding Window
1. Complete all general roadside seeding within the appropriate seeding window.

2. Postpone seeding until the following year if the seeding is not completed within the given window.
3. A late winter exception to the seeding window may be obtained from the Engineer if suitable weather and soil conditions exist.

<u>Elevation</u>	<u>Seeding Window</u>
Below 4,000 ft	October 1 – December 31
4,000 to 6,000 ft	September 15 – December 1
Above 6,000 ft	September 1 – November 15

- C. Turf seed and turf sod can be placed only after irrigation system is installed and operational.
- D. Topsoil
 1. Refer to Section 02912.
 2. Place topsoil just before seeding to eliminate competition from weeds.
 3. Coordinate topsoil placement with the above seeding window.

PART 2 PRODUCTS

2.1 SEED AND TURF SEED

- A. Meet the Utah Seed Law – Utah Code - Title 4, Chapter 16.
- B. Supply seed on a pure live seed (PLS) basis.
- C. Obtain seed from lots that have been tested by a state certified seed testing laboratory such as Association of Seed Analyst (AOSA) or Society of Commercial Seed Technologists (SCST).
 1. Seed germination test older than 18 months for grass seed and 9 months for shrub or tree seed are not acceptable.
 2. Based on the amount or type of seed required on a project, the Department may require additional testing by the Department of Agriculture.
- D. Do not use wet, moldy, or otherwise damaged seed.
- E. Seed Substitutions
 1. Contact the major seed brokers in the state to verify that the seed is unavailable before requesting a seed substitution.
 2. Obtain approval for a seed substitution.

2.2 TURF SOD

- A. Healthy and well-rooted nursery grown Kentucky Blue Grass sod comprised of a minimum of three varieties and free of weeds.
- B. Machine cut in straight, uniform strips or rolls, cut at a depth between $\frac{3}{4}$ inch and 1 inch.

2.3 FERTILIZER (turf sod and turf seed areas only)

- A. Uniform in composition, dry, and free flowing.
 - 1. Turf seed or turf sod – Elemental nitrogen in granular form. Phosphorus and potassium are optional and may be applied with nitrogen in granules. Use a slow release form of a minimum 50 percent nitrogen such as sulfur coated urea or urea formaldehyde.
 - 2. Apply elemental nitrogen with a concentration ranging from 21-34 percent if hydroseeding method is used.

PART 3 EXECUTION

3.1 PREPARATION

- A. Complete all final grading, irrigation work, trench settling, topsoil placement, and surface preparation before seed or sod application.
- B. Prepare general seedbed for all seeded and sodded areas.
 - 1. Verify that a suitable topsoil surface has been prepared according to Section 02912 before seeding.
 - 2. Do not work topsoil or seed when the soil is saturated or frozen.
- C. Prepare Turf Seedbed
 - 1. Review finish grade to confirm that topsoil is 1 inch below the top of all walks, curbs, mow strips, and other hard surfaces.
 - 2. Apply fertilizer at the rate of 2 lb/100 yd² and mix thoroughly into upper 2 inches of topsoil.
 - 3. Do not apply fertilizer and seed at the same time in the same machine.
- D. Prepare Turf Sod Surface
 - 1. Review finish grade to confirm that topsoil is 1½ inch below the top of all walks, curbs, mow strips, and other hard surfaces.
 - 2. Apply fertilizer at the rate of 2 lb/100 yd² and mix thoroughly into upper 2 inches of topsoil.
 - 3. Level and roll prepared areas using a 21 gal water-filled hand roller containing 8 to 10 gal of water.
 - 4. Lightly rake and dampen with water the top $\frac{1}{8}$ to $\frac{5}{8}$ inches of soil just before laying the sod.

3.2 SEEDING – GENERAL

- A. Notify the Engineer seven working days before seeding.
- B. Apply seed at the rate indicated in the Seed Schedule as shown. Note that drill seed and broadcast seed are applied at different rates.

3.3 DRILL SEEDING METHOD

- A. Use the drill method of seeding on accessible slopes 3:1 and flatter.
- B. Use a drill equipped with the following:
 - 1. Depth band
 - 2. Seed box agitator
 - 3. Seed metering device
 - 4. Furrow opener
 - 5. Packer wheels or drag chains
- C. Use the drill manufacturer's directions in the presence of the Engineer. Calibrate the drill to apply seed at the rate indicated in the seeding schedule.
- D. Space drill rows a minimum of 6 inches and a maximum of 8 inches.
- E. Fill the seed boxes no more than half full when drilling on a slope.
- F. Set depth bands to drill seeds to a ½ inch depth.
- G. Drill along the contour.
- H. Maintain the drill at the calibrated setting throughout the seeding operation.
- I. Allow the furrows that are created by the drill to remain.

3.4 BROADCAST SEEDING METHOD

- A. Use the broadcast method of seeding under the following conditions:
 - 1. Slopes steeper than 3:1.
 - 2. Slopes 3:1 and flatter where the area to be seeded is inaccessible to drill.
 - 3. The area to be seeded is not large enough to justify using a drill.
 - 4. Rocky surface conditions will damage a drill.

- B. Obtain approval of the broadcast method by demonstrating the procedure on a 100 yd² area.
- C. Evenly broadcast seed using either:
 - 1. A cyclone seeder or other approved mechanical seeder.
 - 2. A hydroseeder.
 - a) Apply seed, water, and 300 lb of cellulose fiber mulch (tracer) per acre.
- D. Do not seed during windy weather or when soil is saturated.
- E. Incorporate the seed into the soil by one of three methods:
 - 1. Cat-tracking by running the dozer up and down the slope creating continuous cleat tracks that run parallel with the contours.
 - 2. Hand raking the seed in ½ inch deep and along the contours of the slope.
 - 3. Slope chaining by pulling the chain along the contour until the seed is covered.
- F. Obtain approval from the Engineer that the seed has been adequately incorporated into the soil before applying wood fiber mulch, erosion control blanket, flexible growth medium, flexible channel liner, or other topdressing.

3.5 TURF SEEDING

- A. Apply turf seed after seedbed preparation. Refer to this Section, Article 3.4, paragraph C.
- B. Roll seeded areas using a hand roller half filled with water.
- C. Lightly water and program the irrigation system to maintain a moist seedbed.
- D. Rope off newly seeded areas along walkways using bright plastic ribbon tape attached to stakes.

3.6 TURF SOD PLACEMENT

- A. Prepare sod bed and place sod with all edges and joints tightly butted.
 - 1. Do not stretch or overlap sod.
 - 2. Keep length seams in a straight line.
- B. Lay turf sod with staggered joints and trim off excess material along the edges.

- C. Roll sod immediately after placing using a hand roller half filled with water.
 - 1. Re-roll if depressions still remain.
 - 2. Thoroughly water with a fine spray to a depth sufficient that the underside of the new sod and soil immediately below the sod are thoroughly wet.

END OF SECTION

Appendix B –BMP Specifications and Details

B.1 Erosion Control Methods

Temporary control measures are designed to effectively reduce erosion and sedimentation to sensitive resources during construction. These temporary erosion control measures will be installed concurrently with construction earthwork and will be maintained throughout the course of construction. When necessary, these measures may be left in place along with permanent measures during the post construction period until effective revegetation has been reestablished. Sediment barriers and water bars (as described below) will be the primary measures for temporary erosion control used on the project.

Permanent erosion control measures are designed to minimize erosion and sedimentation after construction until revegetation efforts have effectively stabilized the construction area. Installation of permanent erosion control measures should be performed within 14 days following backfilling of the trench except as follows: In areas where the construction ROW has been restricted, the zone over the backfilled trench will be used temporarily for spoil storage as contractors continue construction along the ROW. Contractors will install permanent erosion control measures within ten days, if possible, following "temporary" use of these areas for spoil storage. In general, temporary erosion control measures will be removed after permanent erosion control measures have been installed.

The following sections review materials, installation requirements, and performance criteria for temporary, interim, and permanent erosion and sediment control measures.

B.1.1 Sediment Barriers

Straw bale sediment barriers (certified to be free of noxious weeds) and silt fence sediment barriers are temporary sediment barriers designed to slow down water flow and to intercept suspended sediment conveyed by sheet flow, while allowing runoff to continue down gradient. These installations are used to prevent sediment delivery from the construction area as well as to divert water off the construction area. Temporary sediment barriers will be installed, as necessary, at the following locations immediately after initial ground disturbance:

Across the ROW at the base of slopes where the ROW crosses roadways, water bodies, springs, wetlands and other sensitive resources;

Along the edge of the ROW adjacent to and up slope of roadways, water bodies, springs, wetlands or other sensitive resources; and

Around topsoil or subsoil piles where necessary (e.g. adjacent to water bodies or wetlands)

The requirement to install a sediment barrier is dependent on the slope angle (when a hillside slopes in multiple directions, the slopes can off-set each other and reduce the need for sediment barriers), slope length, and soil type (texture and coarse fragment content). While typically used only during construction, silt fences and straw bale sediment barriers will be left in place following seeding, possibly for a complete growing season.

B.1.1.2 General Requirements

Straw bale or silt fence sediment barriers placed at the toe of a slope will be at least 6 feet from the toe of the slope, where possible, in order to increase ponding volume. The ends of the sediment barrier will be turned upslope to capture sediment.

If sediment barriers are necessary, they will be placed so as not to hinder construction activities and outside of (above the high water mark) active stream channels. If silt fences or straw bale sediment barriers are placed across the construction area (adjacent to water bodies, wetlands, or roads) where construction traffic is allowed to cross, provisions will be made for traffic flow. An approximately 15-foot-wide gap will be provided along the silt fence or straw bale row, with the ends of the sediment barrier turned slightly up slope. Drivable earth berms will be installed and maintained across the gap immediately up slope of the sediment barrier. Alternatively, straw bales will be installed across the gap with 24 inches of overlap with the adjacent sediment barrier at the end of each day.

If sediment loading is noted during regular inspections of temporary sediment barriers to be at or greater than 40 percent of barrier capacity, sediment behind the barrier will be spread on the disturbed ROW uphill of the sediment barrier. Loose stakes, loosely abutted bales, damaged bales, or damaged or under-mined sections of silt fence will be repaired or replaced as necessary.

Straw Bales

Straw bale sediment barriers consist of a row of tightly abutted straw bales placed perpendicular to the runoff direction with the ends turned up slope. The barriers are typically one bale high, placed on the fiber-cut edge in a 4-inch trench (tie not in contact with the ground), and anchored securely with two wooden stakes driven through each bale. A small amount of soil is then piled across the up slope side of the straw bale barrier. Only certified, weed-free straw will be used in these bales which will be identified by multicolored, orange and blue, baling twine. Excelsior logs may be substituted for straw bales. Installation will be as recommended by the manufacturer. When straw bales are used as a temporary substitute for water bars, the same spacing noted for water bars will be used (see Section C.3.2).

Silt Fences

Commercial filter fabrics, with sufficient strength to prevent failure will be provided by contractors. The height of a silt fence will not exceed 36 inches and the fabric will be cut from a continuous roll of fabric with splices only at support posts, with a minimum 6-inch overlap and both ends of fabric securely attached to the post. Support posts will be a maximum of 10 feet apart.

The bottom edge of silt fences will be installed in a trench excavated approximately 4 inches wide by 6 inches deep and refilled with compacted soil, unless on-site constraints dictate otherwise (e.g., rock). Silt fences will be attached to supporting posts by staples or wire.

If additional support is needed to contain wet spoil or to provide added protection near a sensitive resource, either wire mesh or straw bales may be placed immediately behind the silt fence on the down-gradient side. If wire mesh is used, the wire will be attached to the support posts, prior to installation of the fabric, with heavy duty wire staples at least one inch long, wire ties, or hog rings. The wire will be keyed into the trench at least 2 inches, and extended up the posts to the top of the filter fabric.

B.2 Stabilization Practices

B.2.1 Mulching

Mulching is the application of noxious weed-free straw or wood fiber to disturbed soils to minimize the effects of wind or rain on exposed soils. During rainy conditions, mulch reduces the impact of rainfall and slows the flow of water down the slope. Mulch, rather than erosion control mats, would typically be used across large sections of the ROW to reduce wind erosion and raindrop impact, if needed.

If mulching is necessary, it will be monitored for adequacy in area coverage and cover thickness during application. Application rates will be adjusted, as necessary, to provide adequate coverage. Mulch will be reapplied to areas where erosion repairs are necessary.

Mulch as Temporary Erosion Control

Application of mulch for temporary erosion control is based on slope surface type and condition (i.e., sand, clay, rock, etc.), slope steepness, and the amount of exposed surface area not covered by plant residue.

During construction, water or non-toxic, organic tackifier may be applied to topsoil storage mounds composed of soils with high wind erodibility at 120 pounds/acre. Tackifier will not be applied within 100 feet of a watercourse or wetlands.

If reclamation and seeding is deferred more than 10 days after final grade restoration near water bodies or wetlands, all disturbed slopes above the water body or wetland will be temporarily stabilized by applying 2000 pounds/acre of straw mulch for a minimum distance of 100 feet above the edge of the water body or wetlands. Similar temporary stabilization may be used on slopes steeper than 30 percent. Interim seeding may also be performed. Seed bed preparation, including thinning or removal of the mulch, will be repeated as necessary prior to application of the final seed mix.

Mulch as Permanent Erosion Control

If needed after final restoration and seeding, permanent mulch applications will be applied to slopes greater than 30 percent, slopes within 100 feet of water bodies and wetlands, and other sensitive sites (dry, sandy, steep slopes, etc.) to control erosion. Where appropriate, contractors will randomly distribute any windrowed shrubs or other remaining vegetation debris over the ROW. Large unmerchantable trees may be placed on the ROW to provide slope stabilization and erosion control benefits. On steep slopes and other areas where broadcast rather than drill seeding must be employed, trees and shrubs will be spread or placed during final cleanup and prior to seeding. Where any spreading woody debris results in an adequate mulch layer, mulch rates may be reduced or eliminated.

Straw Mulch

Weed-free straw mulch, if necessary, will be applied and anchored into the seed bed using a mechanical crimper specifically designed to crimp mulch to a depth of 2 to 3 inches. The straw will be crimped perpendicular to slope. Acceptable straw mulch crimpers include:

Mechanical crimper, backhoe with crimper forks,
Racked equipment tracking across slopes (restricted to areas where other methods will not work),
Hand-punching with round-pointed shovel.

Sheep's foot packers will not be used, though organic liquid mulch binders may be used in accordance with

manufacturer's recommendations. If a straw mulch blower is used, strands of the mulching material will be long enough to allow anchoring.

Wood Fiber Mulch

If wood fiber mulch is used, it will be made of 100-percent wood fiber or equivalent and will be applied by a hydroseeder with non-toxic, organic tackifier (except within 100 feet of a water body or wetland) such as a guar-based tackifier.

B.2.2 Erosion Control Matting

After final grade restoration, erosion control matting may be installed, as necessary, to reduce rain impacts on soils, to control erosion and to stabilize steep slopes and water body banks. Erosion control matting will typically be used on stream banks and slopes steeper than 3:1.

Mats will typically be furnished in continuous rolls of 30 feet or greater with a minimum width of 4 feet. Staples will be made of wire, 0.091 inch in diameter or greater, and have a U-shape with legs 8 inches in length and a 2-inch crown. Wire staples will be driven into the ground for the full length of the staple legs. Alternatively, wood pegs (2-inch diameter) may be used to secure the erosion control fabric.

For stream bank installations, mats will generally be laid parallel (upper mat overlapping lower mat in a shingle pattern) to the water body to a point above the top of the bank. The erosion control mats identified above for stream bank stabilization are designed to handle flow and can be placed under the ordinary high water mark of the stream bank. Native materials (rocks, logs, etc.) may be used in conjunction with the matting to aid in stabilization of banks. During regular erosion control monitoring, erosion control matting will be inspected for washouts, adequate staking, and loss of matting. Damaged or undermined matting will be repaired or replaced as necessary.

Revegetation

Revegetation will follow, as soon as possible after final clean-up of a ROW or a site, with the agreement of the land owner or land management agency. In some areas, such as the desert, seeding is not required and the desert erosion control plan will be implemented. This may be true in other areas. Generally, seed mixes, rate of application, and types and rates of application of fertilizer will be project specific and agreed upon with the land owner or land management agency. Ground cover will be established to a level of 70% of the original cover density or other stabilization practices will be installed before the Notice of Termination, described in Part 4 of the General Construction Permit UTR 300000, is submitted. Weather related conditions may determine the schedule for revegetation and/or final stabilization.

B.3 Structural Practices

In addition to the stabilization and erosion methods above, structural practices are used to divert flows from exposed soils, store flows, or otherwise limit runoff and discharge of pollutants from exposed areas of the site. To the extent practical, structural devices will not be placed in floodplains. Additionally, the appropriate sediment basin requirements provided in the general permit will be implemented when necessary.

B.3.1 Trench Breakers

Trench breakers will be installed in the trench to restrict or slow ground water flow along the trench line.

They will be installed prior to backfilling on slopes that drain into water bodies (natural or artificial stream, river, or drainage with perceptible flow at the time of crossing, and ponds, or lakes), wetlands, and improved roads. Trench breakers will also be constructed immediately down slope of any location where groundwater could enter and migrate along the trench at any time of year.

Breakers will be installed at the same spacing as, and up slope of, permanent slope breakers. In agricultural fields where water bars are typically not required, trench breakers will be installed on the same spacing as if permanent slope breakers were required. The number of water bars and trench breakers need not be the same due to site-specific conditions. Trench breakers can be constructed from sandbags or polyurethane foam. If the sandbag method is selected, topsoil will not be used as a fill material.

B.3.2 Water bars

Water bars are utilized in various forms (e.g., rolling dips on access roads, derivable berms across travel ways, water bars on slopes) during project construction and after final grade restoration. Water bars are intended to intercept water traveling down a disturbed slope and divert water off disturbed soil into stable, well-vegetated, or adjacent rocky areas.

If necessary, temporary water bars will be installed concurrently with initial grading operations and will be maintained throughout construction. Permanent water bars will be installed after the ROW grade is restored if needed. Water bars will also be installed near the base of slopes adjacent to wetlands and watercourses except at those specific sites (e.g., terrain slopes away from a canal) where water bars are not necessary to prevent discharge of sediment into a wetland or watercourse. Though site-specific details may differ, the spacing for temporary and permanent water bars will be generally as follows:

Slope (%)	Spacing (feet)
5 to 15	300
15 to 30	200
> 30	100

Alternative spacing may be requested by the landowner or land management agencies for isolated, site-specific areas and conditions (i.e., in areas of highly erodible soils). Water bar spacing is based on a site-specific evaluation of the ROW and standard construction protective measures. This spacing takes into account the soils, timing of construction, and area of disturbance anticipated for construction of the project. Water bars will be generally sited so that they do not outlet into sensitive resource areas (cultural sites, rare plant sites, etc.).

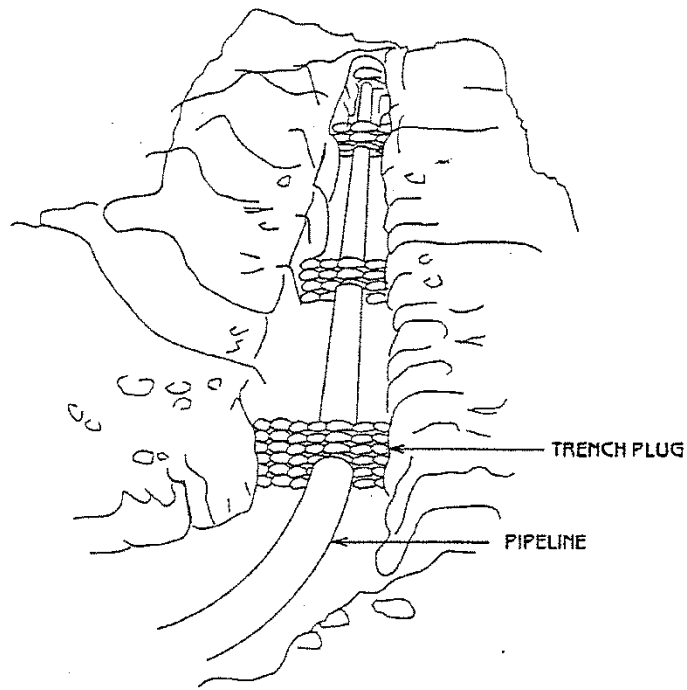
Except for site-specific situations as determined by land owners and land management agency representatives (e.g., extremely long slopes with highly erodible soils), temporary water bars will not be constructed on slopes with less than five-percent gradient. Water bars are not typically installed in residential or active agricultural areas.

Water bars will be constructed of existing suitable material (compacted soil), a series of tightly abutted

straw bales, excelsior logs, or burlap bags filled with native soil. The installation angle will be approximately 2 to 5 percent down slope and will extend beyond the edge of the disturbed construction area. Where possible, water bars will discharge into stable, non-erosive (vegetated or rocky) receiving areas.

In isolated instances where water bars discharge into unstable or highly erosive areas without rock or vegetation flow, energy dissipaters or "J-hook" shaped sediment barriers will be positioned at the water bar outlet. However, decreasing spacing or adjusting the spacing to locate outlets onto a stable site is preferable to using outlet energy dissipaters. When allowed by existing topographic conditions the flow energy dissipaters will be offset (staggered) on slopes greater than 20 percent.

Contractors will regularly inspect and repair water bars during construction to maintain their effectiveness. Water bars worn down by heavy construction traffic or filled with sediments will be repaired as needed, and the sediments will be spread on the disturbed ROW uphill of the bar.



TRENCH BREAKERS

Description

Protection of existing vegetation on a construction site can be accomplished through installation of a construction fence around the area requiring protection.

In cases where upgradient areas are disturbed, it may also be necessary to install perimeter controls to minimize sediment loading to sensitive areas such as wetlands. Existing vegetation may be designated for protection to maintain a stable surface cover as part of construction phasing, or vegetation may be protected in areas designated to remain in natural condition under post-development conditions (e.g., wetlands, mature trees, riparian areas, open space).

Photograph PV-1. Protection of existing vegetation and a sensitive area. Photo courtesy of CDOT.

Appropriate Uses

Existing vegetation should be preserved for the maximum practical duration on a construction site through the use of effective construction phasing. Preserving vegetation helps to minimize erosion and can reduce revegetation costs following construction.

Protection of wetland areas is required under the Clean Water Act, unless a permit has been obtained from the U.S. Army Corps of Engineers (USACE) allowing impacts in limited areas.

If trees are to be protected as part of post-development landscaping, care must be taken to avoid several types of damage, some of which may not be apparent at the time of injury. Potential sources of injury include soil compaction during grading or due to construction traffic, direct equipment-related injury such as bark removal, branch breakage, surface grading and trenching, and soil cut and fill. In order to minimize injuries that may lead to immediate or later death of the tree, tree protection zones should be developed during site design, implemented at the beginning of a construction project, as well as continued during active construction.

Design and Installation

General

Once an area has been designated as a preservation area, there should be no construction activity allowed within a set distance of the area. Clearly mark the area with construction fencing. Do not allow stockpiles, equipment, trailers or parking within the protected area. Guidelines to protect various types of existing vegetation follow.

Protection of Existing Vegetation	
Functions	
Erosion Control	Yes
Sediment Control	Moderate
Site/Material Management	Yes

Surface Cover During Phased Construction

Install construction fencing or other perimeter controls around areas to be protected from clearing and grading as part of construction phasing.

Maintaining surface cover on steep slopes for the maximum practical duration during construction is recommended.

Open Space Preservation

Where natural open space areas will be preserved as part of a development, it is important to install construction fencing around these areas to protect them from compaction. This is particularly important when areas with soils with high infiltration rates are preserved as part of LID designs. Preserved open space areas should not be used for staging and equipment storage.

Wetlands and Riparian Areas

Install a construction fence around the perimeter of the wetland or riparian (streamside vegetation) area to prevent access by equipment. In areas downgradient of disturbed areas, install a perimeter control such as silt fence, sediment control logs, or similar measure to minimize sediment loading to the wetland.

Tree Protection¹

- Before beginning construction operations, establish a tree protection zone around trees to be preserved by installing construction fences. Allow enough space from the trunk to protect the root zone from soil compaction and mechanical damage, and the branches from mechanical damage (see Table PV-1). If low branches will be kept, place the fence outside of the drip line. Where this is not possible, place fencing as far away from the trunk as possible. In order to maintain a healthy tree, be aware that about 60 percent of the tree's root zone extends beyond the drip line.

Table PV-1
Guidelines for Determining the Tree Protection Zone
(Source: Matheny and Clark, 1998; as cited in GreenCO and WWE 2008)

Species Tolerance to Damage	Distance from Trunk (ft) per inch of DBH		
	<i>Young</i>	<i>Mature</i>	<i>Over mature</i>
<i>Good</i>	0.5'	0.75'	1.0'
<i>Moderate</i>	0.75'	1.0'	1.25'
<i>Poor</i>	1.0'	1.25'	1.5'
Notes: DBH = diameter at breast height (4.5 ft above grade); Young = <20% of life expectancy; Mature = 20%-80% of life expectancy; Over mature =>80% of life expectancy			

- Most tree roots grow within the top 12 to 18 inches of soil. Grade changes within the tree protection zone should be avoided where possible because seemingly minor grade changes can either smother

¹ Tree Protection guidelines adapted from GreenCO and WWE (2008). *Green Industry Best Management Practices (BMPs) for the Conservation and Protection of Water Resources in Colorado: Moving Toward Sustainability, Third Release*. See www.greenco.org for more detailed guidance on tree preservation.

roots (in fill situations) or damage roots (in cut situations). Consider small walls where needed to avoid grade changes in the tree protection zone.

- Place and maintain a layer of mulch 4 to 6-inch thick from the tree trunk to the fencing, keeping a 6-inch space between the mulch and the trunk. Mulch helps to preserve moisture and decrease soil compaction if construction traffic is unavoidable. When planting operations are completed, the mulch may be reused throughout planting areas.
- Limit access, if needed at all, and appoint one route as the main entrance and exit to the tree protection zone. Within the tree protection zone, do not allow any equipment to be stored, chemicals to be dumped, or construction activities to take place except fine grading, irrigation system installation, and planting operations. These activities should be conducted in consultation with a landscaping professional, following Green Industry BMPs.
- Be aware that soil compaction can cause extreme damage to tree health that may appear gradually over a period of years. Soil compaction is easier to prevent than repair.

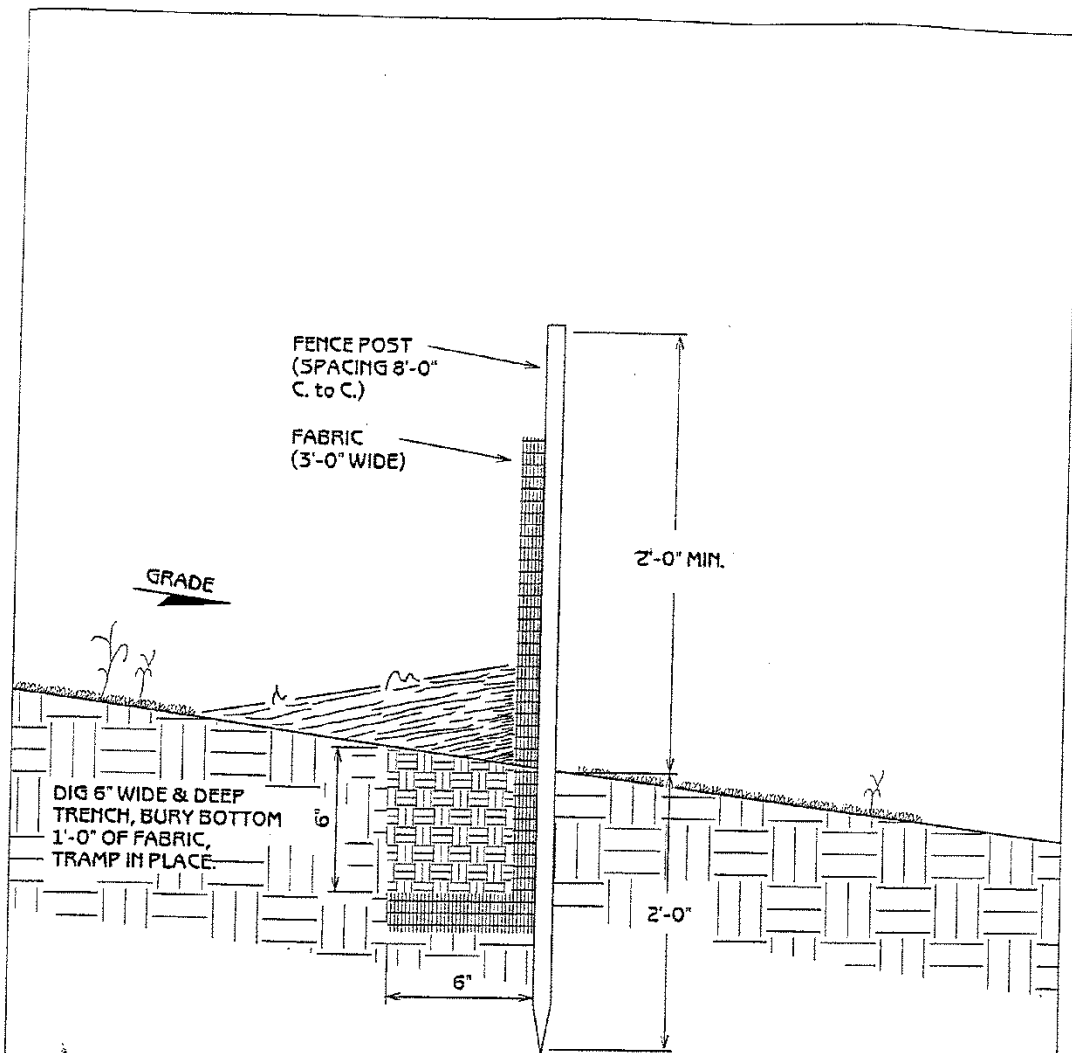
Maintenance and Removal

Repair or replace damaged or displaced fencing or other protective barriers around the vegetated area.

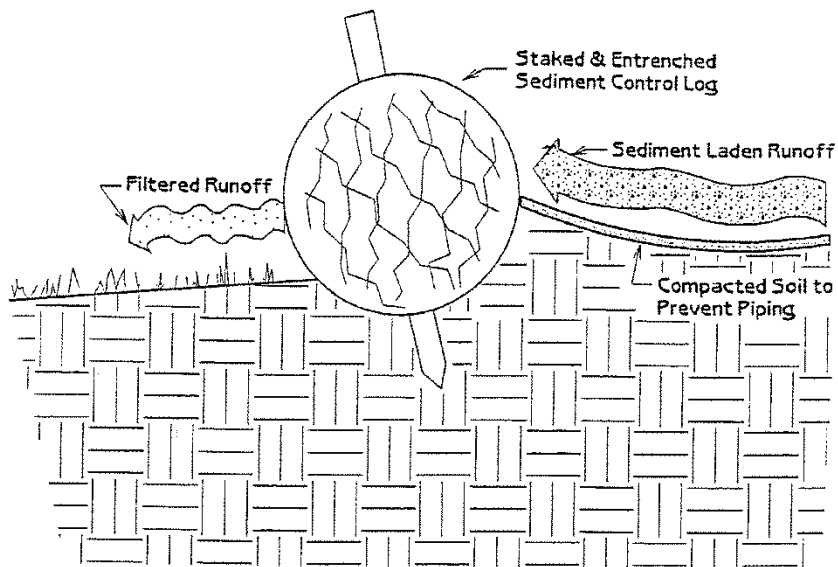
If damage occurs to a tree, consult an arborist for guidance on how to care for the tree. If a tree in a designated preservation area is damaged beyond repair, remove and replace with a 2-inch diameter tree of the same or similar species.

Construction equipment must not enter a wetland area, except as permitted by the U.S. Army Corps of Engineers (USACE). Inadvertent placement of fill in a wetland is a 404 permit violation and will require notification of the USACE.

If damage to vegetation occurs in a protected area, reseed the area with the same or similar species, following the recommendations in the USDCM *Revegetation* chapter.



SILT FENCE CONSTRUCTION



**CROSS-SECTION OF A
PROPERLY INSTALLED
SEDIMENT CONTROL LOG
(EXCELSIOR LOG OR EQUIVALENT)**

1. DESCRIPTION:

Temporary Berms are temporary control measure barriers made of compacted subsoil or other approved materials such as embankment or sand bags. Their function is to intercept and divert sheet surface runoff away from areas not yet stabilized, prevent erosion, manage sheet flow, and reduce sediment transport.

2. CONTROL MEASURE USES

- ☒ Erosion Control
- ☒ Sediment Control
- ☐ Site/Materials Management

3. RELEVANT SPECIFICATION SECTIONS

[Section 208](#) - Erosion Control

- a) **208.05 (d)** - Construction BMPS
- b) **208.11** - Method of Measurement

4. RELEVANT M-STANDARD DETAILS

[M-208-1](#), Sheet 7 of 11 (Grading Applications)

5. BASIS OF PAYMENT

Pay item	Description	Pay Unit
208-00300	Temporary Berm	LF

6. APPLICATIONS

- May be constructed across roadways (transverse berm) at a slight angle with respect to the centerline.
- May be constructed along the top edge of fill slopes or below the toe of exposed and erodible slopes (upslope or downslope side of a construction area). They can also be used at storm drain inlets (when approved) and across minor swales and ditches.
- May be used to construct Rough Cut Street Control measures.
- May be used to divert surface sheet flows from areas where flows may damage property or interfere with establishment of vegetation.
- May be used to divert surface runoff to other control measures like Sediment Traps.



Temporary Berm along access road

- May be used on relatively flat slopes to capture surface runoff to shorten the overall slope length before it has a chance to concentrate and cause rill and gully erosion

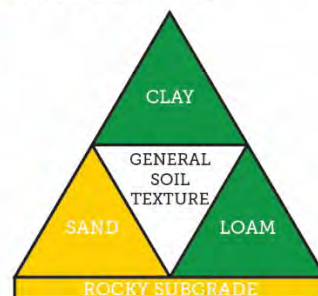
7. LIMITATIONS

- Only to be used as a temporary measure on flat areas with slopes less than 2H:1V.
- Must use a secondary erosion control measure device when sediment control is an objective.
- Susceptible to erosion when intercepted concentrated flows have high velocities.

8. SOILS TRIANGLE

SOIL TEXTURE AND SUBGRADE CONDITIONS

- APPROPRIATE
- SOMEWHAT APPROPRIATE
- NOT APPROPRIATE



9. SWMP ADMINISTRATOR FOR DESIGN CRITERIA

- Temporary Berm:
 - Berm must be at least 18 inches tall or high enough to prevent overtopping.
 - Berm must have a minimum of 4- to 6-foot base.
 - Gradient of all receiving area above berm must be less than 2:1, or flatter.
 - Berms must be designed so that flow line of water is at a gradient of less than 3 percent. Greater than 3 percent may require the use of Check Dams in the flow line behind the berm.
 - Outlets of anticipated flow from captured water behind berms must be designed with additional control measures suitable to control concentrated flow. Maximum drainage area for each outlet must be limited to 2 acres.
 - Berms installed taller than 2 feet require additional control measures at the toe opposite of the conveyance side.

10. INSTALLATION CRITERIA

- Construct Temporary Berm using native subsoil materials that can be compacted. Topsoil may **not be used** to construct these structures.
- Temporary Berm must be compacted manually or by mechanical means.
- The berms shall be constructed at regular intervals along the road and shall be perpendicular to the longitudinal slope from the outer edge of the swale to the crown of the road.

11. MAINTENANCE AND REMOVAL

- Inspect Temporary Berms on a daily basis for signs of erosion, stability, and compaction. Whenever erosion is spotted, replace lost material and recompact berm to match original conditions.
- If intensive maintenance is necessary to keep this control measure functional, consider using a different control measure device (see Silt Dike [fact sheet No. 19] or Erosion Logs [fact sheet No. 17]).
- When upstream area is stabilized, Temporary Berms may be removed. Disturbed area around control measure must be cleared of any debris or sediment, receive subgrade soil preparation, and be seeded and mulched.
- Removed material for Temporary Berms may be distributed on-site at a location approved by the Engineer.



CHECK DAM - FIBER ROLL



CHECK DAM - STONE

EXAMPLE: A CUT DITCH WITH A 6:1 FORE SLOPE AND A 2:1 BACK SLOPE WOULD REQUIRE A 9.5 (7.0 + 2.5) FT MIN. FIBER ROLL OR 0.62 (0.45 + 0.17) CUBIC YARD MIN. OF STONE.

- NOTES:**
1. PLACE A CHECK DAM AT EVERY ONE FT DROP IN ELEVATION ALONG THE CUT DITCH.
 2. PLACE CHECK DAMS PERPENDICULAR TO THE FLOW LINE OF THE DITCH.
 3. DO NOT PLACE CHECK DAMS ACROSS NATURAL STREAM BEDS.
 4. PLACE STONE CHECK DAMS OUTSIDE OF CLEAR ZONES.
 5. INSTALL CHECK DAMS WITH POINT "A" A MINIMUM OF 4 INCHES LOWER THAN POINT "B".
 6. REMOVE CHECK DAMS BY SPREADING STONE OR BREAKING APART AND SPREADING FIBER ROLL MATRIX MATERIAL WITHIN CUT DITCH OR COMPLETELY REMOVING FIBER ROLL.

Description

Inlet protection consists of permeable barriers installed around an inlet to filter runoff and remove sediment prior to entering a storm drain inlet. Inlet protection can be constructed from rock socks, sediment control logs, silt fence, block and rock socks, or other materials approved by the local jurisdiction. Area inlets can also be protected by over-excavating around the inlet to form a sediment trap.

Appropriate Uses

Install protection at storm sewer inlets that are operable during construction. Consider the potential for tracked-out sediment or temporary stockpile areas to contribute sediment to inlets when determining which inlets must be protected. This may include inlets in the general proximity of the construction area, not limited to downgradient inlets. Inlet protection is not a stand-alone BMP and should be used in conjunction with other upgradient BMPs.



Photograph IP-1. Inlet protection for a curb opening inlet.

Design and Installation

To function effectively, inlet protection measures must be installed to ensure that flows do not bypass the inlet protection and enter the storm drain without treatment. However, designs must also enable the inlet to function without completely blocking flows into the inlet in a manner that causes localized flooding. When selecting the type of inlet protection, consider factors such as type of inlet (e.g., curb or area, sump or on-grade conditions), traffic, anticipated flows, ability to secure the BMP properly, safety and other site-specific conditions. For example, block and rock socks will be better suited to a curb and gutter along a roadway, as opposed to silt fence or sediment control logs, which cannot be properly secured in a curb and gutter setting, but are effective area inlet protection measures.

Several inlet protection designs are provided in the Design Details. Additionally, a variety of proprietary products are available for inlet protection that may be approved for use by local governments. If proprietary products are used, design details and installation procedures from the manufacturer must be followed. Regardless of the type of inlet protection selected, inlet protection is most effective when combined with other BMPs such as curb socks and check dams. Inlet protection is often the last barrier before runoff enters the storm sewer or receiving water.

Design details with notes are provided for these forms of inlet protection:

- IP-1. Block and Rock Sock Inlet Protection for Sump or On-grade Inlets
- IP-2. Curb (Rock) Socks Upstream of Inlet Protection, On-grade Inlets

Inlet Protection (various forms)	
Functions	
Erosion Control	No
Sediment Control	Yes
Site/Material Management	No

IP-3. Rock Sock Inlet Protection for Sump/Area Inlet

IP-4. Silt Fence Inlet Protection for Sump/Area Inlet

IP-5. Over-excavation Inlet Protection

IP-6. Straw Bale Inlet Protection for Sump/Area Inlet

CIP-1. Culvert Inlet Protection

Proprietary inlet protection devices should be installed in accordance with manufacturer specifications.

More information is provided below on selecting inlet protection for sump and on-grade locations.

Inlets Located in a Sump

When applying inlet protection in sump conditions, it is important that the inlet continue to function during larger runoff events. For curb inlets, the maximum height of the protective barrier should be lower than the top of the curb opening to allow overflow into the inlet during larger storms without excessive localized flooding. If the inlet protection height is greater than the curb elevation, particularly if the filter becomes clogged with sediment, runoff will not enter the inlet and may bypass it, possibly causing localized flooding, public safety issues, and downstream erosion and damage from bypassed flows.

Area inlets located in a sump setting can be protected through the use of silt fence, concrete block and rock socks (on paved surfaces), sediment control logs/straw wattles embedded in the adjacent soil and stacked around the area inlet (on pervious surfaces), over-excavation around the inlet, and proprietary products providing equivalent functions.

Inlets Located on a Slope

For curb and gutter inlets on paved sloping streets, block and rock sock inlet protection is recommended in conjunction with curb socks in the gutter leading to the inlet. For inlets located along unpaved roads, also see the Check Dam Fact Sheet.

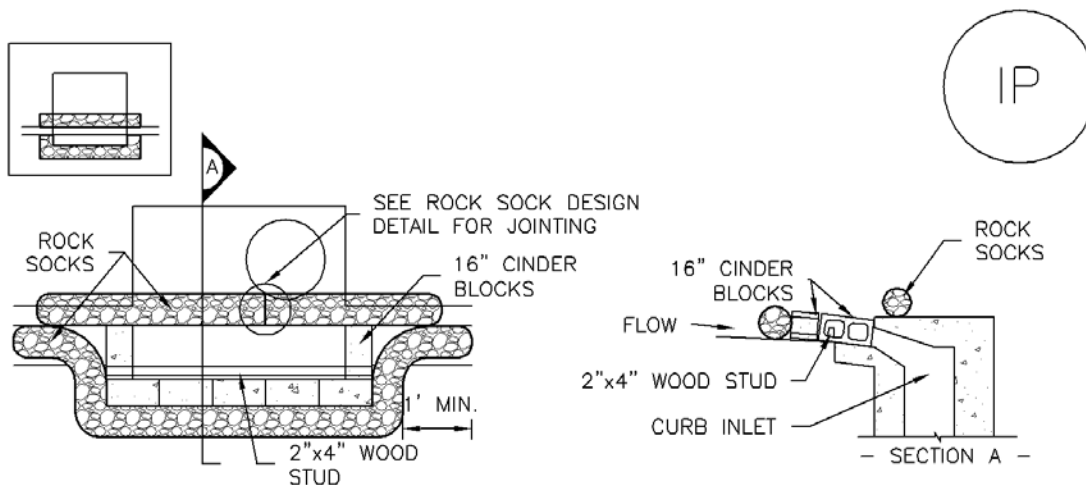
Maintenance and Removal

Inspect inlet protection frequently. Inspection and maintenance guidance includes:

- Inspect for tears that can result in sediment directly entering the inlet, as well as result in the contents of the BMP (e.g., gravel) washing into the inlet.
- Check for improper installation resulting in untreated flows bypassing the BMP and directly entering the inlet or bypassing to an unprotected downstream inlet. For example, silt fence that has not been properly trenched around the inlet can result in flows under the silt fence and directly into the inlet.
- Look for displaced BMPs that are no longer protecting the inlet. Displacement may occur following larger storm events that wash away or reposition the inlet protection. Traffic or equipment may also crush or displace the BMP.
- Monitor sediment accumulation upgradient of the inlet protection.

- Remove sediment accumulation from the area upstream of the inlet protection, as needed to maintain BMP effectiveness, typically when it reaches no more than half the storage capacity of the inlet protection. For silt fence, remove sediment when it accumulates to a depth of no more than 6 inches. Remove sediment accumulation from the area upstream of the inlet protection as needed to maintain the functionality of the BMP.
- Proprietary inlet protection devices should be inspected and maintained in accordance with manufacturer specifications. If proprietary inlet insert devices are used, sediment should be removed in a timely manner to prevent devices from breaking and spilling sediment into the storm drain.

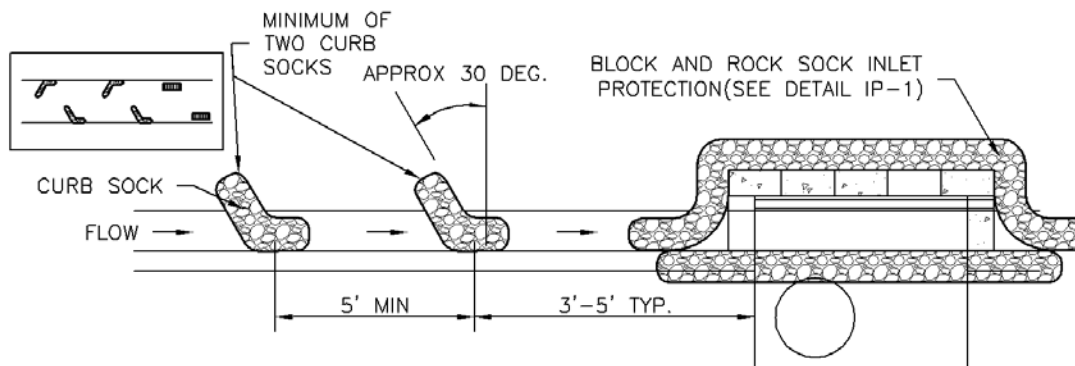
Inlet protection must be removed and properly disposed of when the drainage area for the inlet has reached final stabilization.



IP-1. BLOCK AND ROCK SOCK SUMP OR ON GRADE INLET PROTECTION

BLOCK AND CURB SOCK INLET PROTECTION INSTALLATION NOTES

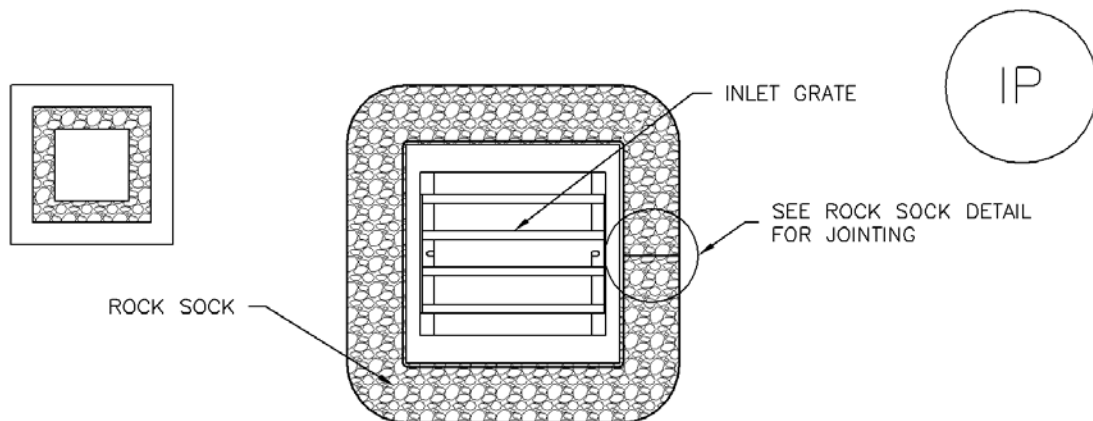
1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
2. CONCRETE "CINDER" BLOCKS SHALL BE LAID ON THEIR SIDES AROUND THE INLET IN A SINGLE ROW, ABUTTING ONE ANOTHER WITH THE OPEN END FACING AWAY FROM THE CURB.
3. GRAVEL BAGS SHALL BE PLACED AROUND CONCRETE BLOCKS, CLOSELY ABUTTING ONE ANOTHER AND JOINTED TOGETHER IN ACCORDANCE WITH ROCK SOCK DESIGN DETAIL.



IP-2. CURB ROCK SOCKS UPSTREAM OF INLET PROTECTION

CURB ROCK SOCK INLET PROTECTION INSTALLATION NOTES

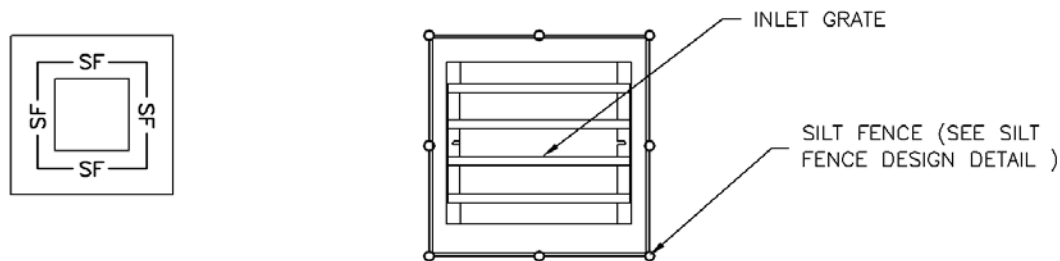
1. SEE ROCK SOCK DESIGN DETAIL INSTALLATION REQUIREMENTS.
2. PLACEMENT OF THE SOCK SHALL BE APPROXIMATELY 30 DEGREES FROM PERPENDICULAR IN THE OPPOSITE DIRECTION OF FLOW.
3. SOCKS ARE TO BE FLUSH WITH THE CURB AND SPACED A MINIMUM OF 5 FEET APART.
4. AT LEAST TWO CURB SOCKS IN SERIES ARE REQUIRED UPSTREAM OF ON-GRADE INLETS.



IP-3. ROCK SOCK SUMP/AREA INLET PROTECTION

ROCK SOCK SUMP/AREA INLET PROTECTION INSTALLATION NOTES

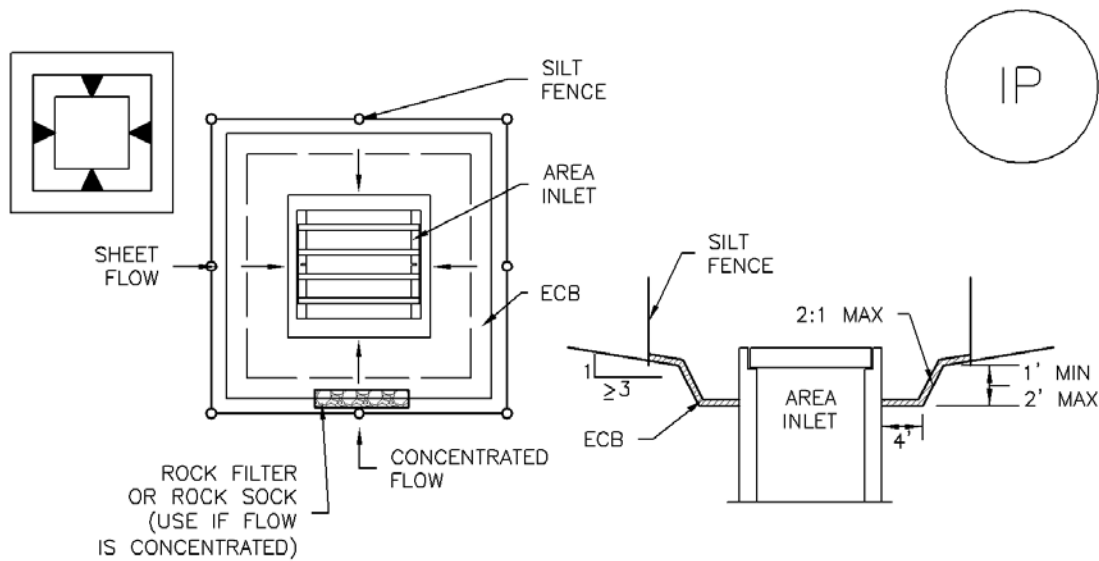
1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
2. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF ROCK SOCKS FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.



IP-4. SILT FENCE FOR SUMP INLET PROTECTION

SILT FENCE INLET PROTECTION INSTALLATION NOTES

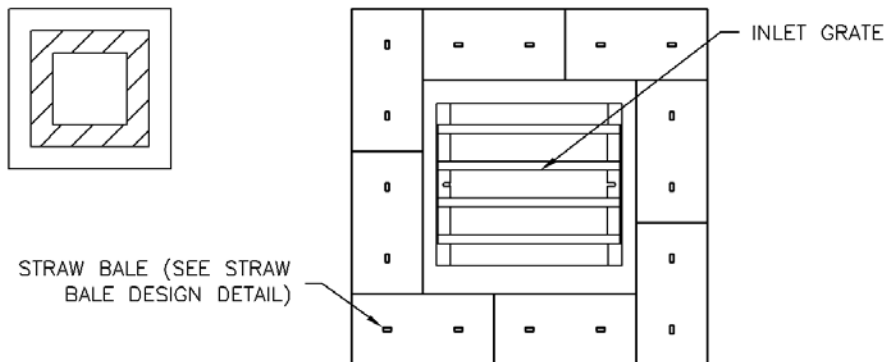
1. SEE SILT FENCE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
2. POSTS SHALL BE PLACED AT EACH CORNER OF THE INLET AND AROUND THE EDGES AT A MAXIMUM SPACING OF 3 FEET.
3. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF SILT FENCE FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.



IP-5. OVEREXCAVATION INLET PROTECTION

OVEREXCAVATION INLET PROTECTION INSTALLATION NOTES

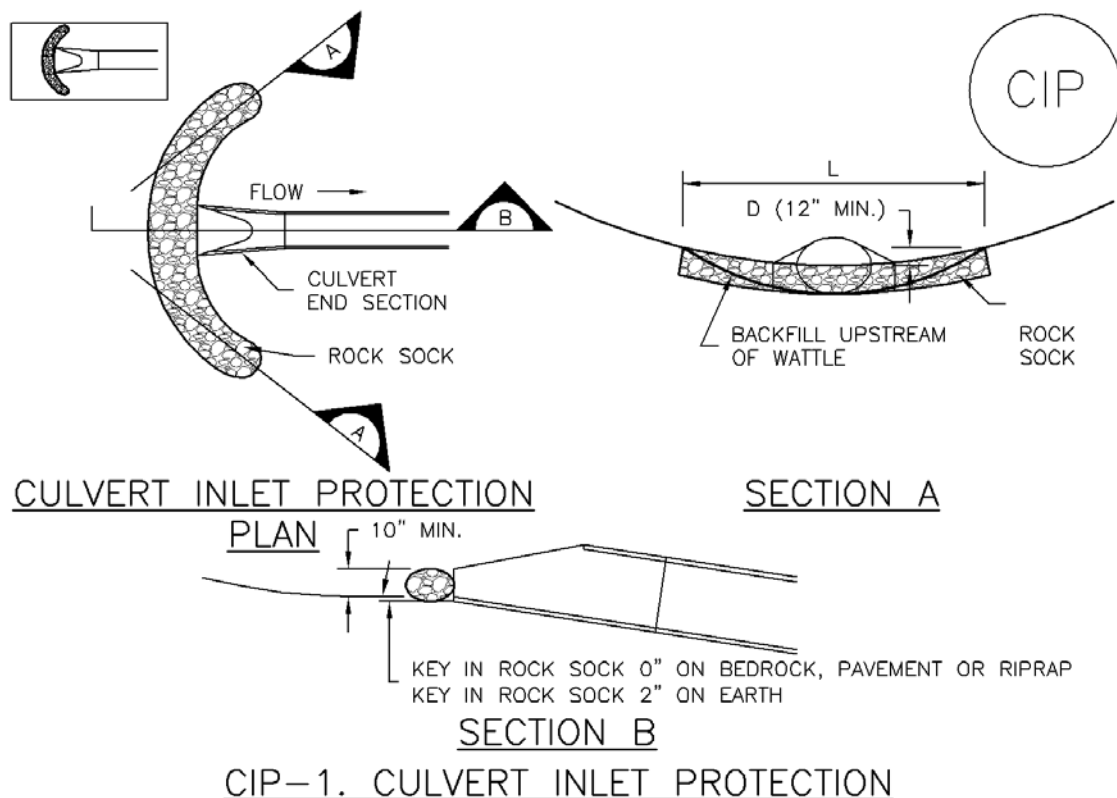
1. THIS FORM OF INLET PROTECTION IS PRIMARILY APPLICABLE FOR SITES THAT HAVE NOT YET REACHED FINAL GRADE AND SHOULD BE USED ONLY FOR INLETS WITH A RELATIVELY SMALL CONTRIBUTING DRAINAGE AREA.
2. WHEN USING FOR CONCENTRATED FLOWS, SHAPE BASIN IN 2:1 RATIO WITH LENGTH ORIENTED TOWARDS DIRECTION OF FLOW.
3. SEDIMENT MUST BE PERIODICALLY REMOVED FROM THE OVEREXCAVATED AREA.



IP-6. STRAW BALE FOR SUMP INLET PROTECTION

STRAW BALE BARRIER INLET PROTECTION INSTALLATION NOTES

1. SEE STRAW BALE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
2. BALES SHALL BE PLACED IN A SINGLE ROW AROUND THE INLET WITH ENDS OF BALES TIGHTLY ABUTTING ONE ANOTHER.



CULVERT INLET PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR
-LOCATION OF CULVERT INLET PROTECTION.
2. SEE ROCK SOCK DESIGN DETAIL FOR ROCK GRADATION REQUIREMENTS AND JOINTING DETAIL.

CULVERT INLET PROTECTION MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. SEDIMENT ACCUMULATED UPSTREAM OF THE CULVERT SHALL BE REMOVED WHEN THE SEDIMENT DEPTH IS $\frac{1}{2}$ THE HEIGHT OF THE ROCK SOCK.
5. CULVERT INLET PROTECTION SHALL REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.

(DETAILS ADAPTED FROM AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

GENERAL INLET PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
 - LOCATION OF INLET PROTECTION.
 - TYPE OF INLET PROTECTION (IP.1, IP.2, IP.3, IP.4, IP.5, IP.6)
2. INLET PROTECTION SHALL BE INSTALLED PROMPTLY AFTER INLET CONSTRUCTION OR PAVING IS COMPLETE (TYPICALLY WITHIN 48 HOURS). IF A RAINFALL/RUNOFF EVENT IS FORECAST, INSTALL INLET PROTECTION PRIOR TO ONSET OF EVENT.
3. MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

INLET PROTECTION MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. SEDIMENT ACCUMULATED UPSTREAM OF INLET PROTECTION SHALL BE REMOVED AS NECESSARY TO MAINTAIN BMP EFFECTIVENESS, TYPICALLY WHEN STORAGE VOLUME REACHES 50% OF CAPACITY, A DEPTH OF 6" WHEN SILT FENCE IS USED, OR ¼ OF THE HEIGHT FOR STRAW BALES.
5. INLET PROTECTION IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED, UNLESS THE LOCAL JURISDICTION APPROVES EARLIER REMOVAL OF INLET PROTECTION IN STREETS.
6. WHEN INLET PROTECTION AT AREA INLETS IS REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOP SOIL, SEEDED AND MULCHED, OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

NOTE: THE DETAILS INCLUDED WITH THIS FACT SHEET SHOW COMMONLY USED, CONVENTIONAL METHODS OF INLET PROTECTION IN THE DENVER METROPOLITAN AREA. THERE ARE MANY PROPRIETARY INLET PROTECTION METHODS ON THE MARKET. UDFCD NEITHER ENDORSES NOR DISCOURAGES USE OF PROPRIETARY INLET PROTECTION; HOWEVER, IN THE EVENT PROPRIETARY METHODS ARE USED, THE APPROPRIATE DETAIL FROM THE MANUFACTURER MUST BE INCLUDED IN THE SWMP AND THE BMP MUST BE INSTALLED AND MAINTAINED AS SHOWN IN THE MANUFACTURER'S DETAILS.

NOTE: SOME MUNICIPALITIES DISCOURAGE OR PROHIBIT THE USE OF STRAW BALES FOR INLET PROTECTION. CHECK WITH LOCAL JURISDICTION TO DETERMINE IF STRAW BALE INLET PROTECTION IS ACCEPTABLE.

Description

Vehicle tracking controls provide stabilized construction site access where vehicles exit the site onto paved public roads. An effective vehicle tracking control helps remove sediment (mud or dirt) from vehicles, reducing tracking onto the paved surface.

Appropriate Uses

Implement a stabilized construction entrance or vehicle tracking control where frequent heavy vehicle traffic exits the construction site onto a paved roadway. An effective vehicle tracking control is particularly important during the following conditions:

- Wet weather periods when mud is easily tracked off site.
- During dry weather periods where dust is a concern.
- When poorly drained, clayey soils are present on site.

Although wheel washes are not required in designs of vehicle tracking controls, they may be needed at particularly muddy sites.

Design and Installation

Construct the vehicle tracking control on a level surface. Where feasible, grade the tracking control towards the construction site to reduce off-site runoff. Place signage, as needed, to direct construction vehicles to the designated exit through the vehicle tracking control. There are several different types of stabilized construction entrances including:

VTC-1. Aggregate Vehicle Tracking Control. This is a coarse-aggregate surfaced pad underlain by a geotextile. This is the most common vehicle tracking control, and when properly maintained can be effective at removing sediment from vehicle tires.

VTC-2. Vehicle Tracking Control with Construction Mat or Turf Reinforcement Mat. This type of control may be appropriate for site access at very small construction sites with low traffic volume over vegetated areas. Although this application does not typically remove sediment from vehicles, it helps protect existing vegetation and provides a stabilized entrance.



Photograph VTC-1. A vehicle tracking control pad constructed with properly sized rock reduces off-site sediment tracking.

Vehicle Tracking Control	
Functions	
Erosion Control	Moderate
Sediment Control	Yes
Site/Material Management	Yes

VTC-3. Stabilized Construction Entrance/Exit with Wheel Wash. This is an aggregate pad, similar to VTC-1, but includes equipment for tire washing. The wheel wash equipment may be as simple as hand-held power washing equipment to more advance proprietary systems. When a wheel wash is provided, it is important to direct wash water to a sediment trap prior to discharge from the site.

Vehicle tracking controls are sometimes installed in combination with a sediment trap to treat runoff.

Maintenance and Removal

Inspect the area for degradation and replace aggregate or material used for a stabilized entrance/exit as needed. If the area becomes clogged and ponds water, remove and dispose of excess sediment or replace material with a fresh layer of aggregate as necessary.

With aggregate vehicle tracking controls, ensure rock and debris from this area do not enter the public right-of-way.

Remove sediment that is tracked onto the public right of way daily or more frequently as needed. Excess sediment in the roadway indicates that the stabilized construction entrance needs maintenance.

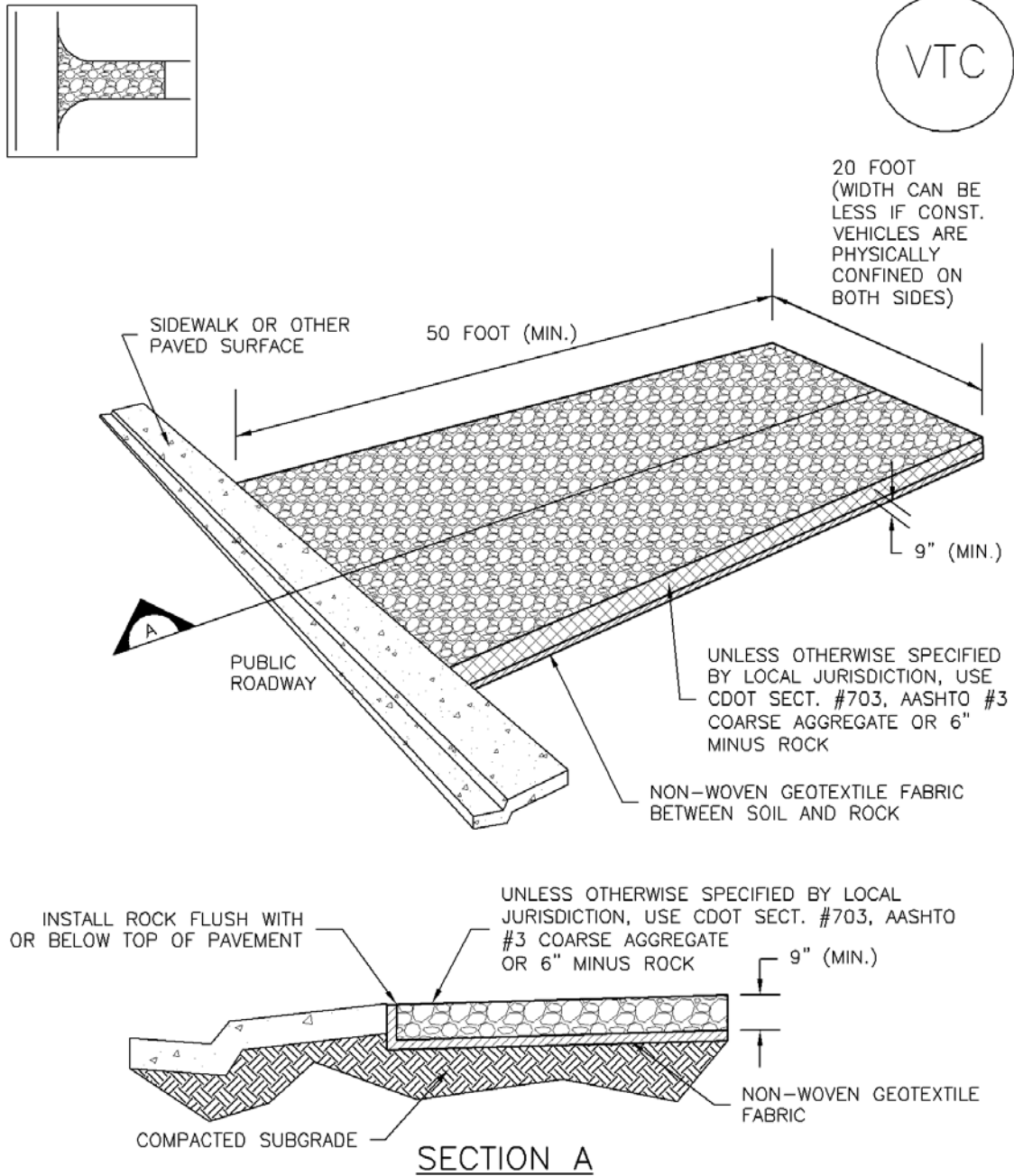
Photograph VTC-2. A vehicle tracking control pad with wheel wash facility. Photo courtesy of Tom Gore.

Ensure that drainage ditches at the entrance/exit area remain clear.

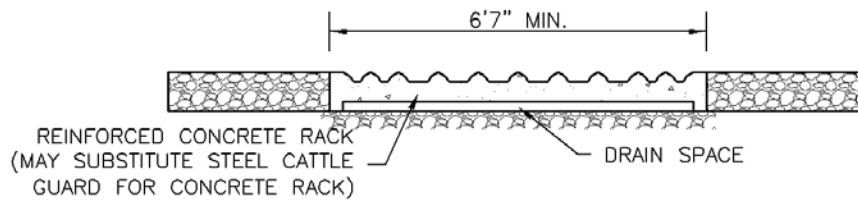
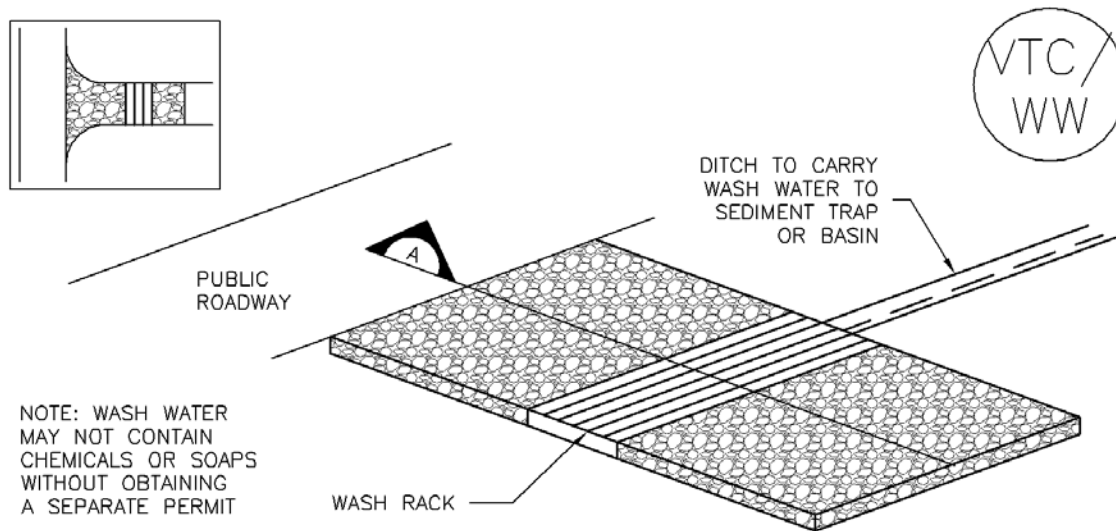
A stabilized entrance should be removed only when there is no longer the potential for vehicle tracking to occur. This is typically after the site has been stabilized.

When wheel wash equipment is used, be sure that the wash water is discharged to a sediment trap prior to discharge. Also inspect channels conveying the water from the wash area to the sediment trap and stabilize areas that may be eroding.

When a construction entrance/exit is removed, excess sediment from the aggregate should be removed and disposed of appropriately. The entrance should be promptly stabilized with a permanent surface following removal, typically by paving.

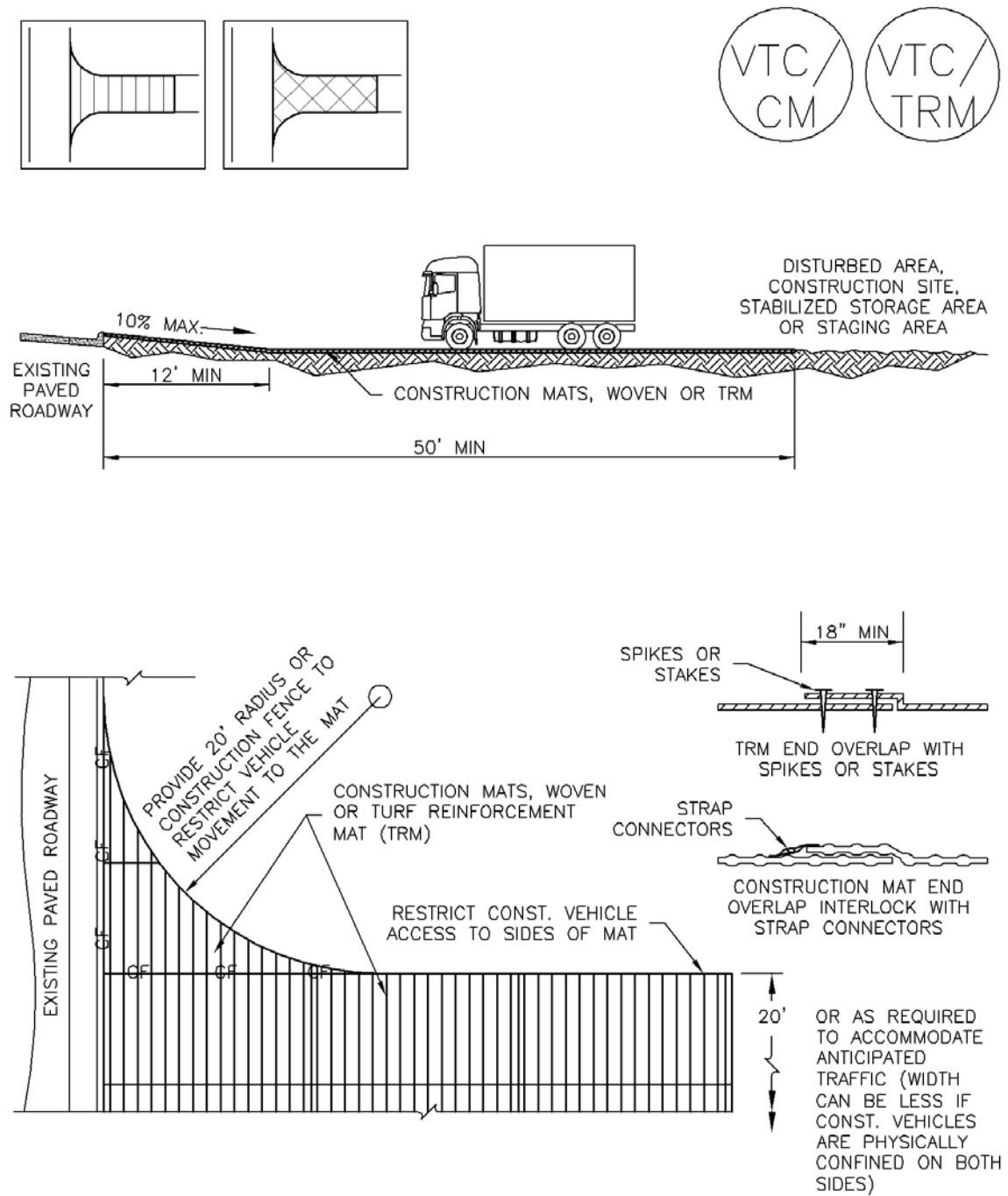


VTC-1. AGGREGATE VEHICLE TRACKING CONTROL



SECTION A

VTC-2. AGGREGATE VEHICLE TRACKING CONTROL WITH
WASH RACK



VTC-3. VEHICLE TRACKING CONTROL W/ CONSTRUCTION MAT OR TURF REINFORCEMENT MAT (TRM)

STABILIZED CONSTRUCTION ENTRANCE/EXIT INSTALLATION NOTES

1. SEE PLAN VIEW FOR
 - LOCATION OF CONSTRUCTION ENTRANCE(S)/EXIT(S).
 - TYPE OF CONSTRUCTION ENTRANCE(S)/EXITS(S) (WITH/WITHOUT WHEEL WASH, CONSTRUCTION MAT OR TRM).
2. CONSTRUCTION MAT OR TRM STABILIZED CONSTRUCTION ENTRANCES ARE ONLY TO BE USED ON SHORT DURATION PROJECTS (TYPICALLY RANGING FROM A WEEK TO A MONTH) WHERE THERE WILL BE LIMITED VEHICULAR ACCESS.
3. A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE LOCATED AT ALL ACCESS POINTS WHERE VEHICLES ACCESS THE CONSTRUCTION SITE FROM PAVED RIGHT-OF-WAYS.
4. STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
5. A NON-WOVEN GEOTEXTILE FABRIC SHALL BE PLACED UNDER THE STABILIZED CONSTRUCTION ENTRANCE/EXIT PRIOR TO THE PLACEMENT OF ROCK.
6. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.

STABILIZED CONSTRUCTION ENTRANCE/EXIT MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY TO THE STABILIZED ENTRANCE/EXIT TO MAINTAIN A CONSISTENT DEPTH.
5. SEDIMENT TRACKED ONTO PAVED ROADS IS TO BE REMOVED THROUGHOUT THE DAY AND AT THE END OF THE DAY BY SHOVELING OR SWEEPING. SEDIMENT MAY NOT BE WASHED DOWN STORM SEWER DRAINS.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

(DETAILS ADAPTED FROM CITY OF BROOMFIELD, COLORADO, NOT AVAILABLE IN AUTOCAD)

Description

Street sweeping and vacuuming remove sediment that has been tracked onto roadways to reduce sediment transport into storm drain systems or a surface waterway.

Appropriate Uses

Use this practice at construction sites where vehicles may track sediment offsite onto paved roadways.

Design and Installation

Street sweeping or vacuuming should be conducted when there is noticeable sediment accumulation on roadways adjacent to the construction site. Typically, this will be concentrated at the entrance/exit to the construction site. Well-maintained stabilized construction entrances, vehicle tracking controls and tire wash facilities can help reduce the necessary frequency of street sweeping and vacuuming.

Photograph SS-1. A street sweeper removes sediment and potential pollutants along the curb line at a construction site. Photo courtesy of Tom Gore.

On smaller construction sites, street sweeping can be conducted manually using a shovel and broom. Never wash accumulated sediment on roadways into storm drains.

Maintenance and Removal

- Inspect paved roads around the perimeter of the construction site on a daily basis and more frequently, as needed. Remove accumulated sediment, as needed.
- Following street sweeping, check inlet protection that may have been displaced during street sweeping.
- Inspect area to be swept for materials that may be hazardous prior to beginning sweeping operations.

Street Sweeping/ Vacuuming	
Functions	
Erosion Control	No
Sediment Control	Yes
Site/Material Management	Yes

Description

Wind erosion and dust control BMPs help to keep soil particles from entering the air as a result of land disturbing construction activities. These BMPs include a variety of practices generally focused on either graded disturbed areas or construction roadways. For graded areas, practices such as seeding and mulching, use of soil binders, site watering, or other practices that provide prompt surface cover should be used. For construction roadways, road watering and stabilized surfaces should be considered.

Photograph DC-1. Water truck used for dust suppression. Photo courtesy of Douglas County.

Appropriate Uses

Dust control measures should be used on any site where dust poses a problem to air quality. Dust control is important to control for the health of construction workers and surrounding waterbodies.

Design and Installation

The following construction BMPs can be used for dust control:

- An irrigation/sprinkler system can be used to wet the top layer of disturbed soil to help keep dry soil particles from becoming airborne.
- Seeding and mulching can be used to stabilize disturbed surfaces and reduce dust emissions.
- Protecting existing vegetation can help to slow wind velocities across the ground surface, thereby limiting the likelihood of soil particles to become airborne.
- Spray-on soil binders form a bond between soil particles keeping them grounded. Chemical treatments may require additional permitting requirements. Potential impacts to surrounding waterways and habitat must be considered prior to use.
- Placing rock on construction roadways and entrances will help keep dust to a minimum across the construction site.
- Wind fences can be installed on site to reduce wind speeds. Install fences perpendicular to the prevailing wind direction for maximum effectiveness.

Maintenance and Removal

When using an irrigation/sprinkler control system to aid in dust control, be careful not to overwater. Overwatering will cause construction vehicles to track mud off-site.

Wind Erosion Control/ Dust Control	
Functions	
Erosion Control	Yes
Sediment Control	No
Site/Material Management	Moderate

Description

Surface roughening is an erosion control practice that involves tracking, scarifying, imprinting, or tilling a disturbed area to provide temporary stabilization of disturbed areas. Surface roughening creates variations in the soil surface that help to minimize wind and water erosion. Depending on the technique used, surface roughening may also help establish conditions favorable to establishment of vegetation.

Appropriate Uses

Surface roughening can be used to provide temporary stabilization of disturbed areas, such as when

Photograph SR-1. Surface roughening via imprinting for temporary stabilization.

revegetation cannot be immediately established due to seasonal planting limitations. Surface roughening is not a stand-alone BMP, and should be used in conjunction with other erosion and sediment controls.

Surface roughening is often implemented in conjunction with grading and is typically performed using heavy construction equipment to track the surface. Be aware that tracking with heavy equipment will also compact soils, which is not desirable in areas that will be revegetated. Scarifying, tilling, or ripping are better surface roughening techniques in locations where revegetation is planned. Roughening is not effective in very sandy soils and cannot be effectively performed in rocky soil.

Design and Installation

Typical design details for surfacing roughening on steep and mild slopes are provided in Details SR-1 and SR-2, respectively.

Surface roughening should be performed either after final grading or to temporarily stabilize an area during active construction that may be inactive for a short time period. Surface roughening should create depressions 2 to 6 inches deep and approximately 6 inches apart. The surface of exposed soil can be roughened by a number of techniques and equipment. Horizontal grooves (running parallel to the contours of the land) can be made using tracks from equipment treads, stair-step grading, ripping, or tilling.

Fill slopes can be constructed with a roughened surface. Cut slopes that have been smooth graded can be roughened as a subsequent operation. Roughening should follow along the contours of the slope. The tracks left by truck mounted equipment working perpendicular to the contour can leave acceptable horizontal depressions; however, the equipment will also compact the soil.

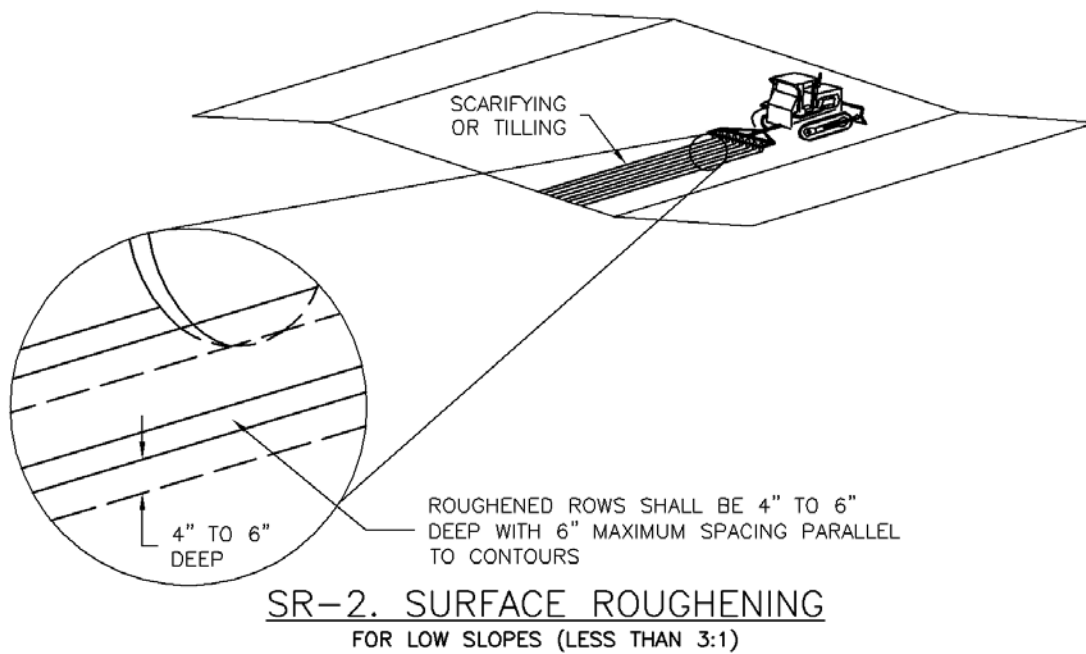
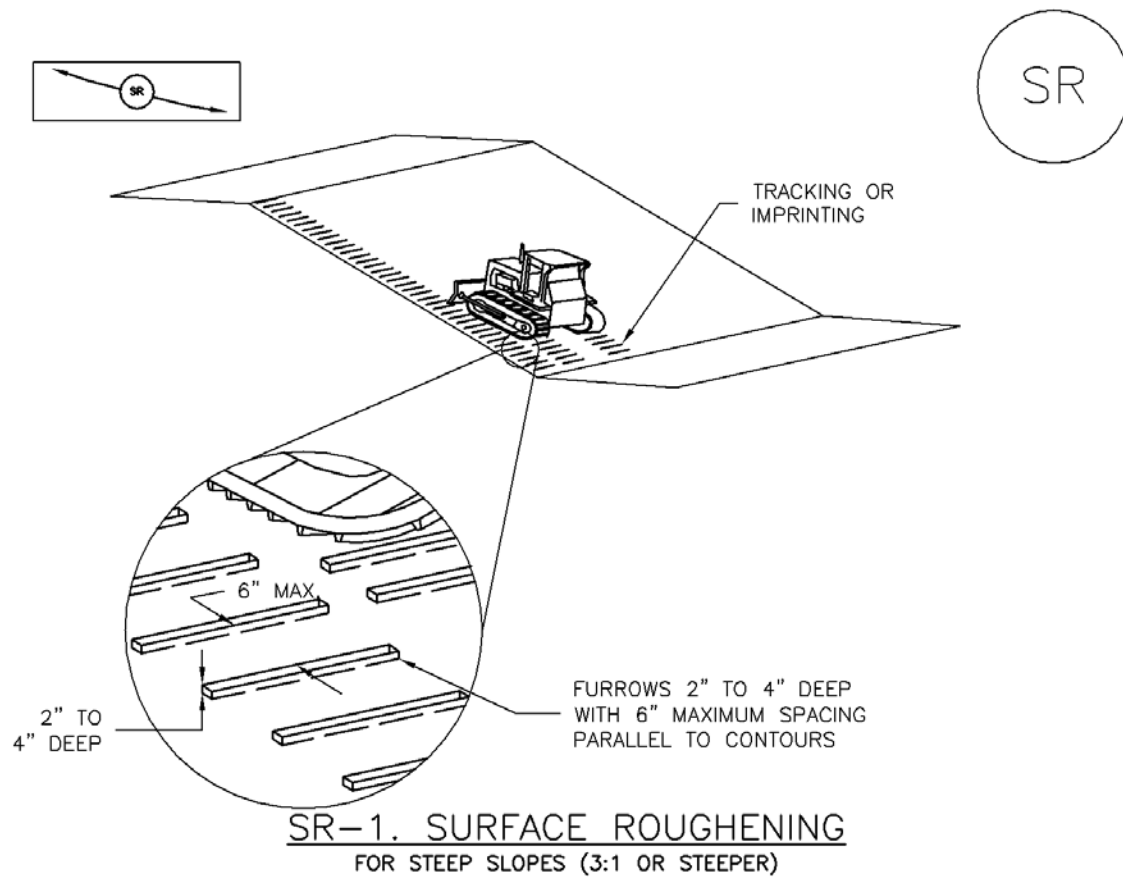
Surface Roughening	
Functions	
Erosion Control	Yes
Sediment Control	No
Site/Material Management	No

Maintenance and Removal

Care should be taken not to drive vehicles or equipment over areas that have been surface roughened. Tire tracks will smooth the roughened surface and may cause runoff to collect into rills and gullies.

Because surface roughening is only a temporary control, additional treatments may be necessary to maintain the soil surface in a roughened condition.

Areas should be inspected for signs of erosion. Surface roughening is a temporary measure, and will not provide long-term erosion control.



SURFACE ROUGHENING INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
 –LOCATION(S) OF SURFACE ROUGHENING.
2. SURFACE ROUGHENING SHALL BE PROVIDED PROMPTLY AFTER COMPLETION OF FINISHED GRADING (FOR AREAS NOT RECEIVING TOPSOIL) OR PRIOR TO TOPSOIL PLACEMENT OR ANY FORECASTED RAIN EVENT.
3. AREAS WHERE BUILDING FOUNDATIONS, PAVEMENT, OR SOD WILL BE PLACED WITHOUT DELAY IN THE CONSTRUCTION SEQUENCE, SURFACE ROUGHENING IS NOT REQUIRED.
4. DISTURBED SURFACES SHALL BE ROUGHENED USING RIPPING OR TILLING EQUIPMENT ON THE CONTOUR OR TRACKING UP AND DOWN A SLOPE USING EQUIPMENT TREADS.
5. A FARMING DISK SHALL NOT BE USED FOR SURFACE ROUGHENING.

SURFACE ROUGHENING MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACE UPON DISCOVERY OF THE FAILURE.
4. VEHICLES AND EQUIPMENT SHALL NOT BE DRIVEN OVER AREAS THAT HAVE BEEN SURFACE ROUGHENED.
5. IN NON-TURF GRASS FINISHED AREAS, SEEDING AND MULCHING SHALL TAKE PLACE DIRECTLY OVER SURFACE ROUGHENED AREAS WITHOUT FIRST SMOOTHING OUT THE SURFACE.
6. IN AREAS NOT SEEDED AND MULCHED AFTER SURFACE ROUGHENING, SURFACES SHALL BE RE-ROUGHENED AS NECESSARY TO MAINTAIN GROOVE DEPTH AND SMOOTH OVER RILL EROSION.

(DETAILS ADAPTED FROM TOWN OF PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

Description

Temporary seeding can be used to stabilize disturbed areas that will be inactive for an extended period.

Permanent seeding should be used to stabilize areas at final grade that will not be otherwise stabilized. Effective seeding includes preparation of a seedbed, selection of an appropriate seed mixture, proper planting techniques, and protection of the seeded area with mulch, geotextiles, or other appropriate measures.

Appropriate Uses

When the soil surface is disturbed and will remain inactive for an extended period (typically 30 days or longer),

Photograph TS/PS -1. Equipment used to drill seed. Photo courtesy of Douglas County.

proactive stabilization measures should be implemented. If the inactive period is short-lived (on the order of two weeks), techniques such as surface roughening may be appropriate. For longer periods of inactivity, temporary seeding and mulching can provide effective erosion control. Permanent seeding should be used on finished areas that have not been otherwise stabilized.

Typically, local governments have their own seed mixes and timelines for seeding. Check jurisdictional requirements for seeding and temporary stabilization.

Design and Installation

Effective seeding requires proper seedbed preparation, selection of an appropriate seed mixture, use of appropriate seeding equipment to ensure proper coverage and density, and protection with mulch or fabric until plants are established.

The USDCM Volume 2 *Revegetation* Chapter contains detailed seed mix, soil preparations, and seeding and mulching recommendations that may be referenced to supplement this Fact Sheet.

Drill seeding is the preferred seeding method. Hydroseeding is not recommended except in areas where steep slopes prevent use of drill seeding equipment, and even in these instances it is preferable to hand seed and mulch. Some jurisdictions do not allow hydroseeding or hydromulching.

Seedbed Preparation

Prior to seeding, ensure that areas to be revegetated have soil conditions capable of supporting vegetation. Overlot grading can result in loss of topsoil, resulting in poor quality subsoils at the ground surface that have low nutrient value, little organic matter content, few soil microorganisms, rooting restrictions, and conditions less conducive to infiltration of precipitation. As a result, it is typically necessary to provide stockpiled topsoil, compost, or other

Temporary and Permanent Seeding	
Functions	
Erosion Control	Yes
Sediment Control	No
Site/Material Management	No

soil amendments and rototill them into the soil to a depth of 6 inches or more.

Topsoil should be salvaged during grading operations for use and spread on areas to be revegetated later. Topsoil should be viewed as an important resource to be utilized for vegetation establishment, due to its water-holding capacity, structure, texture, organic matter content, biological activity, and nutrient content. The rooting depth of most native grasses in the semi-arid Denver metropolitan area is 6 to 18 inches. At a minimum, the upper 6 inches of topsoil should be stripped, stockpiled, and ultimately respread across areas that will be revegetated.

Where topsoil is not available, subsoils should be amended to provide an appropriate plant-growth medium. Organic matter, such as well digested compost, can be added to improve soil characteristics conducive to plant growth. Other treatments can be used to adjust soil pH conditions when needed. Soil testing, which is typically inexpensive, should be completed to determine and optimize the types and amounts of amendments that are required.

If the disturbed ground surface is compacted, rip or rototill the surface prior to placing topsoil. If adding compost to the existing soil surface, rototilling is necessary. Surface roughening will assist in placement of a stable topsoil layer on steeper slopes, and allow infiltration and root penetration to greater depth.

Prior to seeding, the soil surface should be rough and the seedbed should be firm, but neither too loose nor compacted. The upper layer of soil should be in a condition suitable for seeding at the proper depth and conducive to plant growth. Seed-to-soil contact is the key to good germination.

Seed Mix for Temporary Vegetation

To provide temporary vegetative cover on disturbed areas which will not be paved, built upon, or fully landscaped or worked for an extended period (typically 30 days or more), plant an annual grass appropriate for the time of planting and mulch the planted areas. Annual grasses suitable for the Denver metropolitan area are listed in Table TS/PS-1. These are to be considered only as general recommendations when specific design guidance for a particular site is not available. Local governments typically specify seed mixes appropriate for their jurisdiction.

Seed Mix for Permanent Revegetation

To provide vegetative cover on disturbed areas that have reached final grade, a perennial grass mix should be established. Permanent seeding should be performed promptly (typically within 14 days) after reaching final grade. Each site will have different characteristics and a landscape professional or the local jurisdiction should be contacted to determine the most suitable seed mix for a specific site. In lieu of a specific recommendation, one of the perennial grass mixes appropriate for site conditions and growth season listed in Table TS/PS-2 can be used. The pure live seed (PLS) rates of application recommended in these tables are considered to be absolute minimum rates for seed applied using proper drill-seeding equipment.

If desired for wildlife habitat or landscape diversity, shrubs such as rubber rabbitbrush (*Chrysothamnus nauseosus*), fourwing saltbush (*Atriplex canescens*) and skunkbrush sumac (*Rhus trilobata*) could be added to the upland seedmixes at 0.25, 0.5 and 1 pound PLS/acre, respectively. In riparian zones, planting root stock of such species as American plum (*Prunus americana*), woods rose (*Rosa woodsii*), plains cottonwood (*Populus sargentii*), and willow (*Populus spp.*) may be considered. On non-topsoiled upland sites, a legume such as Ladak alfalfa at 1 pound PLS/acre can be included as a source of nitrogen for perennial grasses.

Seeding dates for the highest success probability of perennial species along the Front Range are generally in the spring from April through early May and in the fall after the first of September until the ground freezes. If the area is irrigated, seeding may occur in summer months, as well. See Table TS/PS-3 for appropriate seeding dates.

Table TS/PS-1. Minimum Drill Seeding Rates for Various Temporary Annual Grasses

Species^a (Common name)	Growth Season^b	Pounds of Pure Live Seed (PLS)/acre^c	Planting Depth (inches)
1. Oats	Cool	35 - 50	1 - 2
2. Spring wheat	Cool	25 - 35	1 - 2
3. Spring barley	Cool	25 - 35	1 - 2
4. Annual ryegrass	Cool	10 - 15	½
5. Millet	Warm	3 - 15	½ - ¾
6. Sudangrass	Warm	5–10	½ - ¾
7. Sorghum	Warm	5–10	½ - ¾
8. Winter wheat	Cool	20–35	1 - 2
9. Winter barley	Cool	20–35	1 - 2
10. Winter rye	Cool	20–35	1 - 2
11. Triticale	Cool	25–40	1 - 2
<p>^a Successful seeding of annual grass resulting in adequate plant growth will usually produce enough dead-plant residue to provide protection from wind and water erosion for an additional year. This assumes that the cover is not disturbed or mowed closer than 8 inches.</p> <p>Hydraulic seeding may be substituted for drilling only where slopes are steeper than 3:1 or where access limitations exist. When hydraulic seeding is used, hydraulic mulching should be applied as a separate operation, when practical, to prevent the seeds from being encapsulated in the mulch.</p> <p>^b See Table TS/PS-3 for seeding dates. Irrigation, if consistently applied, may extend the use of cool season species during the summer months.</p> <p>^c Seeding rates should be doubled if seed is broadcast, or increased by 50 percent if done using a Brillion Drill or by hydraulic seeding.</p>			

Table TS/PS-2. Minimum Drill Seeding Rates for Perennial Grasses

Common^a Name	Botanical Name	Growth Season^b	Growth Form	Seeds/ Pound	Pounds of PLS/acre
Alakali Soil Seed Mix					
Alkali sacaton	<i>Sporobolus airoides</i>	Cool	Bunch	1,750,000	0.25
Basin wildrye	<i>Elymus cinereus</i>	Cool	Bunch	165,000	2.5
Sodar streambank wheatgrass	<i>Agropyron riparium 'Sodar'</i>	Cool	Sod	170,000	2.5
Jose tall wheatgrass	<i>Agropyron elongatum 'Jose'</i>	Cool	Bunch	79,000	7.0
Arriba western wheatgrass	<i>Agropyron smithii 'Arriba'</i>	Cool	Sod	110,000	5.5
Total					17.75
Fertile Loamy Soil Seed Mix					
Ephriam crested wheatgrass	<i>Agropyron cristatum 'Ephriam'</i>	Cool	Sod	175,000	2.0
Dural hard fescue	<i>Festuca ovina 'duriuscula'</i>	Cool	Bunch	565,000	1.0
Lincoln smooth brome	<i>Bromus inermis leyss 'Lincoln'</i>	Cool	Sod	130,000	3.0
Sodar streambank wheatgrass	<i>Agropyron riparium 'Sodar'</i>	Cool	Sod	170,000	2.5
Arriba western wheatgrass	<i>Agropyron smithii 'Arriba'</i>	Cool	Sod	110,000	7.0
Total					15.5
High Water Table Soil Seed Mix					
Meadow foxtail	<i>Alopecurus pratensis</i>	Cool	Sod	900,000	0.5
Redtop	<i>Agrostis alba</i>	Warm	Open sod	5,000,000	0.25
Reed canarygrass	<i>Phalaris arundinacea</i>	Cool	Sod	68,000	0.5
Lincoln smooth brome	<i>Bromus inermis leyss 'Lincoln'</i>	Cool	Sod	130,000	3.0
Pathfinder switchgrass	<i>Panicum virgatum 'Pathfinder'</i>	Warm	Sod	389,000	1.0
Alkar tall wheatgrass	<i>Agropyron elongatum 'Alkar'</i>	Cool	Bunch	79,000	5.5
Total					10.75
Transition Turf Seed Mix^c					
Ruebens Canadian bluegrass	<i>Poa compressa 'Ruebens'</i>	Cool	Sod	2,500,000	0.5
Dural hard fescue	<i>Festuca ovina 'duriuscula'</i>	Cool	Bunch	565,000	1.0
Citation perennial ryegrass	<i>Lolium perenne 'Citation'</i>	Cool	Sod	247,000	3.0
Lincoln smooth brome	<i>Bromus inermis leyss 'Lincoln'</i>	Cool	Sod	130,000	3.0
Total					7.5

Table TS/PS-2. Minimum Drill Seeding Rates for Perennial Grasses (cont.)

Common Name	Botanical Name	Growth Season ^b	Growth Form	Seeds/ Pound	Pounds of PLS/acre
Sandy Soil Seed Mix					
Blue grama	<i>Bouteloua gracilis</i>	Warm	Sod-forming bunchgrass	825,000	0.5
Camper little bluestem	<i>Schizachyrium scoparium</i> 'Camper'	Warm	Bunch	240,000	1.0
Prairie sandreed	<i>Calamovilfa longifolia</i>	Warm	Open sod	274,000	1.0
Sand dropseed	<i>Sporobolus cryptandrus</i>	Cool	Bunch	5,298,000	0.25
Vaughn sideoats grama	<i>Bouteloua curtipendula</i> 'Vaughn'	Warm	Sod	191,000	2.0
Arriba western wheatgrass	<i>Agropyron smithii</i> 'Arriba'	Cool	Sod	110,000	5.5
Total					10.25
Heavy Clay, Rocky Foothill Seed Mix					
Ephriam crested wheatgrass ^d	<i>Agropyron cristatum</i> 'Ephriam'	Cool	Sod	175,000	1.5
Oahe Intermediate wheatgrass	<i>Agropyron intermedium</i> 'Oahe'	Cool	Sod	115,000	5.5
Vaughn sideoats grama ^e	<i>Bouteloua curtipendula</i> 'Vaughn'	Warm	Sod	191,000	2.0
Lincoln smooth brome	<i>Bromus inermis</i> leyss 'Lincoln'	Cool	Sod	130,000	3.0
Arriba western wheatgrass	<i>Agropyron smithii</i> 'Arriba'	Cool	Sod	110,000	5.5
Total					17.5
^a All of the above seeding mixes and rates are based on drill seeding followed by crimped straw mulch. These rates should be doubled if seed is broadcast and should be increased by 50 percent if the seeding is done using a Brillion Drill or is applied through hydraulic seeding. Hydraulic seeding may be substituted for drilling only where slopes are steeper than 3:1. If hydraulic seeding is used, hydraulic mulching should be done as a separate operation. ^b See Table TS/PS-3 for seeding dates. ^c If site is to be irrigated, the transition turf seed rates should be doubled. ^d Crested wheatgrass should not be used on slopes steeper than 6H to 1V. ^e Can substitute 0.5 lbs PLS of blue grama for the 2.0 lbs PLS of Vaughn sideoats grama.					

Table TS/PS-3. Seeding Dates for Annual and Perennial Grasses

Seeding Dates	Annual Grasses (Numbers in table reference species in Table TS/PS-1)		Perennial Grasses	
	Warm	Cool	Warm	Cool
January 1–March 15			✓	✓
March 16–April 30	4	1,2,3	✓	✓
May 1–May 15	4		✓	
May 16–June 30	4,5,6,7			
July 1–July 15	5,6,7			
July 16–August 31				
September 1–September 30		8,9,10,11		
October 1–December 31			✓	✓

Mulch

Cover seeded areas with mulch or an appropriate rolled erosion control product to promote establishment of vegetation. Anchor mulch by crimping, netting or use of a non-toxic tackifier. See the Mulching BMP Fact Sheet for additional guidance.

Maintenance and Removal

Monitor and observe seeded areas to identify areas of poor growth or areas that fail to germinate. Reseed and mulch these areas, as needed.

An area that has been permanently seeded should have a good stand of vegetation within one growing season if irrigated and within three growing seasons without irrigation in Colorado. Reseed portions of the site that fail to germinate or remain bare after the first growing season.

Seeded areas may require irrigation, particularly during extended dry periods. Targeted weed control may also be necessary.

Protect seeded areas from construction equipment and vehicle access.

Description

Mulching consists of evenly applying straw, hay, shredded wood mulch, rock, bark or compost to disturbed soils and securing the mulch by crimping, tackifiers, netting or other measures. Mulching helps reduce erosion by protecting bare soil from rainfall impact, increasing infiltration, and reducing runoff.

Although often applied in conjunction with temporary or permanent seeding, it can also be used for temporary stabilization of areas that cannot be reseeded due to seasonal constraints.

Mulch can be applied either using standard mechanical dry application methods or using hydromulching equipment that hydraulically applies a slurry of water, wood fiber mulch, and often a tackifier.

Photograph MU-1. An area that was recently seeded, mulched, and crimped.

Appropriate Uses

Use mulch in conjunction with seeding to help protect the seedbed and stabilize the soil. Mulch can also be used as a temporary cover on low to mild slopes to help temporarily stabilize disturbed areas where growing season constraints prevent effective reseeded. Disturbed areas should be properly mulched and tacked, or seeded, mulched and tacked promptly after final grade is reached (typically within no longer than 14 days) on portions of the site not otherwise permanently stabilized.

Standard dry mulching is encouraged in most jurisdictions; however, hydromulching may not be allowed in certain jurisdictions or may not be allowed near waterways.

Do not apply mulch during windy conditions.

Design and Installation

Prior to mulching, surface-roughen areas by rolling with a crimping or punching type roller or by track walking. Track walking should only be used where other methods are impractical because track walking with heavy equipment typically compacts the soil.

A variety of mulches can be used effectively at construction sites. Consider the following:

Mulch	
Functions	
Erosion Control	Yes
Sediment Control	Moderate
Site/Material Management	No

- Clean, weed-free and seed-free cereal grain straw should be applied evenly at a rate of 2 tons per acre and must be tacked or fastened by a method suitable for the condition of the site. Straw mulch must be anchored (and not merely placed) on the surface. This can be accomplished mechanically by crimping or with the aid of tackifiers or nets. Anchoring with a crimping implement is preferred, and is the recommended method for areas flatter than 3:1. Mechanical crimpers must be capable of tucking the long mulch fibers into the soil to a depth of 3 inches without cutting them. An agricultural disk, while not an ideal substitute, may work if the disk blades are dull or blunted and set vertically; however, the frame may have to be weighted to afford proper soil penetration.
- Grass hay may be used in place of straw; however, because hay is comprised of the entire plant including seed, mulching with hay may seed the site with non-native grass species which might in turn out-compete the native seed. Alternatively, native species of grass hay may be purchased, but can be difficult to find and are more expensive than straw. Purchasing and utilizing a certified weed-free straw is an easier and less costly mulching method. When using grass hay, follow the same guidelines as for straw (provided above).
- On small areas sheltered from the wind and heavy runoff, spraying a tackifier on the mulch is satisfactory for holding it in place. For steep slopes and special situations where greater control is needed, erosion control blankets anchored with stakes should be used instead of mulch.
- Hydraulic mulching consists of wood cellulose fibers mixed with water and a tackifying agent and should be applied at a rate of no less than 1,500 pounds per acre (1,425 lbs of fibers mixed with at least 75 lbs of tackifier) with a hydraulic mulcher. For steeper slopes, up to 2000 pounds per acre may be required for effective hydroseeding. Hydromulch typically requires up to 24 hours to dry; therefore, it should not be applied immediately prior to inclement weather. Application to roads, waterways and existing vegetation should be avoided.
- Erosion control mats, blankets, or nets are recommended to help stabilize steep slopes (generally 3:1 and steeper) and waterways. Depending on the product, these may be used alone or in conjunction with grass or straw mulch. Normally, use of these products will be restricted to relatively small areas. Biodegradable mats made of straw and jute, straw-coconut, coconut fiber, or excelsior can be used instead of mulch. (See the ECM/TRM BMP for more information.)
- Some tackifiers or binders may be used to anchor mulch. Check with the local jurisdiction for allowed tackifiers. Manufacturer's recommendations should be followed at all times. (See the Soil Binder BMP for more information on general types of tackifiers.)
- Rock can also be used as mulch. It provides protection of exposed soils to wind and water erosion and allows infiltration of precipitation. An aggregate base course can be spread on disturbed areas for temporary or permanent stabilization. The rock mulch layer should be thick enough to provide full coverage of exposed soil on the area it is applied.

Maintenance and Removal

After mulching, the bare ground surface should not be more than 10 percent exposed. Reapply mulch, as needed, to cover bare areas.

Description

Implement construction site good housekeeping practices to prevent pollution associated with solid, liquid and hazardous construction-related materials and wastes. Stormwater Management Plans (SWMPs) should clearly specify BMPs including these good housekeeping practices:

- Provide for waste management.
- Establish proper building material staging areas.
- Designate paint and concrete washout areas.
- Establish proper equipment/vehicle fueling and maintenance practices.
- Control equipment/vehicle washing and allowable non-stormwater discharges.
- Develop a spill prevention and response plan.

Acknowledgement: This Fact Sheet is based directly on EPA guidance provided in *Developing Your Stormwater Pollution Prevent Plan* (EPA 2007).

Photographs GH-1 and GH-2. Proper materials storage and secondary containment for fuel tanks are important good housekeeping practices. Photos courtesy of CDOT and City of Aurora.

Appropriate Uses

Good housekeeping practices are necessary at all construction sites.

Design and Installation

The following principles and actions should be addressed in SWMPs:

- **Provide for Waste Management.** Implement management procedures and practices to prevent or reduce the exposure and transport of pollutants in stormwater from solid, liquid and sanitary wastes that will be generated at the site. Practices such as trash disposal, recycling, proper material handling, and cleanup measures can reduce the potential for stormwater runoff to pick up construction site wastes and discharge them to surface waters. Implement a comprehensive set of waste-management practices for hazardous or toxic materials, such as paints, solvents, petroleum products, pesticides, wood preservatives, acids, roofing tar, and other materials. Practices should include storage, handling, inventory, and cleanup procedures, in case of spills. Specific practices that should be considered include:

Solid or Construction Waste

- Designate trash and bulk waste-collection areas on-site.

Good Housekeeping	
Functions	
Erosion Control	No
Sediment Control	No
Site/Material Management	Yes

- Recycle materials whenever possible (e.g., paper, wood, concrete, oil).
- Segregate and provide proper disposal options for hazardous material wastes.
- Clean up litter and debris from the construction site daily.
- Locate waste-collection areas away from streets, gutters, watercourses, and storm drains. Waste-collection areas (dumpsters, and such) are often best located near construction site entrances to minimize traffic on disturbed soils. Consider secondary containment around waste collection areas to minimize the likelihood of contaminated discharges.
- Empty waste containers before they are full and overflowing.

Sanitary and Septic Waste

- Provide convenient, well-maintained, and properly located toilet facilities on-site.
- Locate toilet facilities away from storm drain inlets and waterways to prevent accidental spills and contamination of stormwater.
- Maintain clean restroom facilities and empty portable toilets regularly.
- Where possible, provide secondary containment pans under portable toilets.
- Provide tie-downs or stake-downs for portable toilets.
- Educate employees, subcontractors, and suppliers on locations of facilities.
- Treat or dispose of sanitary and septic waste in accordance with state or local regulations. Do not discharge or bury wastewater at the construction site.
- Inspect facilities for leaks. If found, repair or replace immediately.
- Special care is necessary during maintenance (pump out) to ensure that waste and/or biocide are not spilled on the ground.

Hazardous Materials and Wastes

- Develop and implement employee and subcontractor education, as needed, on hazardous and toxic waste handling, storage, disposal, and cleanup.
- Designate hazardous waste-collection areas on-site.
- Place all hazardous and toxic material wastes in secondary containment.

Photograph GH-3. Locate portable toilet facilities on level surfaces away from waterways and storm drains. Photo courtesy of WWE.

- Hazardous waste containers should be inspected to ensure that all containers are labeled properly and that no leaks are present.
- **Establish Proper Building Material Handling and Staging Areas.** The SWMP should include comprehensive handling and management procedures for building materials, especially those that are hazardous or toxic. Paints, solvents, pesticides, fuels and oils, other hazardous materials or building materials that have the potential to contaminate stormwater should be stored indoors or under cover whenever possible or in areas with secondary containment. Secondary containment measures prevent a spill from spreading across the site and may include dikes, berms, curbing, or other containment methods. Secondary containment techniques should also ensure the protection of groundwater. Designate staging areas for activities such as fueling vehicles, mixing paints, plaster, mortar, and other potential pollutants. Designated staging areas enable easier monitoring of the use of materials and clean up of spills. Training employees and subcontractors is essential to the success of this pollution prevention principle. Consider the following specific materials handling and staging practices:
 - Train employees and subcontractors in proper handling and storage practices.
 - Clearly designate site areas for staging and storage with signs and on construction drawings. Staging areas should be located in areas central to the construction site. Segment the staging area into sub-areas designated for vehicles, equipment, or stockpiles. Construction entrances and exits should be clearly marked so that delivery vehicles enter/exit through stabilized areas with vehicle tracking controls (See Vehicle Tracking Control Fact Sheet).
 - Provide storage in accordance with Spill Protection, Control and Countermeasures (SPCC) requirements and plans and provide cover and impermeable perimeter control, as necessary, for hazardous materials and contaminated soils that must be stored on site.
 - Ensure that storage containers are regularly inspected for leaks, corrosion, support or foundation failure, or other signs of deterioration and tested for soundness.
 - Reuse and recycle construction materials when possible.
- **Designate Concrete Washout Areas.** Concrete contractors should be encouraged to use the washout facilities at their own plants or dispatch facilities when feasible; however, concrete washout commonly occurs on construction sites. If it is necessary to provide for concrete washout areas on-site, designate specific washout areas and design facilities to handle anticipated washout water. Washout areas should also be provided for paint and stucco operations. Because washout areas can be a source of pollutants from leaks or spills, care must be taken with regard to their placement and proper use. See the Concrete Washout Area Fact Sheet for detailed guidance.

Both self-constructed and prefabricated washout containers can fill up quickly when concrete, paint, and stucco work are occurring on large portions of the site. Be sure to check for evidence that contractors are using the washout areas and not dumping materials onto the ground or into drainage facilities. If the washout areas are not being used regularly, consider posting additional signage, relocating the facilities to more convenient locations, or providing training to workers and contractors.

When concrete, paint, or stucco is part of the construction process, consider these practices which will help prevent contamination of stormwater. Include the locations of these areas and the maintenance and inspection procedures in the SWMP.

- Do not washout concrete trucks or equipment into storm drains, streets, gutters, uncontained areas, or streams. Only use designated washout areas.
- Establish washout areas and advertise their locations with signs. Ensure that signage remains in good repair.
- Provide adequate containment for the amount of wash water that will be used.
- Inspect washout structures daily to detect leaks or tears and to identify when materials need to be removed.
- Dispose of materials properly. The preferred method is to allow the water to evaporate and to recycle the hardened concrete. Full service companies may provide dewatering services and should dispose of wastewater properly. Concrete wash water can be highly polluted. It should not be discharged to any surface water, storm sewer system, or allowed to infiltrate into the ground in the vicinity of waterbodies. Washwater should not be discharged to a sanitary sewer system without first receiving written permission from the system operator.
- **Establish Proper Equipment/Vehicle Fueling and Maintenance Practices.** Create a clearly designated on-site fueling and maintenance area that is clean and dry. The on-site fueling area should have a spill kit, and staff should know how to use it. If possible, conduct vehicle fueling and maintenance activities in a covered area. Consider the following practices to help prevent the discharge of pollutants to stormwater from equipment/vehicle fueling and maintenance. Include the locations of designated fueling and maintenance areas and inspection and maintenance procedures in the SWMP.
 - Train employees and subcontractors in proper fueling procedures (stay with vehicles during fueling, proper use of pumps, emergency shutoff valves, etc.).
 - Inspect on-site vehicles and equipment regularly for leaks, equipment damage, and other service problems.
 - Clearly designate vehicle/equipment service areas away from drainage facilities and watercourses to prevent stormwater run-on and runoff.
 - Use drip pans, drip cloths, or absorbent pads when replacing spent fluids.
 - Collect all spent fluids, store in appropriate labeled containers in the proper storage areas, and recycle fluids whenever possible.
- **Control Equipment/Vehicle Washing and Allowable Non-Stormwater Discharges.** Implement practices to prevent contamination of surface and groundwater from equipment and vehicle wash water. Representative practices include:
 - Educate employees and subcontractors on proper washing procedures.
 - Use off-site washing facilities, when available.
 - Clearly mark the washing areas and inform workers that all washing must occur in this area.
 - Contain wash water and treat it using BMPs. Infiltrate washwater when possible, but maintain separation from drainage paths and waterbodies.

- Use high-pressure water spray at vehicle washing facilities without detergents. Water alone can remove most dirt adequately.
- Do not conduct other activities, such as vehicle repairs, in the wash area.
- Include the location of the washing facilities and the inspection and maintenance procedures in the SWMP.
- **Develop a Spill Prevention and Response Plan.** Spill prevention and response procedures must be identified in the SWMP. Representative procedures include identifying ways to reduce the chance of spills, stop the source of spills, contain and clean up spills, dispose of materials contaminated by spills, and train personnel responsible for spill prevention and response. The plan should also specify material handling procedures and storage requirements and ensure that clear and concise spill cleanup procedures are provided and posted for areas in which spills may potentially occur. When developing a spill prevention plan, include the following:
 - Note the locations of chemical storage areas, storm drains, tributary drainage areas, surface waterbodies on or near the site, and measures to stop spills from leaving the site.
 - Provide proper handling and safety procedures for each type of waste. Keep Material Safety Data Sheets (MSDSs) for chemical used on site with the SWMP.
 - Establish an education program for employees and subcontractors on the potential hazards to humans and the environment from spills and leaks.
 - Specify how to notify appropriate authorities, such as police and fire departments, hospitals, or municipal sewage treatment facilities to request assistance. Emergency procedures and contact numbers should be provided in the SWMP and posted at storage locations.
 - Describe the procedures, equipment and materials for immediate cleanup of spills and proper disposal.
 - Identify personnel responsible for implementing the plan in the event of a spill. Update the spill prevention plan and clean up materials as changes occur to the types of chemicals stored and used at the facility.

Spill Prevention, Control, and Countermeasure (SPCC) Plan

Construction sites may be subject to 40 CFR Part 112 regulations that require the preparation and implementation of a SPCC Plan to prevent oil spills from aboveground and underground storage tanks. The facility is subject to this rule if it is a non-transportation-related facility that:

- Has a total storage capacity greater than 1,320 gallons or a completely buried storage capacity greater than 42,000 gallons.
- Could reasonably be expected to discharge oil in quantities that may be harmful to navigable waters of the United States and adjoining shorelines.

Furthermore, if the facility is subject to 40 CFR Part 112, the SWMP should reference the SPCC Plan. To find out more about SPCC Plans, see EPA's website on SPPC at www.epa.gov/oilspill/spcc.htm.

Reporting Oil Spills

In the event of an oil spill, contact the National Response Center toll free at 1-800-424- 8802 for assistance, or for more details, visit their website: www.nrc.uscg.mil.

Maintenance and Removal

Effective implementation of good housekeeping practices is dependent on clear designation of personnel responsible for supervising and implementing good housekeeping programs, such as site cleanup and disposal of trash and debris, hazardous material management and disposal, vehicle and equipment maintenance, and other practices. Emergency response "drills" may aid in emergency preparedness.

Checklists may be helpful in good housekeeping efforts.

Staging and storage areas require permanent stabilization when the areas are no longer being used for construction-related activities.

Construction-related materials, debris and waste must be removed from the construction site once construction is complete.

Design Details

See the following Fact Sheets for related Design Details:

MM-1 Concrete Washout Area

MM-2 Stockpile Management

SM-4 Vehicle Tracking Control

Design details are not necessary for other good housekeeping practices; however, be sure to designate where specific practices will occur on the appropriate construction drawings.

Description

The BMPs selected for construction dewatering vary depending on site-specific features such as soils, topography, anticipated discharge quantities, and discharge location. Dewatering typically involves pumping water from an inundated area to a BMP, and then downstream to a receiving waterway, sediment basin, or well-vegetated area. Dewatering typically involves use of several BMPs in sequence.

Appropriate Uses

Dewatering operations are used when an area of the construction site needs to be dewatered as the result of a large storm event, groundwater, or existing ponding conditions. This can occur during deep excavation, utility trenching, and wetland or pond excavation.

Design and Installation

Dewatering techniques will vary depending on site conditions. However, all dewatering discharges must be treated to remove sediment before discharging from the construction site. Discharging water into a sediment trap or basin is an acceptable treatment option. Water may also be treated using a dewatering filter bag, and a series of straw bales or sediment logs. If these previous options are not feasible due to space or the ability to passively treat the discharge to remove sediment, then a settling tank or an active treatment system may need to be utilized. Settling tanks are manufactured tanks with a series of baffles to promote settling. Flocculants can also be added to the tank to induce more rapid settling. This is an approach sometimes used on highly urbanized construction sites. Contact the state agency for special requirements prior to using flocculents and land application techniques.

Some commonly used methods to handle the pumped water without surface discharge include land application to vegetated areas through a perforated discharge hose (i.e., the "sprinkler method") or dispersal from a water truck for dust control.



Photograph DW-1. A relatively small dewatering operation using straw bales and a dewatering bag.



Photograph DW-2. Dewatering bags used for a relatively large dewatering operation.

Dewatering Operations	
Functions	
Erosion Control	Moderate
Sediment Control	Yes
Site/Material Management	Yes

Dewatering discharges to non-paved areas must minimize the potential for scour at the discharge point either using a velocity dissipation device or dewatering filter bag.

Design Details are provided for these types of dewatering situations:

DW-1. Dewatering for Pond Already Filled with Water

DW-2 Dewatering Sump for Submersed Pump

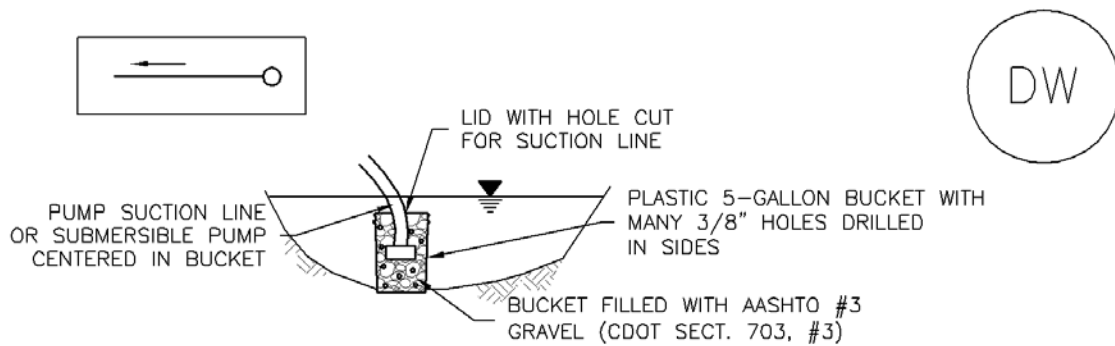
DW-3 Sump Discharge Settling Basin

DW-4 Dewatering Filter Bag

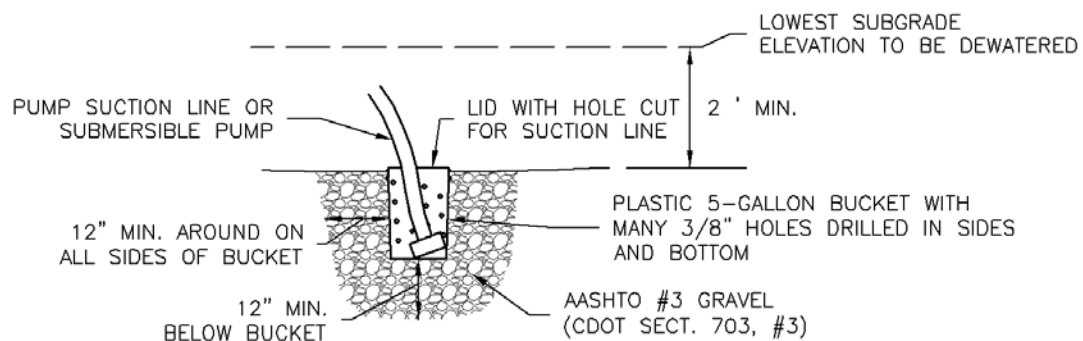
Maintenance and Removal

When a sediment basin or trap is used to enable settling of sediment from construction dewatering discharges, inspect the basin for sediment accumulation. Remove sediment prior to the basin or trap reaching half full. Inspect treatment facilities prior to any dewatering activity. If using a sediment control practice such as a sediment trap or basin, complete all maintenance requirements as described in the fact sheets prior to dewatering.

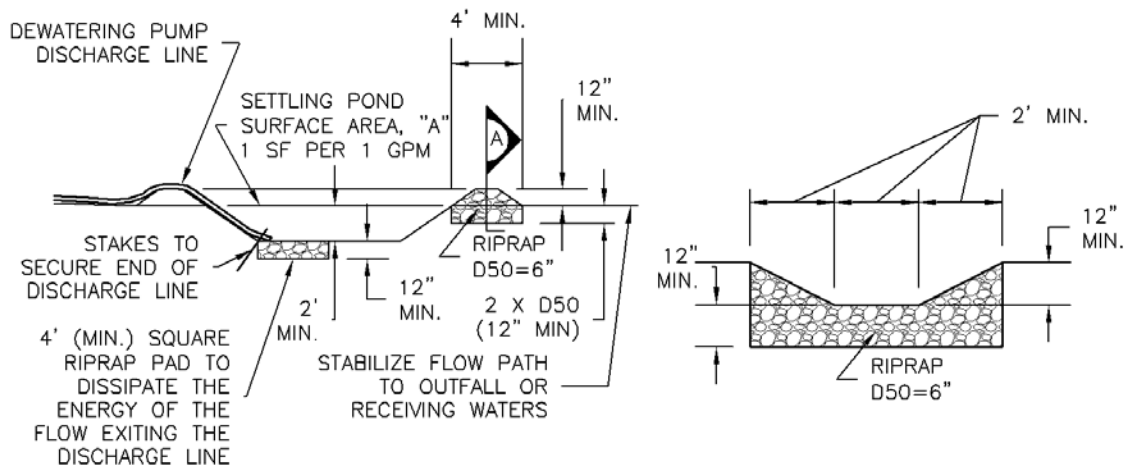
Properly dispose of used dewatering bags, as well as sediment removed from the dewatering BMPs. Depending on the size of the dewatering operation, it may also be necessary to revegetate or otherwise stabilize the area where the dewatering operation was occurring.



DW-1. DEWATERING POND ALREADY FILLED WITH WATER

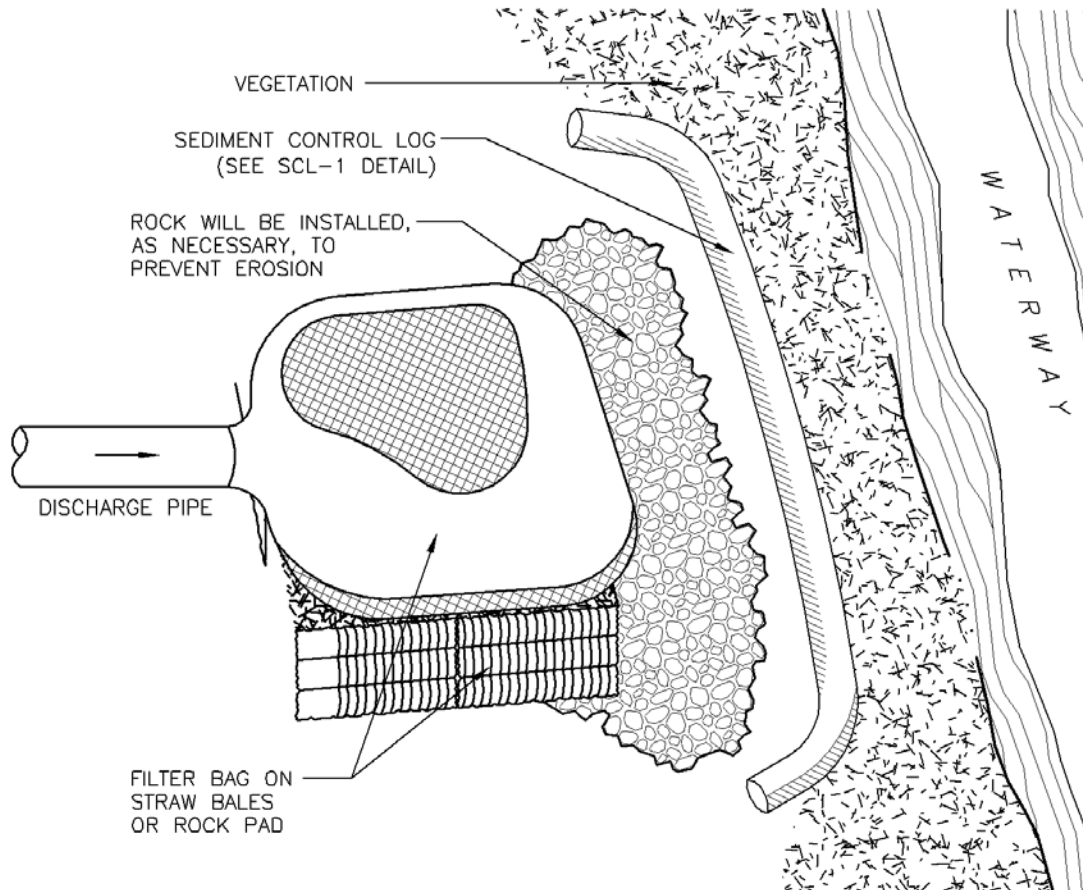


DW-2. DEWATERING SUMP FOR SUBMERSED PUMP



DW-3. SUMP DISCHARGE
SETTLING BASIN

SETTLING BASIN
SECTION A



DW-4. DEWATERING FILTER BAG

DEWATERING INSTALLATION NOTES

1. SEE PLAN VIEW FOR;
 - LOCATION OF DEWATERING EQUIPMENT.
 - TYPE OF DEWATERING OPERATION (DW-1 TO DW-4).
2. THE OWNER OR CONTRACTOR SHALL OBTAIN A CONSTRUCTION DISCHARGE (DEWATERING) PERMIT FROM THE STATE PRIOR TO ANY DEWATERING OPERATIONS DISCHARGING FROM THE SITE. ALL DEWATERING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE PERMIT.
3. THE OWNER OR OPERATOR SHALL PROVIDE, OPERATE, AND MAINTAIN DEWATERING SYSTEMS OF SUFFICIENT SIZE AND CAPACITY TO PERMIT EXCAVATION AND SUBSEQUENT CONSTRUCTION IN DRY CONDITIONS AND TO LOWER AND MAINTAIN THE GROUNDWATER LEVEL A MINIMUM OF 2- FEET BELOW THE LOWEST POINT OF EXCAVATION AND CONTINUOUSLY MAINTAIN EXCAVATIONS FREE OF WATER UNTIL BACK-FILLED TO FINAL GRADE.

DEWATERING INSTALLATION NOTES

4. DEWATERING OPERATIONS SHALL USE ONE OR MORE OF THE DEWATERING SUMPS SHOWN ABOVE, WELL POINTS, OR OTHER MEANS APPROVED BY THE LOCAL JURISDICTION TO REDUCE THE PUMPING OF SEDIMENT, AND SHALL PROVIDE A TEMPORARY SEDIMENT BASIN OR FILTRATION BMP TO REDUCE SEDIMENT TO ALLOWABLE LEVELS PRIOR TO RELEASE OFF SITE OR TO A RECEIVING WATER. A SEDIMENT BASIN MAY BE USED IN LIEU OF SUMP DISCHARGE SETTLING BASIN SHOWN ABOVE IF A 4-FOOT-SQUARE RIPRAP PAD IS PLACED AT THE DISCHARGE POINT AND THE DISCHARGE END OF THE LINE IS STAKED IN PLACE TO PREVENT MOVEMENT OF THE LINE.

DEWATERING MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. DEWATERING BMPs ARE REQUIRED IN ADDITION TO ALL OTHER PERMIT REQUIREMENTS.

5. TEMPORARY SETTLING BASINS SHALL BE REMOVED WHEN NO LONGER NEEDED FOR DEWATERING OPERATIONS. ANY DISTURBED AREA SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

(DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO, NOT AVAILABLE IN AUTOCAD)

Appendix C

UDOT's Spill Prevention and Response Plan for Construction Sites

UDOT
SPILL PREVENTION and RESPONSE PLAN
for
CONSTRUCTION SITES



November 2018

The plan contained in the following pages was developed in part from UDOT Construction Division's Safety and Health Manual, Section 9 and from the Utah Department of Environmental Quality's General Construction Permit, Part 2.3 Pollution Prevention Requirements.

1.0 SPILL PREVENTION AND RESPONSE PLAN

1.1 General

This plan is established to provide the Contractor general guidance and procedures to manage project site operations which have potential to cause environmental damage and procedures to follow in case a hazardous spill occurs. The following discharges are prohibited from roadway construction sites and pollution prevention standards are required whenever the sources for these potential pollutants are located on a construction site:

1. Wastewater from washout of concrete;
2. Wastewater from washout and cleanout of paint, form release oils, concrete grinding slurry, curing compounds and other construction materials;
3. Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance;
4. Soaps, solvents, or detergents used in vehicle and equipment washing; and
5. Toxic or hazardous substances from a spill or other release.

1.2 Contractor Responsibilities

The Contractors is responsible for the following requirements:

1. Follow proper procedures for the procurement, receipt, storage, and handling of hazardous materials under their control.
2. Train employees to control the identified waste and recyclable products in the containers provided.
3. Maintain Material Safety Data Sheets (MSDS) on file for hazardous chemicals used on the project and ensure employees follow all of the incorporated requirements.
4. Know the potential health and environmental hazards associated with the use of hazardous materials on the project site.
5. Store and dispose of hazardous or toxic waste in accordance with the manufacturer's recommended methods and in compliance with federal, state, tribal, and local requirements.
6. Inspect hazardous material containments weekly for leaks and damage.
7. Ensure equipment for emergency action is in place to provide quick assistance and minimize employee risk.

8. Use correct personal protective equipment in accordance with the hazard analysis, MSDS, or other procedural requirement.

1.3 Fueling and Maintenance of Equipment or Vehicles

If fueling and/or maintenance of equipment or vehicles occur on the project site, the following are required:

1. Ensure adequate supplies are available at all times to handle spills, leaks, and disposal of used liquids;
2. Use drip pans and absorbents under or around leaky vehicles;
3. Dispose of or recycle oil and oily wastes in accordance with other federal, state, tribal, or local requirements;
4. Clean up spills or contaminated surfaces immediately, using dry clean up measures where possible, and eliminate the source of the spill to prevent discharge or a furtherance of an ongoing discharge; and
5. Do not clean surfaces by hosing the area down.

1.4 Washing of Equipment and Vehicles

If washing vehicles on site, provide an effective means of minimizing the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other types of washing.

1.5 Storage of Products that have the Potential to be Hazardous or Toxic Waste

Examples of hazardous or toxic waste that may be present at construction sites include, but are not limited to, paints, solvents, petroleum-based products, wood preservatives, additives, curing compounds, acids. If storing any of the above products on the construction site, comply with the following:

1. Provide the Resident Engineer with a plan as to where all hazardous chemicals and fuels storage tanks and containers will be located. This plan will include all safety and health precautions to be implemented to maximize safe handling and storage of chemicals and fuels. This plan and the location requested by the Contractor must be approved by the Resident Engineer before bringing chemicals and fuels onsite.
2. Store these products in water-tight containers, and provide either cover (e.g., plastic sheeting or temporary roofs) to prevent these containers from coming into contact with rainwater or provide secondary containment (e.g., spill berms, decks, spill containment pallets)

1.6 Disposal of Waste Products

1. Separate hazardous or toxic waste from construction and domestic waste. Mixing increases hazardous waste volume and consequent handling and disposal costs.
2. Store waste in sealed containers, which are constructed of suitable materials to prevent leakage and corrosion, and which are labeled in accordance with applicable Resource Conservation and Recovery Act (RCRA) requirements and all other applicable state, or local requirements. Label hazardous waste containers as such.
3. The Contractor can maintain waste materials and non-emergency spills up to 2700 lbs. (approved container) no longer than 180 days from the accumulation start date. Obtain a licensed waste hauler to remove hazardous wastes (liquids, solids).
4. For construction and domestic waste: Provide waste containers (e.g., dumpster or trash receptacle) of sufficient size and number to contain construction and domestic wastes. In addition, clean up and dispose of waste in designated waste containers and clean up immediately if containers overflow.
5. Dispose of hardened concrete waste in ways that are consistent with Utah disposal laws for inert material
6. For sanitary waste: Position portable toilets so that they are secure and will not be tipped or knocked over.

1.7 Washout Practices

Provide an effective means of eliminating the discharge of contaminated water from the washout and cleanout of paint, concrete, form release oils, curing compounds, etc. by incorporating the following:

1. Direct all washwater into a leak-proof container/pit. The container or pit must be designed so that no overflows can occur due to inadequate sizing or precipitation. Segregate paint waste, oily waste, and concrete washout waste and manage the proper disposal separately.
2. Ensure liquid wastes are not dumped in storm sewers or surface waters.
3. Locate any washout or cleanout activities as far away as possible from surface waters and stormwater inlets or conveyances.

1.8 Corrective Actions

The Contractor is responsible to comply with this Hazardous Spill Prevention and Response Plan. The Resident Engineer, the UDOT Region Safety Risk Manager, and the UDOT Environmental Control Supervisor will monitor the Contractor's compliance with the plan at the project site. Non-compliance to spill containment control measures will be communicated to the Contractor by the UDOT for immediate corrective action.

1.9 Spill Control Definition and Control

1. Hazardous Spill Definition: A leak, spill, or other release meeting any of the following measures is a hazardous spill and requires an emergency spill notification (See 1.9.2):
 - a. 2.2 pounds or more of "acutely hazardous waste" (see MSDS), or
 - b. 220 pounds or more of other hazardous waste, or
 - c. 25 gallons or more of fuel or oil are spilled or cause oil sheen to form on a water surface.
2. Emergency Spill Notification Procedures: If the spill presents a potential for harm to personnel, public, or the environment, the Contractor is not able to immediately control and clean-up the spill, and/or the spill exceeds the reportable quantity (See 1.9.1), the following actions shall be taken:
 - a. Notify the Resident Engineer and the UDOT Region Safety Risk Manager to determine if the quantity or severity of the spill warrants outside assistance by emergency services (again, this is to ascertain the toxicity, size of spill, and if the spill could discharge to a surface water or a sewer/storm drain line).

Emergency Hazardous Spill Notification List	
UDOT Resident Engineer	(include for each project)
Utah Department of Environmental Quality (24-hour emergency number)	801-563-4123
National Response Center	800-424-8802
Region 1 Safety Risk Manager – Alan Nielsen	Cell: 801-940-6551 Office: 801-620-1603
Region 2 Safety Risk Manager – Dottie Weese	Cell: 801-910-2030 Office: 801-975-4902
Region 3 Safety Risk Manager – (unfilled)	Cell: Office:
Region 4 Safety Loss Manager – Brian Quarnberg	Cell: 435-979-8468 Office: 435-896-1315
Region 4 Safety Loss Coordinator– Nick Peterson	Cell: 435-590-1285 Office: 435-865-5503
Region 4 Safety Loss Coordinator - Jeff Willden	Cell: 435-201-1197 Office: 435-893-4723

- b. If the spill is clearly an emergency hazardous spill condition, the Resident Engineer or the UDOT Region Safety Risk Manager will notify the Utah Department of Environmental Quality and the National Response Center.
 - c. Submit an incident report within 24 hours to the Resident Engineer. The UDOT Region Safety Risk Manager will review the report, and if necessary, hold a post incident meeting with the Contractor.
 - d. It is recommended that the Contractor use a State Certified Hazardous Materials Lab when necessary to identify an unknown spill material. Identifying the type of spill material or liquid containment can save the Contractor from increase costs for disposal if the material to be removed is known.
 - e. The Contractor is responsible for all required hazardous waste management which includes but is not limited to the transportation, storage, and disposal at a hazardous waste disposal facility.
3. Waste Disposal and Minor Spills: A minor spill is a condition that does not present potential harm to personnel and/or the environment, the Contractor has the ability to immediately control and clean-up the spill, and the spill does not meet the hazardous spill definition. Actions to control non-emergency spills involve the following activities from the Contractor:
- a. Immediately notify the Resident Engineer for verification that condition is a non-reportable minor spill.
 - b. Begin spill clean-up immediately and use trained personnel to respond to critical events involving spills.
 - c. Use contingency clean up products and equipment to handle non-emergency spills (absorbent materials, personal protection equipment, compatible empty container to store spilled material, fire extinguisher, etc.)
 - d. Spilled liquids or solids are to be properly contained in a compatible container and stored on-site until proper disposal action is taken as required by state and federal requirements. Where a spill occurs or when hazardous wastes are generated the Contractor will fill out a hazardous waste label and establish an accumulation date.
 - e. Submit a spill report to the Resident Engineer explaining the spill quantity and method of disposal including a Hazardous Waste Disposal Manifest if applicable.

Appendix D
Notice of Intent
(print a copy when completing NOI form on Division of Water Quality's website)
and
Utah Construction General Permit
(Obtain and Insert a copy from Division of Water Quality's website)

STATE OF UTAH

DEPARTMENT OF ENVIRONMENTAL QUALITY

DIVISION OF WATER QUALITY

Utah Pollutant Discharge Elimination System

General Permit for Storm Water Discharges from Construction Activities

UPDES Permit No. UTRC00000

This Permit is issued in compliance with the provisions of the Utah Water Quality Act, Title 19, Chapter 5, Utah Code, as amended (the "Act") under delegated authority according to Title 33 U.S. Code Section 1342 with federal oversight from the Environmental Protection Agency under the Federal Clean Water Act, Title 33 U.S. Code Section 1251, *et. seq.*, as amended, and the rules and Regulations made pursuant to those statutes. This permit authorizes "owners/operators" of construction activities (defined in Part 1.1.1 and Part 10) that meet the requirements of Part 1. of this Utah Pollutant Discharge Elimination System (UPDES) general permit, to discharge pollutants in accordance with the effluent limitations and conditions set forth herein. Permit coverage is required from the "commencement of earth-disturbing activities" (see Part 10) until "final stabilization" (see Part 2.2.14).

This MODIFIED permit becomes effective on July 8, 2020.

This MODIFIED permit and the authorization to discharge expire at midnight on June 30, 2024.

Signed this eighth day of July, 2020.



Erica Brown Gaddis, PhD
Director

Table of Contents

1. COVERAGE UNDER THIS PERMIT	1
1.1. ELIGIBILITY CONDITIONS	1
1.2. DISCHARGES AUTHORIZED UNDER THIS PERMIT.	3
1.3. PROHIBITED DISCHARGES.....	4
1.4. NOTICE OF INTENT (NOI).....	4
1.5. REQUIREMENT TO POST A NOTICE OF YOUR PERMIT COVERAGE.....	6
2. TECHNOLOGY-BASED EFFLUENT LIMITATIONS.....	7
2.1. GENERAL STORM WATER CONTROL DESIGN, INSTALLATION, AND MAINTENANCE REQUIREMENTS.	7
2.2. EROSION AND SEDIMENT CONTROL REQUIREMENTS.....	8
2.3. POLLUTION PREVENTION REQUIREMENTS.....	13
3. WATER QUALITY-BASED EFFLUENT LIMITATIONS.	17
3.1. GENERAL EFFLUENT LIMITATION TO MEET APPLICABLE WATER QUALITY STANDARDS.	17
3.2. DISCHARGE LIMITATIONS FOR SITES DISCHARGING TO SENSITIVE WATERS.....	17
4. SITE INSPECTION REQUIREMENTS.	19
4.1. PERSON(S) RESPONSIBLE FOR INSPECTING THE SITE.	19
4.2. FREQUENCY OF INSPECTIONS.....	19
4.3. INCREASE IN INSPECTION FREQUENCY FOR SITES DISCHARGING TO SENSITIVE WATERS.....	19
4.4. REDUCTIONS IN INSPECTION FREQUENCY.....	20
4.5. AREAS THAT MUST BE INSPECTED.....	21
4.6. REQUIREMENTS FOR INSPECTIONS	22
4.7. INSPECTION REPORT	22

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

4.8.	INSPECTIONS BY DWQ	23
5.	CORRECTIVE ACTIONS	24
5.1.	CONDITIONS TRIGGERING CORRECTIVE ACTION.....	24
5.2.	CORRECTIVE ACTION DEADLINES	24
5.3.	CORRECTIVE ACTION REQUIRED BY DWQ	24
5.4.	CORRECTIVE ACTION REPORT	24
6.	STAFF TRAINING REQUIREMENTS.....	26
7.	STORM WATER POLLUTION PREVENTION PLAN (SWPPP)	27
7.1.	GENERAL REQUIREMENTS	27
7.2.	SWPPP WRITER/REVIEWER CERTIFICATION REQUIREMENT	27
7.3.	SWPPP CONTENTS.	27
7.4.	ON-SITE AVAILABILITY OF YOUR SWPPP	33
7.5.	SWPPP MODIFICATIONS.	33
8.	HOW TO TERMINATE COVERAGE.....	34
8.1.	MINIMUM INFORMATION REQUIRED IN NOT.....	34
8.2.	CONDITIONS FOR TERMINATING CGP COVERAGE.....	34
8.3.	HOW TO SUBMIT YOUR NOT.....	35
8.4.	DEADLINE FOR SUBMITTING THE NOT.	35
8.5.	PARTIAL NOT REQUIREMENTS.....	35
8.6.	EFFECTIVE DATE OF TERMINATION OF COVERAGE.	35
9.	STANDARD PERMIT CONDITIONS.....	36
10.	DEFINITIONS AND ACRONYMS.....	40

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

Appendix A – BUFFER REQUIREMENTS

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

1. COVERAGE UNDER THIS PERMIT

To be covered under this permit you must meet the eligibility conditions and follow the requirements for applying for permit coverage in this Part.

1.1. ELIGIBILITY CONDITIONS

1.1.1. All “operators” of a construction site must sign on the notice of intent or NOI (see part 1.4 for NOI). Owners (or lessee’s) and general contractors are both considered “operators” for the purposes of this permit (see definition of “operator” in Part 10). Except for areas listed in part 1.2.2, this permit does not cover area that is not legally owned or leased by the operator defined in Part 10, that has operational control over construction plans and specifications.

1.1.2. The Project:

- a. A project covered by this permit will **disturb 1 or more acres** of land, or will disturb less than 1 acre of land but be part of a common plan of development or sale¹ that will ultimately disturb 1 or more acres of land; or
- b. A project’s **discharges have been designated** by the Director as needing a permit under UAC 317-8-3.9(1)(a)5. or UAC 317-8-3.9(6)(e)2.
- c. **Single lot residential projects** that disturb **less than 1 acre** of land and are part of a common plan of development or sale may be covered under the Common Plan Permit (UTRH00000) in lieu of this permit. Information on this permit can be found on the DWQ construction storm water web site at <https://deq.utah.gov/legacy/permits/water-quality/utah-pollutant-discharge-elimination-system/storm-water-general-construction.htm>.
- d. Projects **less than five acres** with a **rainfall erosivity factor** (“R” in the revised universal soil loss equation, or RUSLE) value of **less than five** during the period of construction activity may waive the requirements of this permit by submitting an **Erosivity Waiver Certification**. Information on the Erosivity Waiver can be found on the DWQ construction storm water web site at <https://deq.utah.gov/legacy/permits/water-quality/utah-pollutant-discharge-elimination-system/storm-water-general-construction.htm>.

1.1.3. A project is located within the state of Utah, except for Indian Country (Storm water permits for Indian Country within the State must be acquired through EPA Region VIII, except for facilities on the Navajo Reservation or on the Goshute Reservation which must acquire storm water permits through EPA Region IX).

1.1.4. Discharges from a project cannot;

- a. **already have coverage** under the UPDES CGP or any other UPDES permit for a storm water discharge associated with construction activity (UPDES wastewater and industrial permit coverage for separate discharges associated with the site is allowed) or,

¹ See definition for common plan of development or sale in Part 10

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

- b. **be in the process of receiving coverage** under a different UPDES permit for a storm water discharge from construction activities that has been denied, terminated, or revoked²,
- c. **be treated with “cationic treatment chemicals”** (see Definitions) unless and until you notify DWQ in advance of receiving permit coverage and have received written approval. To be able to use “cationic treatment chemicals” you must demonstrate to DWQ that appropriate controls and implementation procedures are used to ensure that your use of cationic treatment chemicals will not lead to discharges that cause an exceedance of water quality standards or harm fish populations.

1.1.5. Eligibility for Emergency-Related Construction Activities. If you are conducting earth-disturbing activities in response to a public emergency (e.g., natural disaster, widespread disruption in essential public services), and the related work requires immediate authorization to avoid imminent endangerment to human health, public safety, or the environment, or to reestablish public services, your requirements are:

- a. If the emergency related activity is accomplished within 30-days you are waived from the normal requirements to submit an NOI and prepare a SWPPP, but you must submit a report to DWQ within 45-days and show:
 - (1) the nature of the emergency work performed,
 - (2) a description of earth disturbances that occurred,
 - (3) the proximity of the work to waters of the State, and what was done to protect water quality during the emergency work, and
 - (4) the occurrence of the public emergency must be substantiated.
- b. If the emergency activity continues longer than 30-days you are authorized to discharge on the condition that a complete and accurate NOI is submitted within 30 calendar days after commencing earth-disturbing activities establishing that you are eligible under this permit. You are also required to provide emergency documentation in your SWPPP to substantiate the occurrence of the public emergency.

1.1.6. Water Quality Standards – Eligibility for New Sources. If you are a “new source” (as defined in Part 10), you are not eligible for coverage under this permit for discharges that have the reasonable potential to cause, or contribute to an excursion above any applicable water quality standard. Where DWQ makes such a determination, operators must make adjustments to storm water controls to bring the discharge into compliance with water quality standards immediately or permit coverage will be rescinded. DWQ expects that compliance with the storm water control requirements of this permit, including the requirements applicable to such discharges in Part 3.2, will result in discharges that will not cause, have the reasonable potential to cause, or contribute to an excursion above any applicable water quality standard.

² Projects having been denied, terminated, or revoked must resolve the problem causing the ineligibility before the same or other coverage will be restored.

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

- 1.1.7. Discharging to Waters with High Water Quality – Eligibility for New Sources.** If you are a “new source” (as defined in Part 10), you are eligible to discharge to a Category 1 water if your discharge is temporary and limited and where best management practices will be employed to minimize pollution effects, to a Category 2 water only if your discharge will not lower the water quality of the applicable water body. In the absence of information demonstrating otherwise, DWQ expects that compliance with the storm water control requirements of this permit, including the requirements applicable to such discharges in Part 3.2, will result in discharges that will not lower the water quality of the applicable water.

Your project will be considered to discharge to a Category 1 or 2 water if the first surface water to which you discharge is identified by the state as a Category 1 or 2 water. For discharges that enter a storm sewer system prior to discharge, the first surface water to which you discharge is the water body that receives the storm water discharge from the storm sewer system. Please refer to water quality information at <http://mapserv.utah.gov/surfacewaterquality/>

- 1.2. DISCHARGES AUTHORIZED UNDER THIS PERMIT.** The following is a list of discharges that are allowed under this permit provided that appropriate storm water controls are designed, installed, and maintained:

- 1.2.1.** Storm water discharges, including **storm water, snowmelt, and surface water runoff and drainage**, associated with construction activity under UAC R317-8-3.9(6)(d)10. or UAC R317-8-3.9(6)(e)1.;

- 1.2.2.** Storm water discharges from **construction support activities** (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas) provided:

- a. The support **activity is directly related to the construction site** required to have permit coverage for storm water discharges;
- b. The support activity **does not serve multiple unrelated construction projects**;
- c. The support activity **does not continue to operate beyond the completion of the construction activity** at the project it supports; and
- d. Storm water controls are implemented in accordance with Part 2 and, if applicable, Part 3, for discharges from the support activity areas.

- 1.2.3. The following non-storm water discharges** from your construction activity are allowed under this permit, provided that you comply with all applicable requirements for these discharges in Part 2:

- a. Discharges from emergency fire-fighting activities;
- b. Fire hydrant flushings;
- c. Properly managed landscape irrigation;
- d. Water used to wash vehicles and equipment, provided that there is no discharge of soaps, solvents, or detergents used for such purposes;
- e. Water used to control dust;

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

- f. Potable water including uncontaminated water line flushings;
 - g. External building washdown, provided soaps, solvents, and detergents are not used, and external surfaces do not contain hazardous substances;
 - h. Pavement wash waters, provided spills or leaks of toxic or hazardous materials have not occurred (unless all spill material has been removed) and where detergents (including biodegradable soy bean oils and biodegradable detergents) are not used. You are prohibited from directing pavement wash waters directly into any surface water, storm drain inlet, or storm water conveyance unless the conveyance is connected to a sediment basin, sediment trap, or similarly effective control for the pollutants present. Per 2.2.5.d., hosing of accumulated sediments on pavement into any storm water conveyance is prohibited;
 - i. Uncontaminated air conditioning or compressor condensate;
 - j. Uncontaminated, non-turbid discharges of ground water (from natural sources) or spring water; and,
 - k. Foundation or footing drains where flows are not contaminated with process materials such as solvents, contaminated ground water, or sediment from construction activity.
- 1.2.4.** Comingling of the non-storm water discharges above with other permitted discharges is also authorized.
- 1.2.5. Discharging of construction dewatering** (groundwater that intersects with excavation) must be permitted under UTG070000 (Construction Dewatering and Hydrostatic Test Permit), and the Municipal Separate Storm Sewer System (MS4) (of jurisdiction) notified of the discharge. Permitting is not required under UTG070000 if the construction dewatering does not leave the site (it is percolated into the ground on site).

1.3. PROHIBITED DISCHARGES.

- 1.3.1.** Wastewater from washing tools and vehicles after pouring, prepping, or finishing concrete.
- 1.3.2.** Wastewater from washing and cleanout of stucco, paint, concrete, form release oils, curing compounds, and other construction materials;
- 1.3.3.** Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance;
- 1.3.4.** Soaps, solvents, or detergents used in vehicle and equipment washing or external building washdown; and
- 1.3.5.** Toxic or hazardous substances from a spill or other release.

To prevent the above-listed prohibited non-storm water discharges, operators must comply with the applicable pollution prevention requirements in Part 2.3.

- 1.4. NOTICE OF INTENT (NOI).** To be covered under this permit, you must develop a SWPPP (see part 7.1), submit a complete and accurate NOI, remit the permit fee, and receive an Authorization to Discharge Letter. The permit fee covers a year of permit coverage. If a project extends more than a year the permit must be renewed and the permit fee must be remitted again.

There is a 60-day grace period after the permit expiration date where projects may be completed or the permit renewed.

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

All NOI application packages, including Authorization to Discharge letters and storm water pollution prevention plans (SWPPP) must also be submitted to regulated MS4s (see the list of municipalities on the DWQ municipal storm water web site <https://deq.utah.gov/legacy/permits/water-quality/utah-pollutant-discharge-elimination-system/storm-water-municipal.htm>). Not all municipalities are regulated MS4s (see definitions Part 10).

- 1.4.1. How to Submit Your NOI.** NOIs and permit fees may be submitted online at <https://cdxnodengn.epa.gov/net-cgp/action/login>. A paper copy of the NOI form may be downloaded from the DWQ construction storm water web site at <https://documents.deq.utah.gov/water-quality/stormwater/DWQ-2017-004363.pdf>, filled out and mailed, with permit fee, to:

Division of Water
Quality PO Box
144870
Salt Lake City, Utah 84114-4870

- 1.4.2. Start and End of Permit Coverage and Deadlines.** Coverage under a permit must be obtained before soil disturbing activities begin. The permit is effective immediately after the Authorization to Discharge Letter has been received. Active coverage may be affected by the following conditions:
- a notice of termination (NOT) is submitted at: <https://cdx.epa.gov/cdx/>.
 - the yearly permit fee is kept current and renewed year by year for the period of construction activity,
 - when this general permit (UTRC00000) expires, if no arrangement has been made for continuing coverage, NOIs may need to be submitted for continuing coverage under a new or reissued replacement permit,
 - coverage under the CGP is rescinded or revoked for the project site for administrative reasons for which the permittee will be notified in writing, or
 - if all storm water discharges for the site are permitted under a different general or individual UPDES permit, this permit is terminated on the day the other permit coverage begins.
- 1.4.3. Continuation of Coverage After this Permit Expires.** If this permit is not reissued or replaced by the expiration date, it will be administratively extended by the Director and remain in force and effect until issuance of a comparable CGP. Permit coverage will continue under this permit until the earliest of:
- authorization of, and an application process, is provided for coverage under a reissued or replacement version of this permit; or
 - the permittee's submittal of a Notice of Termination, submitted at: <https://cdx.epa.gov/cdx/>; or
 - the issuance of an individual permit or denial of coverage (see part 1.4.4 below) for the project's discharges.

DWQ reserves the right to modify or revoke and reissue this permit under UAC317-8-5.6, in which case you will be notified of any relevant changes to which you may be subject.

- 1.4.4. Procedures for Denial of Coverage.** Following a submittal of a complete and accurate NOI, you may be notified in writing by DWQ that you are not covered, and that you must either apply for and/or obtain coverage under an individual UPDES permit or an alternate general UPDES permit. This notification will include a brief statement of the reasons for this decision and will provide application information. Any interested person may request that DWQ consider requiring an individual permit under this paragraph.

If you are already a permittee with coverage under this permit, the notice will set a deadline to file the permit application, and will include a statement that on the effective date of the individual UPDES permit or alternate general UPDES permit, as it applies to you, coverage under this general permit will terminate. DWQ may grant additional time to submit the application if requested. If you are covered under this permit and fail to submit an individual UPDES permit application or an NOI for an alternate general UPDES permit as required by DWQ, then the applicability of this permit to your site is terminated at the end of the day specified by DWQ as the deadline for application submittal. DWQ may take appropriate enforcement action for any unpermitted discharge. If you submit a timely permit application, then when an individual UPDES permit is issued to you or you are provided with coverage under an alternate general UPDES permit, your coverage under this permit is terminated on the effective date of the individual permit or date of coverage under the alternate general permit.

- 1.5. REQUIREMENT TO POST A NOTICE OF YOUR PERMIT COVERAGE** All permitted sites must have a sign posted in a conspicuous, safe, publically accessible place and near the entrance to the project. The font on the sign must large enough for normal corrected vision to easily read the sign contents from a public right-of-way. At a minimum, the notice must include:

- 1.5.1.** the UPDES Permit tracking number,
- 1.5.2.** the name of a contact person for questions, SWPPP requests, or information about the project,
 - a. the contact phone number (must be available during business hours) or
 - b. an email address (must be checked and responded to within 24-hours on week days),

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

- 2. TECHNOLOGY-BASED EFFLUENT LIMITATIONS.** You must comply with the following technology-based effluent limitations in this Part.
- 2.1. GENERAL STORM WATER CONTROL DESIGN, INSTALLATION, AND MAINTENANCE REQUIREMENTS.** You must design, install, and maintain storm water controls required in Parts 2.2 and 2.3 to minimize the discharge of pollutants in storm water from construction activities. To meet this requirement, you must:
- 2.1.1. Account for the following factors in designing your storm water controls:**
- a. The expected amount, frequency, intensity, and duration of precipitation;
 - b. The nature of storm water runoff and run-on at the site, including factors such as expected flow from impervious surfaces, slopes, and site drainage features. You must design storm water controls to control storm water volume, velocity, and peak flow rates to minimize discharges of pollutants in storm water and to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points; and
 - c. The soil type and range of soil particle sizes expected to be present on the site.
- 2.1.2. Design and install all storm water controls** in accordance with good engineering practices, including applicable design specifications (see manufacturer specifications and/or applicable erosion and sediment control manuals or ordinances – departures from such specifications must reflect good engineering practices and must be explained in your SWPPP).
- 2.1.3. Complete installation of storm water controls** by the time each phase of construction activities has begun.
- a. Before construction activity in any given portion of the site begins, install and make operational any downgradient sediment controls (e.g., buffers, perimeter controls, exit point controls, storm drain inlet protection).
 - b. Following the installation of storm water controls for the initial construction activities (e.g., clearing, grading, excavating), adjust storm water control and management strategies throughout the project to meet and match the needs for each phase of construction, if applicable, as the project progresses towards completion.
- 2.1.4. Ensure that all storm water controls are maintained, remain in effective operating condition during permit coverage, and are protected from activities that would reduce their effectiveness.**
- a. Comply with any specific maintenance requirements for the storm water controls listed in this permit. Regular maintenance is expected and is not limited to response actions from inspections or identified problems.
 - b. Follow maintenance recommendations from the manufacturer or utilize good engineering practices based on site conditions and document deviations from manufacture recommendations.
 - c. Any time maintenance issues are discovered in storm water controls, make repairs immediately if practical, prior to weather or activities utilizing the control, or within seven business days, whichever comes first.

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

- d. Any time you find that a storm water control needs to be installed (where none had previously been), replaced, or removed, you must record the corrective action as required in Part 5.

2.2. EROSION AND SEDIMENT CONTROL REQUIREMENTS. You must implement erosion and sediment controls in accordance with the following requirements to minimize the discharge of pollutants in storm water from construction activities.

2.2.1. Provide and maintain natural buffers and/or equivalent erosion and sediment controls when a water of the state is located within 50 feet of the site's earth disturbances. Additional guidance for buffers is provided in Appendix A.

- a. Compliance Alternatives. For any discharges to waters of the State located within 50 feet of your site's earth disturbances, you must comply with one of the following alternatives:
 - (1) Provide and maintain a 50-foot undisturbed natural buffer; or
 - (2) Provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by erosion and sediment controls that achieve, in combination, the sediment load reduction equivalent to a 50-foot undisturbed natural buffer; or
 - (3) If infeasible to provide and maintain an undisturbed natural buffer of any size, implement erosion and sediment controls to achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.

- b. See Appendix A, Part A.2.2. for exceptions to the compliance alternatives.

2.2.2. Preserve naturally vegetated areas where possible and, if feasible, direct storm water to these areas to maximize storm water infiltration and filtering to reduce pollutant discharges.

2.2.3. Install sediment controls along any perimeter areas of the site that will receive pollutant discharges.

- a. Remove sediment before it has accumulated to the point where the control has become ineffective. Often that is one-half of the above-ground height of any perimeter control.
- b. **Exception.** For areas at "linear construction sites" (as defined in Part 10) where perimeter controls are infeasible (e.g., due to a limited or restricted right-of-way), implement other practices as necessary to minimize pollutant discharges to perimeter areas of the site.

2.2.4. Minimize sediment track-out.

- a. **Restrict vehicle use to properly designated exit points;**
- b. Use appropriate stabilization techniques at all points that exit onto paved roads³.
 - (1) **Exception:** Stabilization is not required for exit points at linear utility construction sites that are used only episodically and for very short durations over the life of the project, provided other exit point controls⁴ are implemented to minimize sediment track-out;

³ An example of appropriate stabilization techniques is the use of aggregate stone with an underlying geotextile or non-woven filter fabric, and turf mats.

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

- c. Implement additional track-out controls⁵ as necessary to ensure that sediment removal occurs prior to vehicle exit; and
- d. Where sediment has been tracked-out from your site onto paved roads, sidewalks, or other paved areas outside of your site, you must remove deposited sediment before it accumulates significantly and is tracked beyond the immediate vicinity of the project. Frequency of removal is dependent on site conditions, whatever is necessary to control off site tracking. . Remove the track-out by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal. You are prohibited from hosing or sweeping tracked-out sediment into any storm water conveyance, storm drain inlet, or water of the state⁶.

2.2.5. Manage stockpiles or land clearing debris piles composed, in whole or in part, of sediment and/or soil:

- a. Locate the piles outside of any natural buffers established under Part 2.2.1 and away from any storm water conveyances, drain inlets, and areas where storm water flow is concentrated;
- b. Install a sediment barrier along all downgradient perimeter areas;⁷
- c. For piles that will be unused for 14 or more days and are stored in areas that are being inspected at a reduced frequency due to temporary stabilization or frozen conditions (Part 4.4.1. and 4.4.3.), provide cover⁸ or appropriate temporary stabilization (consistent with Part 2.2.14);
- d. You are prohibited from hosing down or sweeping soil or sediment accumulated on pavement or other impervious surfaces into any storm water conveyance, storm drain inlet, or water of the state.
- e. Where practicable, contain and securely protect from wind.

2.2.6. Minimize dust. On areas of exposed soil, minimize the generation of dust through the appropriate application of water or other dust suppression techniques.

2.2.7. Minimize steep slope disturbances. Minimize the disturbance of “steep slopes” (as defined in Part 10).

2.2.8. Preserve native topsoil,⁹ unless infeasible.

⁴ Examples of other exit point controls include preventing the use of exit points during wet periods; minimizing exit point use by keeping vehicles on site to the extent possible; limiting exit point size to the width needed for vehicle and equipment usage; using scarifying and compaction techniques on the soil; and avoiding establishing exit points in environmentally sensitive areas (e.g., karst areas; steep slopes).

⁵ Examples of additional track-out controls include the use of wheel washing, rumble strips, and rattle plates.

⁶ Fine grains that remain visible (i.e., staining) on the surfaces of off-site streets, other paved areas, and sidewalks after you have implemented sediment removal practices are not a violation of Part 2.2.4.

⁷ Examples of sediment barriers include berms, dikes, fiber rolls, silt fences, sandbags, gravel bags, or straw bale.

⁸ Examples of cover include tarps, blown straw and hydromulching.

⁹ Stockpiling topsoil at off-site locations, or transferring topsoil to other locations, is an example of a practice that is consistent with the requirements in Part 2.2.8. Preserving native topsoil is not required where the intended function of a specific area of the site dictates that the topsoil be disturbed or removed. For example, some sites may be designed to be highly impervious after construction, and therefore little or no vegetation is intended to remain, or may not have space to stockpile native topsoil on site for later use, in which case, it may not be feasible to preserve topsoil.

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

2.2.9. Minimize soil compaction¹⁰ in areas of your site where final vegetative stabilization will occur or where infiltration practices will be installed:

- a. Restrict vehicle and equipment use in these locations to avoid soil compaction; and
- b. Before seeding or planting areas of exposed soil that have been compacted, use techniques that rehabilitate and condition the soils as necessary to support vegetative growth.

2.2.10. Protect storm drain inlets.

- a. Install inlet protection measures that remove sediment from discharges prior to entry into any storm drain inlet that carries storm water flow from your site to a surface water of the state, provided you have authority to access the storm drain inlet;¹¹ and
- b. Clean, or remove and replace, the protection measures as sediment accumulates, the filter becomes clogged, and/or performance is compromised. Where there is evidence of sediment accumulation adjacent to the inlet protection measure, remove the deposited sediment by the end of the same business day in which it is found.

2.2.11. Minimize erosion of storm water conveyance channels and their embankments, outlets, adjacent streambanks, slopes, and downstream waters. Use erosion controls and velocity dissipation devices¹² within and along the length of any storm water conveyance channel and at any outlet to slow down runoff to minimize erosion.

2.2.12. If you install a sediment basin or similar impoundment:

- a. Situate the basin or impoundment outside of any water of the state and any natural buffers established under Part 2.2.1;
- b. Design the basin or impoundment to avoid collecting water from wetlands;
- c. Design the basin or impoundment to provide storage for either:
 - (1) The calculated volume of runoff from a 2-year, 24-hour storm; or
 - (2) 3,600 cubic feet per acre drained.
- d. Utilize outlet structures that withdraw water from near the surface of the sediment basin or similar impoundment, unless infeasible;¹³
- e. Use erosion controls and velocity dissipation devices to prevent erosion at inlets and outlets; and
- f. Remove accumulated sediment to maintain at least one-half of the design capacity and conduct all other appropriate maintenance to ensure the basin or impoundment remains in effective operating condition.

¹⁰ Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted.

¹¹ Inlet protection measures can be removed in the event of flood conditions or to prevent erosion

¹² Examples of velocity dissipation devices include check dams, sediment traps, riprap, and grouted riprap at outlets.

¹³ The circumstances in which it is infeasible to design outlet structures in this manner are rare. A possible exception is dealing with or treating for temperature, but there may be other reasons. If you determine that it is infeasible to meet this requirement, you must provide documentation in your SWPPP to support your determination, including the specific conditions or time periods when this exception will apply.

2.2.13. If using treatment chemicals (e.g., polymers, flocculants, coagulants):

- a. **Use conventional erosion and sediment controls before and after the application of treatment chemicals.** Chemicals may only be applied where treated storm water is directed to a sediment control (e.g., sediment basin, perimeter control) before discharge.
- b. **Select appropriate treatment chemicals.** Chemicals must be appropriately suited to the types of soils likely to be exposed during construction and present in the discharges being treated (i.e., the expected turbidity, pH, and flow rate of storm water flowing into the chemical treatment system or area).
- c. **Minimize discharge risk from stored chemicals.** Store all treatment chemicals in leak- proof containers that are kept under storm-resistant cover and surrounded by secondary containment structures (e.g., spill berms, decks, spill containment pallets), or provide equivalent measures designed and maintained to minimize the potential discharge of treatment chemicals in storm water or by any other means (e.g., storing chemicals in a covered area, having a spill kit available on site and ensuring personnel are available to respond expeditiously in the event of a leak or spill).
- d. **Comply with state/local requirements.** Comply with applicable state and local requirements regarding the use of treatment chemicals.
- e. **Use chemicals in accordance with good engineering practices and specifications of the chemical provider/supplier.** Use treatment chemicals and chemical treatment systems in accordance with good engineering practices, and with dosing specifications and sediment removal design specifications provided by the provider/supplier of the applicable chemicals, or document in your SWPPP specific departures from these specifications and how they reflect good engineering practice. Consider changing site conditions that may affect dosing levels such as temperature.
- f. **Ensure proper training.** Ensure that all persons who handle and use treatment chemicals at the construction site are provided with appropriate, product-specific training. Among other things, the training must cover proper dosing requirements.
- g. **Perform additional measures specified by DWQ for the authorized use of cationic chemicals.** If you have been authorized to use cationic chemicals at your site pursuant to Part 1.1.4.c, you must perform all additional measures as conditioned by your authorization to ensure that the use of such chemicals will not cause an exceedance of water quality standards or harm fish populations.

2.2.14. Stabilize exposed portions of the site. Implement and maintain stabilization measures (e.g., seeding protected by erosion controls until vegetation is established, sodding, mulching, erosion control blankets, hydromulch, gravel) that minimize erosion from exposed portions of the site in accordance with Parts 2.2.14.a and 2.2.14.b.

a. Stabilization Deadlines:

- (1) Initiate the installation of stabilization measures in any areas of exposed soil where construction activities have permanently ceased or will be temporarily inactive for 14 or more calendar days as soon as possible and prior to the end of the 14th day of inactivity; and

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

- (2) Complete the installation of stabilization measures as soon as practicable, but no later than 14 calendar days after stabilization has been initiated.¹⁴

- (3) **Exceptions:**

- (i) Arid, semi-arid, and drought-stricken areas¹⁵ (as defined in Part 10). Where a project is an arid, semi-arid, or a seasonally dry period or a period in which drought is occurring, and vegetative stabilization measures are being used:

- (1) Initiate as soon as practicable and, within 14 calendar days of a temporary or permanent cessation of work in any portion of your site, complete the installation of temporary non-vegetative stabilization measures to the extent necessary to prevent erosion;¹⁶
- (2) As soon as practicable, given conditions or circumstances on the site, complete all activities necessary to seed or plant the area to be stabilized; and
- (3) If construction is occurring during the seasonally dry period¹⁷, indicate in your SWPPP the beginning and ending dates of the seasonally dry period and your site conditions. Also include the schedule you will follow for initiating and completing vegetative stabilization.

- (ii) **Discharges to a sediment- or nutrient-impaired water** (a water having a TMDL identifying sediment or nutrients as the cause of impairment) or to a water that is high quality for antidegradation purposes (see part 3). Complete stabilization as soon as practicable, but no later than seven (7) calendar days after stabilization has been initiated.

- b. **Final Stabilization Criteria** (for any areas not covered by permanent structures):

- (i) Establish uniform, perennial vegetation (i.e., evenly distributed, without large bare areas) that provides 70 percent or more of the vegetative cover that was provided by vegetation prior to commencing earth-disturbing activities; and/or
- (ii) Implement permanent non-vegetative stabilization measures¹⁸ to provide effective cover.
- (iii) **Exceptions:**
 - (1) **Arid, semi-arid, and drought-stricken areas** (as defined in Part 10). Final stabilization is met if the area has been seeded or planted in a manner that vegetation is expected to be

¹⁴ If vegetative stabilization measures are being implemented, stabilization is considered "installed" when all activities necessary to seed or plant the area are completed. If non-vegetative stabilization measures are being implemented, stabilization is considered "installed" when all such measures are implemented or applied.

¹⁵ If you are in an area receiving more than 20 inches of average annual precipitation that is in a drought (as determined by the NOAA drought predictor <http://www.cpc.ncep.noaa.gov/products/Drought/>) and a seasonal dry period, to comply with drought conditions you must identify the normal seasonal dry period in the SWPPP.

¹⁶ The extent necessary to prevent erosion in arid and semi-arid areas means for visually flat areas, stabilization is not required (roughly from 0 percent up to 5 percent) unless an erosion concern exists. Areas with slopes roughly 5 percent to 20 percent must have, at minimum, controls to reduce storm water velocities to a point that erosion is controlled. Over a 20 percent slope requires soil surface stabilization. The amount of stabilization provided must increase commensurately with increasingly steeper slopes.

¹⁷ The lower elevations of the Wasatch Front are semi-arid, the seasonal dry period for the Wasatch Front is June, July, and August.

¹⁸ Examples of permanent non-vegetative stabilization measures include riprap, gravel, gabions, and geotextiles.

established within three (3) years which provides 70 percent or more of the cover that was provided by vegetation prior to commencing earth disturbing activities and, to the extent necessary to prevent erosion on the seeded or planted area, non-vegetative erosion controls meet standards in footnote 16.

- (2) Disturbed areas on agricultural land that are restored to their preconstruction agricultural use. The Part 2.2.14b final stabilization criteria does not apply.
- (3) Areas that need to remain disturbed. In limited circumstances, stabilization may not be required if the intended function of a specific area of the site necessitates that it remain disturbed, and only the minimum area needed remains disturbed (e.g., dirt access roads, utility pole pads, areas being used for storage of vehicles, equipment, materials).

2.3. POLLUTION PREVENTION REQUIREMENTS: Implement pollution prevention controls in accordance with the following requirements to minimize the discharge of pollutants in storm water and to prevent the discharge of pollutants from spilled or leaked materials from construction activities.

2.3.1. For equipment and vehicle fueling and maintenance:

- a. Provide an effective means of eliminating the discharge of spilled or leaked chemicals, including fuels and oils, from these activities;¹⁹
- b. If applicable, comply with the Spill Prevention Control and Countermeasures (SPCC) requirements in 40 CFR part 112 and Section 311 of the CWA;
- c. Ensure adequate supplies are available at all times to handle spills, leaks, and disposal of used liquids;
- d. Use drip pans and absorbents under or around leaky vehicles;
- e. Dispose of or recycle oil and oily wastes in accordance with other federal, state, tribal, or local requirements; and
- f. Clean up spills or contaminated surfaces immediately, using dry clean up measures (do not clean contaminated surfaces by hosing the area down), and eliminate the source of the spill to prevent a discharge or a continuation of an ongoing discharge.

2.3.2. For equipment and vehicle washing:

- a. Provide an effective means of minimizing the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other types of wash waters;²⁰

¹⁹ Examples of effective means include:

- Locating activities away from waters of the state and storm water inlets or conveyances so that storm water coming into contact with these activities cannot reach waters of the state;
- Providing secondary containment (e.g., spill berms, decks, spill containment pallets) and cover where appropriate; and
- Having a spill kit available on site and ensuring personnel are available to respond expeditiously in the event of a leak or spill.

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

- b. Ensure there is no discharge of soaps, solvents, or detergents in equipment and vehicle wash water; and
- c. For storage of soaps, detergents, or solvents, provide either (1) cover (e.g., plastic sheeting, temporary roofs) to minimize the exposure of these detergents to precipitation and to storm water, or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas.

2.3.3. For storage, handling, and disposal of building products and materials:

- a. For building materials and building products²¹ that have the potential to mobilize or release pollutants, provide either (1) cover (e.g., plastic sheeting, temporary roofs) to minimize the exposure of these products to precipitation and to storm water, or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas.
- b. **For pesticides, herbicides, insecticides, fertilizers, and landscape materials:**
 - (1) In storage areas, provide either (1) cover (e.g., plastic sheeting, temporary roofs) to minimize the exposure of these chemicals to precipitation and to storm water, or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas; and
 - (2) Comply with all application and disposal requirements included on the registered pesticide, herbicide, insecticide, and fertilizer label (see also Part 2.3.5).
- c. **For diesel fuel, oil, hydraulic fluids, other petroleum products, and other chemicals:**
 - (1) Store chemicals in water-tight containers, and provide either (1) cover (e.g., plastic sheeting, temporary roofs) to minimize the exposure of these containers to precipitation and to storm water, or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas (e.g., having a spill kit available on site and ensuring personnel are available to respond expeditiously in the event of a leak or spill), or provide secondary containment (e.g., spill berms, decks, spill containment pallets); and
 - (2) Clean up spills immediately, using dry clean-up methods where possible, and dispose of used materials properly. You are prohibited from hosing the area down to clean surfaces or spills. Eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge.
- d. **For hazardous or toxic wastes:**²²
 - (1) Separate hazardous or toxic waste from construction and domestic waste;
 - (2) Store waste in sealed containers, which are constructed of suitable materials to prevent leakage and corrosion, and which are labeled in accordance with applicable Resource

²⁰ Examples of effective means include locating activities away from waters of the state and storm water inlets or conveyances and directing wash waters to a sediment basin or sediment trap, using filtration devices, such as filter bags or sand filters, or using other similarly effective controls.

²¹ Examples of building materials and building products typically present at construction sites include asphalt sealants, copper flashing, roofing materials, adhesives, concrete admixtures, and gravel and mulch stockpiles.

²² Examples of hazardous or toxic waste that may be present at construction sites include paints, caulks, sealants, fluorescent light ballasts, solvents, petroleum-based products, wood preservatives, additives, curing compounds, and acids.

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

Conservation and Recovery Act (RCRA) requirements and all other applicable federal, state, tribal, or local requirements;

- (3) Store all outside containers within appropriately-sized secondary containment (e.g., spill berms, decks, spill containment pallets) to prevent spills from being discharged, or provide a similarly effective means designed to prevent the discharge of pollutants from these areas (e.g., storing chemicals in a covered area, having a spill kit available on site);
- (4) Dispose of hazardous or toxic waste in accordance with the manufacturer's recommended method of disposal and in compliance with federal, state, tribal, and local requirements;
- (5) Clean up spills immediately, using dry clean-up methods, and dispose of used materials properly. You are prohibited from hosing the area down to clean surfaces or spills. Eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge; and
- (6) Follow all other federal, state, tribal, and local requirements regarding hazardous or toxic waste.

e. For construction and domestic wastes:²³

- (1) Provide waste containers (e.g., dumpster, trash receptacle) of sufficient size and number to contain construction and domestic wastes;
- (2) Provide containment or cover for waste that is blowable or that can leach nutrients, metals, pesticides, herbicides, oil, grease, bacteria, or other pollutants;
- (3) On business days, clean up and dispose of waste in designated waste containers; and
- (4) Clean up immediately if containers overflow.

f. For sanitary waste, position portable toilets so that they are secure and will not be tipped or knocked over. Locate them away from waters of the state and, when possible, at least 10 feet from any storm water conveyance, inlet, curb and gutter, or conduit to a waterway. If it is not possible to maintain at least 10 feet of separation, evaluate the need for additional controls such as secondary containment, additional surface preparation, or berms and implement as appropriate.

2.3.4. For washing applicators and containers used for stucco, paint, concrete, form release oils, curing compounds, or other materials:

- a. Direct wash water into a leak-proof container or leak-proof and lined pit designed so that no overflows can occur due to inadequate sizing or precipitation;
- b. Handle washout or cleanout wastes as follows:
 - (1) Do not dump liquid wastes in storm sewers or waters of the state;
 - (2) Dispose of liquid wastes properly²⁴; and

²³ Examples of construction and domestic waste include packaging materials, scrap construction materials, masonry products, timber, pipe and electrical cuttings, plastics, styrofoam, concrete, demolition debris; and other trash or building materials.

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

(3) Remove and dispose of hardened concrete waste consistent with your handling of other construction wastes in Part 2.3.3; and

- c. Locate any washout or cleanout activities as far away as possible from waters of the state and storm water inlets or conveyances, and, to the extent feasible, determine areas to be used for these activities and conduct such activities only in these areas.

2.3.5. For the application of fertilizers:

- a. Apply at a rate and in amounts consistent with manufacturer's specifications, or document in the SWPPP departures from the manufacturer specifications where appropriate in accordance with Part 7.3.5.b.(5)(ix);
- b. Apply at the appropriate time of year for your location, and preferably timed to coincide as closely as possible to the period of maximum vegetation uptake and growth;
- c. Avoid applying before heavy rains that could cause excess nutrients to be discharged;
- d. Never apply to frozen ground;
- e. Never apply to storm water conveyance channels; and
- f. Follow all other federal, state, tribal, and local requirements regarding fertilizer application.

2.3.6. Emergency Spill Notification Requirements: Discharges of toxic or hazardous substances from a spill or other release are prohibited (see Part 1.3). Where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR 110, 40 CFR 117, or 40 CFR 302 occurs during a 24-hour period, you must notify the National Response Center (NRC) at (800) 424-8802 in accordance with the requirements of 40 CFR 110, 40 CFR 117, and 40 CFR 302 as soon as you have knowledge of the release. You must also, within seven (7) calendar days of knowledge of the release, provide a description of the release, the circumstances leading to the release, and the date of the release. State, tribal, or local requirements may necessitate additional reporting of spills or discharges to local emergency response, public health, or drinking water supply agencies.

2.3.7. Construction Dewatering Requirements: Water or accumulated storm water that is removed from excavations, trenches, foundations, vaults, or other similar points of accumulation must be permitted by UPDES permit UTG070000 (UPDES Construction Dewatering and Hydrostatic Test Permit) in accordance with Part 1.2.5., unless it can be managed on site. An option for on site management is percolation of the water back into the ground (assuming it is uncontaminated).

²⁴ Proper disposal of liquid waste: 1) evaporate the waste and dispose of the residual solids with other solid waste, 2) have a liquid waste hauler for wash water haul it off and dispose of it, 3) settle it and pretreat it if necessary with arrangements to discharge the liquid waste to a treatment plant that has the ability to treat it and dispose of it.

3. WATER QUALITY-BASED EFFLUENT LIMITATIONS.

3.1. GENERAL EFFLUENT LIMITATION TO MEET APPLICABLE WATER QUALITY STANDARDS.

Discharges must be controlled as necessary to meet applicable water quality standards. DWQ expects that compliance with the conditions in this permit will result in storm water discharges being controlled as necessary to meet applicable water quality standards. If at any time you become aware, or DWQ determines, that discharges are not being controlled as necessary to meet applicable water quality standards, you must take corrective action as required in Parts 5.1 and 5.2, and document the corrective actions as required in Part 5.4.

DWQ may insist that you install additional controls on a site-specific basis, or require you to obtain coverage under an individual permit, if information in your NOI or from other sources indicates that your discharges are not controlled as necessary to meet applicable water quality standards. This includes situations where additional controls are necessary to comply with a wasteload allocation in an EPA-established or approved TMDL.

The NOI process requires that you determine if the watershed that you discharge into is impaired or if it is considered high quality. Only the first surface water you discharge to is used when determining if your discharge enters an impaired or high quality waterbody. For discharges that enter a storm water system prior to discharge, the first water of the state to which you discharge is the waterbody that receives the storm water discharge from the storm sewer system. Please refer to water quality information at <http://mapserv.utah.gov/surfacewaterquality/>

Each of these cases, impaired or high quality, may require an extra effort to maintain water quality standards. An impaired water body can have an approved TMDL (see Part 10 for definitions) or it can be on the list waiting a TMDL study. An EPA-approved TMDL is a water quality standard. If your project is in an area covered by an EPA-approved TMDL that has sediment or nutrients (particularly phosphorus) identified as the pollutant(s) of concern, you must provide an extra effort to prevent sediment from leaving the site. Nutrients are a component in topsoil from natural biotic systems. Nitrogen (a nutrient) is infused into the soil from biotic systems but also at times from the atmosphere during certain weather conditions. Some soils have phosphorus (a nutrient) from geologic formations in addition to biotic sources. Special efforts including site controls and management efforts must be employed for impaired or high quality waters, but especially for areas with TMDLs identifying sediment or nutrients as the pollutants of concern. Your SWPPP must show the special efforts you are taking for sensitive water bodies.

3.2. DISCHARGE LIMITATIONS FOR SITES DISCHARGING TO SENSITIVE WATERS²⁵

For any portion of the site that discharges to a sediment or nutrient-impaired water or to a water that is identified as impaired or high quality you must comply with the inspection frequency specified in 4.3 and you must comply with the stabilization deadline specified in Part 2.2.14.²⁶

²⁵ Your construction site will be considered to discharge to an impaired or high quality water if the first water to which you discharge is an impaired or high quality water for the pollutants contained in the discharge from your site. For discharges that enter a storm sewer system prior to discharge, the first water to which you discharge is the waterbody that receives the storm water discharge from the storm sewer system.

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

If you discharge to a water that is impaired for a parameter other than sediment or nutrients, you must address that parameter in your SWPPP if that pollutant has a presence in the construction process for your site. If the impaired parameter is naturally occurring in soils, it is assumed that the erosion control BMPs required by this permit will address the concern and it does not need to be addressed in the SWPPP as a pollutant source. You must deploy whatever control mechanisms that's needed to limit the discharge of that pollutant to meet water quality standards. This includes, if requested by DWQ, comparing the load discharged from the site for that pollutant to ensure it does not exceed a wasteload allocation for that pollutant in the applicable TMDL for the watershed.

²⁶ If you qualify for any of the reduced inspection frequencies in Part 4.4, you may conduct inspections in accordance with Part 4.4 for any portion of your site that discharges to a sensitive water.

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

4. SITE INSPECTION REQUIREMENTS.

4.1. PERSON(S) RESPONSIBLE FOR INSPECTING THE SITE. The person(s) inspecting your site may be a person on your staff or a third party you hire to conduct such inspections. You are responsible for ensuring that the person who conducts inspections is a “qualified person” and currently certified.

a. A “qualified person” is a person knowledgeable in the principles and practice of erosion and sediment controls and pollution prevention, who possesses the skills to assess conditions at the construction site that could impact storm water quality, and the skills to assess the effectiveness of any storm water controls selected and installed to meet the requirements of this permit, such as but not limited to the following:

- (1) Utah Registered Storm Water Inspector (RSI)
- (2) Certified Professional in Erosion and Sediment Control (CPESC)
- (3) Certified Professional in Storm Water Quality (CPSWQ)
- (4) Certified Erosion, Sediment, and Storm Water Inspector (CESSWI)
- (5) Certified Inspector of Sediment and Erosion Control (CISEC)
- (6) National Institute for Certification in Engineering Technologies, Erosion and Sediment Control, Level 3 (NICET)
- (7) Utah Department of Transportation Environmental Control Supervisor (ECS)

4.2. FREQUENCY OF INSPECTIONS.²⁷ At a minimum, you must conduct a site inspection in accordance with one of the two schedules listed below, unless you are subject to the Part 4.3 site inspection frequency for discharges to sensitive waters or qualify for a Part 4.4 reduction in the inspection frequency:

4.2.1. At least once every seven (7) calendar days; or

4.2.2. Once every 14 calendar days and within 24 hours of the occurrence of a storm event of 0.50 inches or greater, or the occurrence of runoff from snowmelt sufficient to cause a discharge.²⁸ To determine if a storm event of 0.50 inches or greater has occurred on your site, you must either keep a properly maintained rain gauge on your site, or obtain the storm event information from a weather station that is representative of your location. For any day of rainfall during normal business hours that measures 0.50 inches or greater, you must record the total rainfall measured for that day in accordance with Part 4.7.1.d.

4.3. INCREASE IN INSPECTION FREQUENCY FOR SITES DISCHARGING TO SENSITIVE WATERS. For any portion of the site that discharges to a sediment or nutrient-

²⁷ Inspections are only required during the site’s normal working hours.

²⁸ “Within 24 hours of the occurrence of a storm event” means that you must conduct an inspection within 24 hours once a storm event has produced 0.50 inches within a 24-hour period, even if the storm event is still continuing. Thus, if you have elected to inspect bi-weekly in accordance with Part 4.2.2 and there is a storm event at your site that continues for multiple days, and each day of the storm produces 0.50 inches or more of rain, you must conduct an inspection within 24 hours of the first day of the storm and within 24 hours after the end of the storm.

impaired water or to a high quality water (see Part 3), instead of the inspection frequency specified in Part 4.2, you must conduct inspections in accordance with the following inspection frequencies:

Once every seven (7) calendar days and within 24 hours of the occurrence of a storm event of 0.50 inches or greater, or the occurrence of runoff from snowmelt sufficient to cause a discharge. To determine if a storm event of 0.50 inches or greater has occurred on your site, you must either keep a properly maintained rain gauge on your site, or obtain the storm event information from a weather station that is representative of your location. For any day of rainfall during normal business hours that measures 0.50 inches or greater, you must record the total rainfall measured for that day in accordance with Part 4.7.1d.

4.4. REDUCTIONS IN INSPECTION FREQUENCY.

4.4.1. STABILIZED AREAS.

- a. **Temporarily Stabilized Areas.** You may reduce the frequency of inspections to twice per month for the first month, no more than 14 calendar days apart, then once per month in any area of your site where the stabilization steps in part 2.2.14.a. have been completed. If construction activity resumes in this portion of the site at a later date, the inspection frequency immediately increases to that required in Parts 4.2 and 4.3, as applicable. You must document the beginning and ending dates of this period in your SWPPP.
- b. **Permanently Stabilized Areas.** Inspections requirements are suspended.
- c. **Exception For “Linear Construction Sites”** (as defined in Part 10) where disturbed portions have undergone final stabilization at the same time active construction continues on others, you may reduce the frequency of inspections to twice per month for the first month, no more than 14 calendar days apart, in any area of your site where the stabilization steps in 2.2.14.a have been completed. After the first month, inspect once more within 24 hours of the occurrence of a storm event of 0.50 inches or greater. If there are no issues or evidence of stabilization problems, you may suspend further inspections. If “wash-out” of stabilization materials and/or sediment is observed, following re-stabilization, inspections must resume at the inspection frequency required in Part 4.4.1.a. Inspections must continue until final stabilization is visually confirmed following a storm event of 0.50 inches or greater.

4.4.2. ARID, SEMI-ARID (as defined in Part 10). For inspection frequencies (shown below) where it is required to inspect after a storm event, to determine if a storm event of 0.50 inches or greater has occurred on your site you must either keep a properly maintained rain gauge on your site or obtain the storm event information from a weather station that is representative of your location.

- a. **Arid Areas:** Inspections are required once a month and within 24 hours of the occurrence of a storm event of 0.50 inches or greater.
- b. **Semi-Arid Areas:** Inspections are the same as in parts 4.2.1 and 4.2.2 except for the seasonally dry times of the year where they go to once a month and within 24 hours of the occurrence of a

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

storm event of 0.50 inches or greater.²⁹ Where the inspection frequency changes to once a month the SWPPP must show the reference for the seasonally dry time period.

4.4.3. Frozen conditions

- a. If you are suspending construction activities due to frozen conditions, you may temporarily suspend inspections on your site until thawing conditions (as defined in Part 10) begin to occur if:
 - (1) Runoff is unlikely due to continuous frozen conditions that are likely to continue at your site for at least three (3) months based on historic seasonal averages. If unexpected weather conditions (such as above freezing temperatures or rain events) make discharges likely, you must immediately resume your regular inspection frequency as described in Parts 4.2 and 4.3, as applicable;
 - (2) Land disturbances have been suspended; and
 - (3) Disturbed areas of the site have been stabilized, where possible, in accordance with Part 2.2.14.a.
- b. If you are still conducting construction activities during frozen conditions, you may reduce your inspection frequency to once per month if:
 - (1) Runoff is unlikely due to continuous frozen conditions that are likely to continue at your site for at least three (3) months based on historic seasonal averages. If unexpected weather conditions (such as above freezing temperatures or rain events) make discharges likely, you must immediately resume your regular inspection frequency as described in Parts 4.2 and 4.3, as applicable; and
 - (2) Except for areas in which you are actively conducting construction activities, disturbed areas of the site have been stabilized in accordance with Part 2.2.14.a.

You must document the beginning and ending dates of this period in your SWPPP.

4.5. AREAS THAT MUST BE INSPECTED: During your site inspection, you must at a minimum inspect the following areas of your site:

- 4.5.1. All areas that have been cleared, graded, or excavated and that have not yet completed stabilization consistent with Part 2.2.14.a;
- 4.5.2. All storm water controls (including pollution prevention controls) installed at the site to comply with this permit;³⁰
- 4.5.3. Material, waste, borrow, and equipment storage and maintenance areas that are covered by this permit;
- 4.5.4. All areas where storm water typically flows within the site, including drainage ways designed to divert, convey, and/or treat storm water;

²⁹ The Seasonally dry period for the semi-arid areas on the Wasatch Front is June, July, and August. For other areas there are a few internet sites where it is possible to look up the annual rainfall for an area.

³⁰ This includes the requirement to inspect for sediment that has been tracked out from the site onto paved roads, sidewalks, or other paved areas consistent with Part 2.2.4.

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

- 4.5.5. All points of discharge from the site; and
- 4.5.6. All locations where stabilization measures have been implemented.
- 4.5.7. You are not required to inspect areas that, at the time of the inspection, are considered unsafe to your inspection personnel.
- 4.6. **REQUIREMENTS FOR INSPECTIONS;** During your site inspection, you must at a minimum:
 - 4.6.1. Check whether all storm water controls (i.e., erosion and sediment controls and pollution prevention controls) are properly installed, appear to be operational, and are working as intended to minimize pollutant discharges. Consider what has caused a BMP's failure if it is not operational;
 - 4.6.2. Check for the presence of conditions that could lead to spills, leaks, or other accumulations of pollutants on the site;
 - 4.6.3. Identify any locations where new or modified storm water controls are necessary to meet the requirements of Parts 2 and/or 3;
 - 4.6.4. Check for signs of visible erosion and sedimentation (i.e., sediment deposits) that have occurred and are attributable to your discharge at points of discharge and, if applicable, the banks of any waters of the state flowing within or immediately adjacent to the site;
 - 4.6.5. Identify any incidents of noncompliance observed;
 - 4.6.6. If a discharge is occurring during your inspection:
 - a. Identify all discharge points at the site; and
 - b. Observe and document the visual quality of the discharge, and take note of the characteristics of the storm water discharge, including color; odor; floating, settled, or suspended solids; foam; oil sheen; and other indicators of storm water pollutants.
 - 4.6.7. Based on the results of your inspection, complete any necessary maintenance under Part 2.1.4 and corrective action under Part 5.
- 4.7. **INSPECTION REPORT³¹**
 - 4.7.1. You must complete an inspection report within 24 hours of completing any site inspection. Each inspection report must include the following:
 - a. The inspection date;
 - b. The UPDES CGP permit tracking number;
 - c. Names and titles of personnel making the inspection;
 - d. A summary of your inspection findings, covering at a minimum the observations you made in accordance with Part 4.6, including any necessary maintenance or corrective actions;
 - e. If you are inspecting your site at the frequency specified in Part 4.2.2, Part 4.3, Part 4.4.1.c, Part 4.4.2.a, or Part 4.4.2.b and you conducted an inspection because of rainfall measuring 0.50

³¹ See DWQ construction storm water web page for ideas and examples of self-inspection forms.

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

inches or greater, you must include the applicable rain gauge or weather station readings that triggered the inspection; and

- f. If you determined that it is unsafe to inspect a portion of your site, you must describe the reason you found it to be unsafe and specify the locations to which this condition applies.

4.7.2. Each inspection report must be signed in accordance with 9.16(1)b. of this permit.

4.7.3. You must keep a copy, in paper or electronic form, of all inspection reports at the site or at an easily accessible location, so that it can be made available at the time of an on-site inspection or upon request by DWQ, a local municipality of jurisdiction, or by the EPA.

4.7.4. You must retain all inspection reports completed for this Part for at least three (3) years from the date that your permit coverage expires or is terminated.

4.8. INSPECTIONS BY DWQ MS4 OR EPA: You must allow an authorized representative of DWQ, the MS4 of jurisdiction or the EPA to conduct the following activities at reasonable times. To the extent that you are utilizing shared controls that are not on site to comply with this permit, you must make arrangements for DWQ to have access at all reasonable times to those areas where the shared controls are located.

4.8.1. Enter onto all areas of the site, including any construction support activity areas covered by this permit, any off-site areas where shared controls are utilized to comply with this permit, discharge locations, adjoining waterbodies, and locations where records are kept under the conditions of this permit;

4.8.2. Access and copy any records that must be kept under the conditions of this permit;

4.8.3. Inspect your construction site, including any construction support activity areas covered by this permit (see Part 1.2.2), any storm water controls installed and maintained at the site, and any off-site shared controls utilized to comply with this permit; and

4.8.4. Sample or monitor for the purpose of ensuring compliance.

5. CORRECTIVE ACTIONS

5.1. CONDITIONS TRIGGERING CORRECTIVE ACTION: You must take corrective action to address any of the following conditions identified at your site:

- 5.1.1.** A storm water control needs repair or replacement (beyond routine maintenance required under Part 2.1.4); or
- 5.1.2.** A storm water control necessary to comply with the requirements of this permit was never installed, or was installed incorrectly; or
- 5.1.3.** Your discharges are causing an exceedance of applicable water quality standards; or
- 5.1.4.** A prohibited discharge has occurred (see Part 1.3).

5.2. CORRECTIVE ACTION DEADLINES: For any corrective action triggering conditions in Part 5.1, you must:

- 5.2.1.** When site conditions warrant immediate attention, take all reasonable steps to minimize or prevent the discharge of pollutants until a permanent solution for the problem is installed and made operational;
- 5.2.2.** When the problem does not require a new or replacement control or significant repair, the corrective action must be completed by the close of the next business day;
- 5.2.3.** When the problem requires a new or replacement control or significant repair, the corrective action must be completed no later than seven (7) calendar days from the time of discovery. If it is infeasible to complete the installation or repair within seven (7) calendar days (e.g., due to availability of materials, excessive costs to expedite shipping or activities, or lengthy installation times) you must document in your records why it is infeasible and provide a reasonable correction schedule.

5.3. CORRECTIVE ACTION REQUIRED BY DWQ: You must comply with any corrective actions required by DWQ as a result of permit violations found during an inspection carried out under Part 4.8.

5.4. CORRECTIVE ACTION REPORT: For each corrective action taken in accordance with this Part, you must complete a report in accordance with the following:

- 5.4.1.** Within 24 hours of identifying the corrective action condition, document the specific condition and the date and time it was identified.
- 5.4.2.** Within 24 hours of the observed completion of a corrective action and in accordance with the deadlines in Part 5.2, document the actions taken to address the condition, including the date and whether any SWPPP modifications are required.
- 5.4.3.** Where these actions result in changes to any of the storm water controls or procedures documented in your SWPPP, you must modify your SWPPP (and SWPPP map) accordingly within seven (7) calendar days of completing this work.
- 5.4.4.** You must keep a copy of all corrective action reports at the site or at an easily accessible location, so that it can be made available at the time of an on-site inspection or upon request by

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

DWQ. Corrective action reports may be maintained and made available in paper or electronically.

- 5.4.5.** You must retain all corrective action reports completed for this Part for at least three (3) years from the date that your permit coverage expires or is terminated.

6. STAFF TRAINING REQUIREMENTS

Each operator, or group of multiple operators, must assemble a “storm water team” to carry out compliance activities associated with the requirements in this permit.

6.1. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES, you must ensure that the following personnel³² on the storm water team understand the requirements of this permit and their specific responsibilities with respect to those requirements:

6.1.1. Personnel who are responsible for the design, installation, maintenance, and/or repair of storm water controls (including pollution prevention controls);

6.1.2. Personnel responsible for the application and storage of treatment chemicals (if applicable);

6.1.3. Personnel who are responsible for conducting inspections as required in Part 4.1; and

6.1.4. Personnel who are responsible for taking corrective actions as required in Part 5.

6.2. YOU ARE RESPONSIBLE FOR ENSURING THAT ALL ACTIVITIES ON THE SITE COMPLY with the requirements of this permit. You are not required to provide formal training for subcontractors or other outside service providers, but you must ensure that such personnel understand any requirements of this permit that may be affected by the work they are subcontracted to perform. You should document that you have explained or have given subcontractors information about how to perform their work in compliance with the SWPPP.

6.3. AT A MINIMUM, MEMBERS OF THE STORM WATER TEAM MUST BE TRAINED to understand the following if related to the scope of their job duties (e.g., only personnel responsible for conducting inspections need to understand how to conduct inspections):

6.3.1. The permit deadlines associated with installation, maintenance, and removal of storm water controls and with stabilization;

6.3.2. The location of all storm water controls on the site required by this permit and how they are to be maintained;

6.3.3. The proper procedures to follow with respect to the permit’s pollution prevention requirements; and

6.3.4. When and how to conduct inspections, record applicable findings, and take corrective actions.

6.4. EACH MEMBER OF THE STORM WATER TEAM MUST HAVE EASY ACCESS TO AN ELECTRONIC OR PAPER COPY of applicable portions of this permit, the most updated copy of your SWPPP, and other relevant documents or information that must be kept with the SWPPP.

³² If the person requiring training is a new employee who starts after you commence construction activities, you must ensure that this person has the proper understanding as required above prior to assuming particular responsibilities related to compliance with this permit.

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

7. STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

7.1. GENERAL REQUIREMENTS

All operators associated with a construction site under this permit must develop a SWPPP consistent with the requirements in Part 7 prior to their submittal of the NOI.³³ The SWPPP must be kept up-to-date throughout coverage under this permit.

If a SWPPP was prepared under a previous version of this permit, the operator must review and update the SWPPP to ensure that this permit's requirements are addressed prior to submitting an NOI for coverage under this permit.

7.2. SWPPP WRITER/REVIEWER CERTIFICATION REQUIREMENT Beginning January 1, 2021, a "qualified" SWPPP writer must write or certify SWPPPs for all projects disturbing greater than 5 acres, including small construction projects (1 to 5 acres) that have a perennial surface water within 50 feet of the project, or having a steep slope (70% or 35 degrees or more) with an elevation change from the slope of 10 feet or more (at any point during the time of construction – not including stock piles). A "qualified" SWPPP writer is knowledgeable in the principles and practices that must be considered in the development of a SWPPP. Acceptable qualifications include but are not limited to:

- a. Utah Registered SWPPP Writer (RSW)
- b. Licensed Professional Engineer (PE) in a related field or Professional Geologist (PG)
- c. Certified Professional in Erosion and Sediment Control (CPESC)
- d. Certified Professional in Storm Water Quality (CPSWQ)
- e. National Institute for Certification in Engineering Technologies, Erosion and Sediment Control, Level 3 (NICET)

7.3. SWPPP CONTENTS. At a minimum, the SWPPP must include the information specified in this Part and as specified in other parts of this permit.

7.3.1. Storm Water Team. Identify the personnel (by name or position) that are part of the storm water team, as well as their individual responsibilities, including which members are responsible for conducting inspections.

7.3.2. Nature of Construction Activities.³⁴ Include the following:

- a. A description of the nature of your construction activities, including the age or dates of past renovations for structures that are undergoing demolition;
- b. The size of the property (in acres or length in miles if a linear construction site);

³³ The SWPPP does not establish the effluent limits that apply to your site's discharges; these limits are established in this permit in Parts 2 and 3.

³⁴ If plans change due to unforeseen circumstances or for other reasons, the requirement to describe the sequence and estimated dates of construction activities is not meant to "lock in" the operator to meeting these dates. When departures from initial projections are necessary, this should be documented in the SWPPP itself, or in associated records, as appropriate.

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

- c. The total area expected to be disturbed by the construction activities including on-site and off-site construction support activity areas (to the nearest quarter acre or nearest quarter mile if a linear construction site);
- d. A description of any on-site and off-site construction support activity areas covered by this permit (see Part 1.2.2);
- e. A description and projected schedule for the following:
 - (1) Commencement of construction activities in each portion of the site, including clearing and grubbing, mass grading, demolition activities, site preparation (i.e., excavating, cutting and filling), final grading, and creation of soil and vegetation stockpiles requiring stabilization;
 - (2) Temporary or permanent cessation of construction activities in each portion of the site;
 - (3) Temporary or final stabilization of exposed areas for each portion of the site; and
 - (4) Removal of temporary storm water controls and construction equipment or vehicles, and the cessation of construction-related pollutant-generating activities.
- f. A list and description of all pollutant-generating activities³⁵ on the site. For each pollutant-generating activity, include an inventory of pollutants or pollutant constituents (e.g., sediment, fertilizers, pesticides, paints, caulks, sealants, fluorescent light ballasts, contaminated substrates, solvents, fuels) associated with that activity, which could be discharged in storm water from your construction site. You must take into account where potential spills and leaks could occur that contribute pollutants to storm water discharges, and any known hazardous or toxic substances, such as PCBs and asbestos, that will be disturbed or removed during construction;
- g. Business days and hours for the project;

7.3.3. Site Map. Include a legible map, or series of maps, showing the following features of the site:

- a. Boundaries of the property;
- b. Locations where construction activities will occur, including:
 - (1) Locations where earth-disturbing activities will occur (note any phasing), including any demolition activities;
 - (2) Approximate slopes before and after major grading activities (note any steep slopes (as defined in Part 10));
 - (3) Locations where sediment, soil, or other construction materials will be stockpiled;
 - (4) Any water of the state crossings;
 - (5) Designated points where vehicles will exit onto paved roads;
 - (6) Locations of structures and other impervious surfaces upon completion of construction; and
 - (7) Locations of on-site and off-site construction support activity areas covered by this permit (see Part 1.2.2).

³⁵ Examples of pollutant-generating activities include paving operations; concrete, paint, and stucco washout and waste disposal; solid waste storage and disposal; and dewatering operations

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

- c. Locations of all waters of the state within one mile downstream of the site's discharge point. Also identify if any are listed as impaired or high quality water;
- d. Type and extent of pre-construction cover on the site (e.g., vegetative cover, forest, pasture, pavement, structures);
- e. Drainage patterns of storm water and authorized non-storm water before and after major grading activities;
- f. Storm water and authorized non-storm water discharge locations, including:
 - (1) Locations where storm water and/or authorized non-storm water will be discharged to storm drain inlets;³⁶ and
 - (2) Locations where storm water or authorized non-storm water will be discharged directly to waters of the state.
- g. Locations of all potential pollutant-generating activities identified in Part 7.3.2.g;
- h. Locations of storm water controls, including natural buffer areas and any shared controls utilized to comply with this permit; and
- i. Locations where polymers, flocculants, or other treatment chemicals will be used and stored.

7.3.4. Non-Storm water Discharges. Identify all authorized non-storm water discharges in Part 1.2.3 that will or may occur.

7.3.5. Description of Storm water Controls.

- a. For each of the Part 2.2 erosion and sediment control effluent limits, Part 2.3 pollution prevention effluent limits as applicable to your site, you must include the following:
 - (1) A description of the specific control(s) to be implemented to meet the effluent limit;
 - (2) Any applicable storm water control design specifications (including references to any manufacturer specifications and/or erosion and sediment control manuals/ordinances relied upon);³⁷
 - (3) Routine storm water control maintenance specifications; and
 - (4) The projected schedule for storm water control installation/implementation.
- b. You must also include any of the following additional information as applicable.
 - (1) **Natural buffers** and/or equivalent sediment controls (see Part 2.2.1 and Part 10). You must include the following:
 - (i) The compliance alternative to be implemented;

³⁶ The requirement to show storm drain inlets in the immediate vicinity of the site on your site map only applies to those inlets that are easily identifiable from your site or from a publicly accessible area immediately adjacent to your site.

³⁷ Design specifications may be found in manufacturer specifications and/or in applicable erosion and sediment control manuals or ordinances. Any departures from such specifications must reflect good engineering practice and must be explained in the SWPPP.

- (ii) If complying with alternative 2, the width of natural buffer retained;
 - (iii) If complying with alternative 2 or 3, the erosion and sediment control(s) you will use to achieve an equivalent sediment reduction, and any information you relied upon to demonstrate the equivalency;
 - (iv) If complying with alternative 3, a description of why it is infeasible for you to provide and maintain an undisturbed natural buffer of any size;
 - (v) For “linear construction sites” where it is infeasible to implement compliance alternative 1, 2, or 3, a rationale for this determination, and a description of any buffer width retained and/or supplemental erosion and sediment controls installed; and
 - (vi) A description of any disturbances that are exempt under Part 2.2.1 that occur within 50 feet of a water of the state.
- (2) **Perimeter controls for a “linear construction site”** (see Part 2.2.3). For areas where perimeter controls are not feasible, include documentation to support this determination and a description of the other practices that will be implemented to minimize discharges of pollutants in storm water associated with construction activities.
- Note: Routine maintenance specifications for perimeter controls documented in the SWPPP must include the Part 2.2.3.a requirement that sediment be removed before it has accumulated to one-half of the above-ground height of any perimeter control.
- (3) **Sediment track-out controls** (see Parts 2.2.4.b and 2.2.4.c). Document the specific stabilization techniques and/or controls that will be implemented to remove sediment prior to vehicle exit.
- (4) **Sediment basins** (see Part 2.2.12). In circumstances where it is infeasible to utilize outlet structures that withdraw water from the surface, include documentation to support this determination, including the specific conditions or time periods when this exception will apply.
- (5) **Treatment chemicals** (see Part 2.2.13), you must include the following:
- (i) A listing of the soil types that are expected to be exposed during construction in areas of the project that will drain to chemical treatment systems. Also include a listing of soil types expected to be found in fill material to be used in these same areas, to the extent you have this information prior to construction;
 - (ii) A listing of all treatment chemicals to be used at the site and why the selection of these chemicals is suited to the soil characteristics of your site;
 - (iii) If DWQ authorized you to use cationic treatment chemicals for sediment control, include the specific controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will not lead to an exceedance of water quality standards, or harm to aquatic life;
 - (iv) The dosage of all treatment chemicals to be used at the site or the methodology to be used to determine dosage;

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

- (v) Information from any applicable Safety Data Sheet (SDS);
 - (vi) Schematic drawings of any chemically enhanced storm water controls or chemical treatment systems to be used for application of the treatment chemicals;
 - (vii) A description of how chemicals will be stored consistent with Part 2.2.13.c;
 - (viii) References to applicable local requirements affecting the use of treatment chemicals, and copies of applicable manufacturer's specifications regarding the use of your specific treatment chemicals and/or chemical treatment systems; and
 - (ix) A description of the training that personnel who handle and apply chemicals have received prior to permit coverage, or will receive prior to use of the treatment chemicals at your site.
- (6) **Stabilization measures** (see Part 2.2.14). You must include the following:
- (i) The specific vegetative and/or non-vegetative practices that will be used;
 - (ii) The stabilization deadline that will be met in accordance with Part 2.2.14.a(1)-(2);
 - (iii) It is important to meet the deadlines during the wet times of the year (if the area has a wet time of the year). During the dry times of the year the significance of stabilization deadlines is less important.
- (7) **Spill prevention and response procedures** (see Part 1.3.5 and Part 2.3). You must include the following:
- (i) Procedures for expeditiously stopping, containing, and cleaning up spills, leaks, and other releases. Identify the name or position of the employee(s) responsible for detection and response of spills or leaks; and
 - (ii) Procedures for notification of appropriate facility personnel, emergency response agencies, and regulatory agencies where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity consistent with Part 2.3.6 and established under either 40 CFR 110, 40 CFR 117, or 40 CFR 302, occurs during a 24-hour period. Contact information must be in locations that are readily accessible and available to all employees.
 - (iii) You may also reference the existence of Spill Prevention Control and Countermeasure (SPCC) plans developed for the construction activity under Part 311 of the CWA, or spill control programs otherwise required by an UPDES permit for the construction activity, provided that you keep a copy of that other plan on site or electronically available.³⁸
- (8) **Waste management procedures** (see Part 2.3.3). Describe the procedures you will follow for handling, storing and disposing of all wastes generated at your site consistent with state and local requirements, including clearing and demolition debris, removal of spoil (excess dirt) from the site, construction and domestic waste, hazardous or toxic waste, and sanitary waste.

³⁸ Even if you already have an SPCC or other spill prevention plan in existence, your plans will only be considered adequate if they meet all of the requirements of this Part, either as part of your existing plan or supplemented as part of the SWPPP

- (9) **Application of fertilizers** (see Part 2.3.5). Document any departures from the manufacturer specifications where appropriate.

7.3.6. Procedures for Inspection, Maintenance, and Corrective Action. Describe the procedures you will follow for maintaining your storm water controls, conducting site inspections, and, where necessary, taking corrective actions, in accordance with Part 2.1.4, Part 4, and Part 5 of this permit. Also include:

- a. Personnel responsible for conducting inspections;
- b. The inspection schedule you will follow, which is based on whether your site is subject to Part 4.2 or Part 4.3, or whether your site qualifies for any of the reduced inspection frequencies in Part 4.4;
- c. If you will be conducting inspections in accordance with the inspection schedule in Part 4.2.2, or Part 4.3, the location of the rain gauge or the address of the weather station you will be using to obtain rainfall data;
- d. If you will be reducing your inspection frequency in accordance with Part 4.4.3, the beginning and ending dates of frozen conditions on your site; and
- e. Any maintenance or inspection checklists or other forms that will be used.

7.3.7. Staff Training. Include documentation that the required personnel were, or will be, trained in accordance with Part 6.

7.3.8. Compliance with Other Requirements.

- a. **Utah Water Quality Act Underground Injection Control (UIC) Program Requirements for Certain Subsurface Storm Water Controls.** If you are using any of the following storm water controls at your site, as they are described below, you must document any contact you have had with DWQ for implementing the requirements for underground injection wells in the Safe Drinking Water Act and DEQ's implementing regulations at UAC R317-7. In addition there may be local requirements related to such structures. Such controls (below) would generally be considered Class V UIC wells and all Class V UIC wells must be reported to DWQ for an inventory:
- b. Infiltration trenches (if storm water is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system);
- c. Commercially manufactured pre-cast or pre-built proprietary subsurface detention vaults, chambers, or other devices designed to capture and infiltrate storm water flow; and
- d. Drywells, seepage pits, or improved sinkholes (if storm water is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system).

7.3.9. SWPPP Certification. You must sign and date your SWPPP in accordance with 9.16(1)a.

7.3.10. Post-Authorization Additions to the SWPPP. Once you are authorized for coverage under this permit, you must include the following documents as part of your SWPPP:

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

- a. A copy of your NOI submitted to DWQ, the Authorization to Discharge Letter, along with any correspondence exchanged between you and DWQ related to coverage under this permit;
- b. A copy of this permit (an electronic copy easily available to the storm water team is also acceptable).

7.4. ON-SITE AVAILABILITY OF YOUR SWPPP

- 7.4.1. You must keep a current copy of your SWPPP at the site or at an easily accessible location so that it can be made available at the time of an on-site inspection or upon request by DWQ, the EPA, or an MS4. The SWPPP can be stored electronically as long as personnel on-site can access it and make it available for inspector review.

7.5. SWPPP MODIFICATIONS.

- 7.5.1. You must modify your SWPPP, including the site map(s), within seven (7) days of any of the following conditions:
- a. Whenever you make changes to your construction plans, storm water controls, or other activities at your site that are no longer accurately reflected in your SWPPP. This includes changes made in response to corrective actions triggered under Part 5. You do not need to modify your SWPPP if the estimated dates in Part 7.3.2.f change during the course of construction;
 - b. To reflect areas on your site map where operational control has been transferred (e.g., new general contractor or owner), note the change and the date of transfer since initiating permit coverage;
 - c. If inspections or investigations by DWQ or its authorized representatives determine that SWPPP modifications are necessary for compliance with this permit;
 - d. Where DWQ determines it is necessary to install and/or implement additional controls at your site in order to meet the requirements of this permit, the following must be included in your SWPPP:
 - (1) A copy of any correspondence describing such measures and requirements; and
 - (2) A description of the controls that will be used to meet such requirements.
 - e. To reflect any revisions to applicable federal, state, tribal, or local requirements that affect the storm water controls implemented at the site; and
 - f. If applicable, if a change in chemical treatment systems or chemically enhanced storm water control is made, including use of a different treatment chemical, different dosage rate, or different area of application.
- 7.5.2. You must maintain records showing the dates of all SWPPP modifications. The records must include the name of the person authorizing each change (see Part 7.5.1 above) and a brief summary of all changes.
- 7.5.3. All modifications made to the SWPPP consistent with Part 7.5 must be authorized by a person identified in 9.16.(1)b.
- 7.5.4. Upon determining that a modification to your SWPPP is required, you must notify any persons or subcontractors that may be impacted by the change to the SWPPP.

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

8. HOW TO TERMINATE COVERAGE. Until you terminate coverage under this permit, you must comply with all conditions and effluent limitations in the permit. To terminate permit coverage, you must submit to DWQ a complete and accurate Notice of Termination (NOT, the NOT can be done online in the same account that the NOI was taken out in), which certifies that you have met the requirements for terminating in Part 8.

8.1. MINIMUM INFORMATION REQUIRED IN NOT.

8.1.1. UPDES ID (i.e., permit tracking number) provided by DWQ when you received coverage under this permit;

8.1.2. Basis for submission of the NOT (see Part 8.2);

8.1.3. Operator contact information;

8.1.4. Name of site and address (or a description of location if no street address is available); and

8.1.5. NOT certification.

8.2. CONDITIONS FOR TERMINATING CGP COVERAGE. You must terminate CGP coverage only if one or more of the following conditions has occurred:

8.2.1. You have completed all construction activities at your site and, if applicable, construction support activities covered by this permit (see Part 1.2.2.c), and you have met the following requirements:

- a. You have met the requirements for final vegetative or non-vegetative stabilization in Part 2.2.14.b for any areas that (1) were disturbed during construction, (2) are not covered over by permanent structures, and (3) over which you had control during the construction activities.;
- b. You have removed and properly disposed of all construction materials, waste and waste handling devices, and have removed all equipment and vehicles that were used during construction, unless intended for long-term use following your termination of permit coverage;
- c. You have removed all storm water controls that were installed and maintained during construction, except those that are intended for long-term use following your termination of permit coverage or those that are biodegradable; and
- d. You have removed all potential pollutants and pollutant-generating activities associated with construction, unless needed for long-term use following your termination of permit coverage; or

8.2.2. You have transferred control of all areas of the site for which you are responsible under this permit to another operator, and that operator has submitted a new NOI and obtained coverage under this permit. This only applies if the new operator obtains a new NOI. Termination is not required if a transfer form has been signed by both the previous operator and the new one to move the existing coverage; or

8.2.3. Coverage under an individual or alternative general UPDES permit has been obtained.

8.2.4. Completed homes that are occupied by home owners where at least temporary sediment and erosion controls are in place are allowed to be terminated without final stabilization. If a home owner buys a newly completed house the permit can be terminated while the property is being transferred to the home owner. The home owner should not be involved in the permit process. If

a home owner builds his/her house, they must terminate when the house is approved for occupancy where temporary storm water controls are in place on the site.

8.3. HOW TO SUBMIT YOUR NOT.

8.3.1. It is preferred that the DWQ “on-line” NOI system be used to submit an electronic NOT.

Access to the DWQ online storm water database found at the DWQ webpage at <https://cdxnodengn.epa.gov/net-cgp/action/login>. You must logon to the account created when the NOI was submitted and find the “Terminate” (or NOT) button for the permit tracking number when you wish to terminate a coverage. In the case where the permittee does not have access to the account for which the NOI was submitted the permittee must either contact DWQ and request account access or fill out and submit to DWQ a paper copy of the NOT form, which can be downloaded from the same DWQ website.

8.4. DEADLINE FOR SUBMITTING THE NOT. You must submit your NOT within 30 calendar days after any one of the conditions in Part 8.2 occurs.

8.5. PARTIAL NOT REQUIREMENTS. A partial NOT must be filed if a portion of the permitted site is sold to a new owner prior to completion of construction. You must notify the new owner of the requirement to obtain a storm water permit unless the new owner is the home owner. Prior to releasing a residential lot to a home owner the site must be temporarily stabilized as required in 8.2.4. You must notify DWQ of the change in ownership and provide the name, address, and telephone number of the new owner.

8.6. EFFECTIVE DATE OF TERMINATION OF COVERAGE. Your authorization to discharge under this permit terminates at midnight of the calendar day that a complete NOT is submitted to DWQ.

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

9. STANDARD PERMIT CONDITIONS.

9.1. DUTY TO COMPLY.

- (1) The permittee must comply with all conditions of the UPDES permit. Any permit noncompliance is a violation of the Utah Water Quality Act, as amended and is grounds for enforcement action; permit termination, revocation and reissuance or modification; or denial of a permit renewal application.
- (2) Penalties for Violations of Permit Conditions. The Utah Water Quality Act, in 19-5-115, provides that any person who violates the Act, or any permit, rule, or order adopted under it is subject to a civil penalty not to exceed \$10,000 per day of such violation.
- (3) Willful Non-Compliance or Negligence. Any person who willfully or with gross negligence violates the Act, or any permit, rule or order adopted under it is subject to a fine of not more than \$25,000 per day of violation. Any person convicted under 19-5-115 a second time shall be punished by a fine not exceeding \$50,000 per day.
- (4) False Statements. The Act provides that any person who knowingly makes any false material statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under the Act, the rules, or this Permit, or who knowingly falsifies, tampers with, or renders inaccurate, any monitoring device or method required to be maintained under the Act shall upon conviction, be punished by a fine of not more than \$10,000 or by imprisonment for 6 months, or by both. Utah Code Ann. § 19-5-115(4).

9.2. DUTY TO REAPPLY. If the permittee wishes to continue an activity regulated by this permit after the expiration date of the permit, the permittee shall apply for and obtain a new permit as required in R317-8-3.1

9.3. NEED TO HALT OR REDUCE ACTIVITY NOT A DEFENSE. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. (Upon reduction, loss, or failure of the treatment facility, the permittee, to the extent necessary to maintain compliance with the permit, shall control production of all discharges until the facility is restored or an alternative method of treatment is provided.)

9.4. DUTY TO MITIGATE. The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of the UPDES permit which has a reasonable likelihood of adversely affecting human health or the environment.

9.5. DUTY TO PROVIDE INFORMATION. The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by the permit.

9.6. OTHER INFORMATION. When the permittee becomes aware that he or she failed to submit any relevant facts or submitted incorrect information in the Notice of Intent or in any other report to the Director, he or she shall promptly submit such facts or information.

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

9.7. OIL AND HAZARDOUS SUBSTANCE LIABILITY. Nothing in this Permit shall be construed to preclude the institution of any legal action or relieve the Permittee from any responsibilities, liabilities, or penalties to which the Permittee is or may be subject under the "Act".

9.8. PROPERTY RIGHTS. The issuance of this Permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

9.9. SEVERABILITY. The provisions of this Permit are severable, and if any provision of this Permit, or the application of any provision of this Permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this Permit shall not be affected thereby.

9.10. RECORDS RETENTION.

- (1) The Permittee shall retain copies of SWPPPs, Authorization to Discharge Letters, and all reports required by this Permit, and records of all data used to complete the Notice of Intent to be covered by this Permit, for a period of at least three years from the date that the site is finally stabilized. This period may be extended by request of the Director at any time.
- (2) After final stabilization of the construction site is complete, the SWPPP is no longer required to be maintained on site, but may be maintained by the Permittee(s) at its primary headquarters. However, you must continue to allow DWQ access to the SWPPP as described in paragraph B.10(1) (above).

9.11. ADDRESSES. All written correspondence under this permit shall be directed to the Division of Water Quality at the following address:

Department of Environmental Quality
Division of Water Quality
195 North 1950 West
PO Box 144870
Salt Lake City, Utah 84114-4870

9.12. STATE LAWS.

- (1) Nothing in this Permit shall be construed to preclude the institution of any legal action or relieve the Permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Utah Code Ann. § 19-5-117.
- (2) No condition of this Permit shall release the Permittee from any responsibility or requirements under other environmental statutes or regulations.

9.13. PROPER OPERATION AND MAINTENANCE. The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this Permit and with the requirements of SWPPPs. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance requires the operation of backup or auxiliary

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

facilities or similar systems, installed by a Permittee only when necessary to achieve compliance with the conditions of the Permit.

9.14. INSPECTION AND ENTRY. The Permittee shall allow, upon presentation of credentials, the Director or an authorized representative:

- (1) To enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this Permit;
- (2) Have access to and copy at reasonable times, any records that must be kept under the conditions of this Permit;
- (3) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Permit; and
- (4) Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by law, any substances or parameters at any location.

9.15. REOPENER CLAUSE.

- (1) Reopener Due to Water Quality Impacts. If there is evidence indicating that the storm water discharges authorized by this Permit cause, have the reasonable potential to cause or contribute to, a violation of a water quality standard, the discharger may be required to obtain an individual permit or an alternative general permit in accordance with Part 1.4.4 of this Permit or the Permit may be modified to include different limitations and/or requirements.
- (2) Reopener Guidelines. Permit modification or revocation will be conducted according to UAC R317-8-5.6 and UAC R317-8-6.2.
- (3) Permit Actions. This Permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a Permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any Permit condition.

9.16. SIGNATORY REQUIREMENTS.

- (1) All Notices of Intent, SWPPPs, reports, certifications or information submitted to the Director, or that this Permit requires to be maintained by the Permittee, shall be signed as follows:
 - a. All notice of intent (NOIs), notices of termination (NOTs), and SWPPPs shall be signed as follows:
 - i. For a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or the manager of one or more manufacturing, production or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25,000,000 (in second-quarter 1980 dollars) if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

- ii. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or
 - iii. For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes (1) the chief executive officer of the agency, or (2) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g. Regional Administrators of EPA).
- b. All reports required by the Permit and other information requested by the Director or by an authorized representative of the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:
- i. The authorization is made in writing by a person described above and kept with the SWPPP; and
 - ii. The authorization specifies either an individual or a position having responsibility for overall operation of the regulated site, facility or activity, such as the position of manager, operator, superintendent, or position of equivalent responsibility or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position).
- c. Certification. Any person signing documents under this Part B.16 shall make the following certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

10. DEFINITIONS AND ACRONYMS

“Act” – is a reference to the Utah Water Quality Act, or Utah Code Annotated Title 19, Chapter 5.

“Agricultural Land” - cropland, grassland, rangeland, pasture, and other agricultural land, on which agricultural and forest-related products or livestock are produced and resource concerns may be addressed. Agricultural lands include cropped woodland, marshes, incidental areas included in the agricultural operation, and other types of agricultural land used for the production of livestock.

“Antidegradation Policy” or “Antidegradation Requirements” - the water quality standards regulation that requires maintenance of water quality:

Waters whose existing quality is better than the established standards for the designated uses will be maintained at high quality unless it is determined by the Board, after appropriate intergovernmental coordination and public participation in concert with the Utah continuing planning process, allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. However, existing instream water uses shall be maintained and protected. No water quality degradation is allowable which would interfere with or become injurious to existing instream water uses.

In those cases where potential water quality impairment associated with a thermal discharge is involved, the antidegradation policy and implementing method shall be consistent with Section 316 of the Federal Clean Water Act.

Category 1 Waters: Waters which have been determined by the Board to be of exceptional recreational or ecological significance or have been determined to be a State or National resource requiring protection, shall be maintained at existing high quality through designation, by the Board after public hearing, as Category 1 Waters. New point source discharges of wastewater, treated or otherwise, are prohibited in such segments after the effective date of designation. Protection of such segments from pathogens in diffuse, underground sources is covered in R317-5 and R317-7 and the Regulations for Individual Wastewater Disposal Systems (R317-501 through R317-515). Other diffuse sources (nonpoint sources) of wastes shall be controlled to the extent feasible through implementation of best management practices or regulatory programs.

Discharges may be allowed where pollution will be temporary and limited after consideration of the factors in R317-2-3.5.b.4., and where best management practices will be employed to minimize pollution effects.

Waters of the state designated as Category 1 Waters are listed in UAC R317-2-12.1.

Category 2 Waters: Category 2 Waters are designated surface water segments which are treated as Category 1 Waters except that a point source discharge may be permitted provided that the discharge does not degrade existing water quality. Discharges may be allowed where pollution will be temporary and limited after consideration of the factors in UAC R317-2-3.5.b.4., and where best management practices will be employed to minimize

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

pollution effects. Waters of the state designated as Category 2 Waters are listed in UAC R317-2-12.2.

Category 3 Waters: For all other waters of the state, point source discharges are allowed and degradation may occur, pursuant to the conditions and review procedures outlined in the paragraph below (Antidegradation Review).

Antidegradation Review (ADR): An antidegradation review will determine whether the proposed activity complies with the applicable antidegradation requirements for receiving waters that may be affected.

An antidegradation review (ADR) may consist of two parts or levels. A Level I review is conducted to insure that existing uses will be maintained and protected.

Both Level I and Level II reviews will be conducted on a parameter-by-parameter basis. A decision to move to a Level II review for one parameter does not require a Level II review for other parameters. Discussion of parameters of concern is those expected to be affected by the proposed activity.

Antidegradation reviews shall include opportunities for public participation, as described in UAC R317-2-3.5e.

“Arid Areas” – areas with an average annual rainfall of 0 to 10 inches.

“Authorization to Discharge Letter” – The receipt generated when a Notice of Intent (NOI) is successfully entered and payment is processed by DWQ. The receipt demonstrates that the permittee has coverage under the appropriate Storm Water Permit. Authorization to Discharge Letters contain the dates of the permittee’s coverage under the Construction General Permit (CGP).

“Bank” (e.g., stream bank or river bank) – the rising ground bordering the channel of a water of the State of Utah.

“Best Management Practices (BMPs)” – schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce pollution of waters of the State. BMPs include treatment requirements, operating procedures, and practices to control storm water associated with construction activity, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

“Bluff” – a steep headland, promontory, riverbank, or cliff.

“Borrow Areas” – the areas where materials are dug for use as fill, either onsite or off-site.

“Category 1, 2, and/or 3 Waters” – see “Antidegradation Policy” or “Antidegradation Requirements”.

“Cationic Treatment Chemical” – polymers, flocculants, or other chemicals that contain an overall positive charge. Among other things, they are used to reduce turbidity in storm water discharges by chemically bonding to the overall negative charge of suspended silts and other soil materials and causing them to bind together and settle out. Common examples of cationic treatment chemicals are chitosan and cationic PAM.

“Commencement of Earth-Disturbing Activities” - the initial disturbance of soils (or ‘breaking ground’) associated with clearing, grading, or excavating activities or other construction-related activities (e.g., stockpiling of fill material).

“Commencement of Pollutant-Generating Activities” – at construction sites (for the purposes of this permit) occurs in any of the following circumstances:

- Clearing, grubbing, grading, and excavation has begun;
- Raw materials related to your construction activity, such as building materials or products, landscape materials, fertilizers, pesticides, herbicides, detergents, fuels, oils, or other chemicals have been placed at your site;
- Use of authorized non-storm water for washout activities, or dewatering activities, have begun; or
- Any other activity has begun that causes the generation of or the potential generation of pollutants.

“Common Plan of Development or Sale” –is a plan to subdivide a parcel of land into separate parts for separate sale. This can be for a residential, commercial, or industrial development. The plan originates as a single parcel that is separated into parts. This usually goes through an approval process by a local governmental unit, but in some cases, it may not require that process. The original plan is considered the “common plan of development or sale” whether phased or completed in steps.

Additional information related to Common Plan of Development for Permit Purposes:

For UPDES storm water permit purposes, a common plan must have been initiated after October, 1992. A common plan of development or sale remains so until each lot or section of the development has fulfilled its planned purposes (e.g. in a residential development as homes are completed, stabilized, and sold or occupied). As lots or separated sections of the development are completed, the lot or section is stabilized, and the plan purposes are fulfilled for that area, lot, or section, it is no longer part of the common plan of development or sale (e.g. if a home is sold in a development and the owner decides to add a garage somewhere on the lot, that garage project is not part of the common plan of development or sale. In this process a common plan of development or sale may become reduced in size and/or separated by completed areas which are no longer part of the common plan of development or sale, but all unfinished lots remain part of the same common plan of development or sale until they are completed, stabilized, and fulfilled according to the purposes of the plan.

“Construction Activities” – earth-disturbing activities, such as the clearing, grading, and excavation of land.

“Construction and Development Point Source Category” (C&D Rule) – as published in 40 CFR § 450 is the regulation requiring effluent limitations guidelines (ELG’s) and new source performance standards (NSPS) for controlling the discharge of pollutants from construction sites.

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

- “Construction Site” – the land or water area where construction activities will occur and where storm water controls will be installed and maintained. The construction site includes construction support activities, which may be located at a different part of the property from where the primary construction activity will take place, or on a different piece of property altogether. The construction site is often a smaller subset of the lot or parcel within which the project is taking place.
- “Construction Support Activities” – a construction-related activity that specifically supports the construction activity and involves earth disturbance or pollutant-generating activities of its own. This can include activities associated with concrete or asphalt batch plants, equipment staging yards, materials storage areas, excavated material disposal areas, and borrow areas.
- “Construction Waste” – discarded material (such as packaging materials, scrap construction materials, masonry products, timber, steel, pipe, and electrical cuttings, plastics, and styrofoam).
- “Conveyance Channel” – a temporary or permanent waterway designed and installed to safely convey storm water flow within and out of a construction site.
- “Corrective Action” – for the purposes of the permit, any action taken to (1) repair, modify, or replace any storm water control used at the site; (2) clean up and dispose of spills, releases, or other deposits found on the site; and (3) remedy a permit violation.
- “CWA” – the Clean Water Act or the Federal Water Pollution Control Act, 33 U.S.C. section 1251 et seq.
- “Dewatering” – the act of draining rainwater and/or groundwater from building foundations, vaults, and trenches.
- “Director” – the director of the Division of Water Quality, otherwise known as the Executive Secretary of the Utah Water Quality Board.
- “Discharge” – discharge of storm water or “discharge of a pollutant.”
- “Discharge of a Pollutant” – the addition of any “pollutant” or combination of pollutants to “waters of the State” from any “point source,” or any addition of any pollutant or combination of pollutants to the waters of the State. This includes additions of pollutants into waters of the State from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works. See 40 CFR 122.2.
- “Discharge Point” – for the purposes of this permit, the location where collected and concentrated storm water flows are discharged from the construction site.
- “Discharge-Related Activity” – activities that cause, contribute to, or result in storm water and allowable non-storm water point source discharges, and measures such as the siting, construction, and operation of storm water controls to control, reduce, or prevent pollutants from being discharged.
- “Discharge to an Impaired Water” – for the purposes of this permit, a discharge to an impaired water occurs if the first water of the State to which you discharge is identified by DWQ or EPA pursuant to Section 303(d) of the Clean Water Act as not meeting an applicable water

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

quality standard, or is included in an EPA-approved or DWQ established total maximum daily load (TMDL). For discharges that enter a storm sewer system prior to discharge, the water of the State to which you discharge is the first water of the State that receives the storm water discharge from the storm sewer system.

“Domestic Waste” – for the purposes of this permit, typical household trash, garbage or rubbish items generated by construction activities.

“Drought-Stricken Area” – for the purposes of this permit, an area in which the National Oceanic and Atmospheric Administration’s U.S. Seasonal Drought Outlook indicates for the period during which the construction will occur that any of the following conditions are likely: (1) “Drought to persist or intensify”, (2) “Drought ongoing, some improvement”, (3) “Drought likely to improve, impacts ease”, or (4) “Drought development likely”. See http://www.cpc.ncep.noaa.gov/products/expert_assessment/sdo_summary.php

“Earth-Disturbing Activity” or “Land-Disturbing Activity” – actions taken to alter the existing vegetation and/or underlying soil of a site, such as clearing, grading, site preparation (e.g., excavating, cutting, and filling), soil compaction, and movement and stockpiling of top soils.

“Effective Operating Condition” – for the purposes of this permit, a storm water control is kept in effective operating condition if it has been implemented and maintained in such a manner that it is working as designed to minimize pollutant discharges.

“Effluent Limitations” – for the purposes of this permit, any of the Part 2 or Part 3 requirements.

“Electronic Notice of Intent” – DWQ’s online system for submitting electronic Construction General Permit forms. Can be accessed at <https://secure.utah.gov/stormwater>.

“Emergency-Related Project” – a project initiated in response to a public emergency (e.g., natural disaster, disruption in essential public services), for which the related work requires immediate authorization to avoid imminent endangerment to human health or the environment, or to reestablish essential public services.

“Excursion” – a violation of a standard or limit.

“Existing Project” – a construction project that commenced construction activities prior to the issuance date of this permit.

“Existing Permit Coverage” – means that the permittee had permit coverage under a previous permit prior to the issuance of this permit.

“Exit Points” – any points of egress from the construction site to be used by vehicles and equipment during construction activities.

“Exposed Soils” – for the purposes of this permit, soils that as a result of earth-disturbing activities are disturbed and exposed to the elements of weather.

“Final Stabilization” – All disturbed areas must be covered by permanent structures such as pavement, concrete slab, building, etc., or for areas not covered by permanent structures but that are receiving 20 inches or more of average annual precipitation, vegetation has been established with a uniform (e.g., evenly distributed, without large bare areas) perennial

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

vegetative cover equivalent to 70 percent of the natural background vegetative cover. In the case of areas that are not covered by permanent structures, but that are receiving less than 20 inches of average annual precipitation (arid areas, 0-10 inches; semi-arid areas, 10-20 inches), final stabilization is equivalent to the requirements of 2.2.2.b of this permit, including the provisions for permanent stabilization.

“Groundwater” – water in the voids and interstitial spaces around soil particles beneath the surface of the ground, even if it is only temporary.

“Hazardous Materials” or “Hazardous Substances” or “Hazardous or Toxic Waste” – for the purposes of this permit, any liquid, solid, or contained gas that contain properties that are dangerous or potentially harmful to human health or the environment. See also 40 CFR §261.2.

“Impaired Water” or “Water Quality Impaired Water” or “Water Quality Limited Segment” – for the purposes of this permit, waters identified as impaired on the CWA Section 303(d) list, or waters with an EPA-approved or established TMDL. Your construction site will be considered to discharge to an impaired water if the first water of the state to which you discharge is identified by DWQ pursuant to Section 303(d) of the CWA as not meeting an applicable water quality standard, or is included in an EPA-approved or DWQ established total maximum daily load (TMDL). For discharges that enter a storm sewer system prior to discharge, the first water of the state to which you discharge is the water body that receives the storm water discharge from the storm sewer system.

“Impervious Surface” – for the purpose of this permit, any land surface with a low or no capacity for soil infiltration including, but not limited to, pavement, sidewalks, parking areas and driveways, packed gravel or soil, or rooftops.

“Indian Country” or “Indian Country Lands” – defined at 40 CFR §122.2 as:

1. All land within the limits of any Indian reservation under the jurisdiction of the United States Government, notwithstanding the issuance of any patent, and, including rights-of-way running through the reservation;
2. All dependent Indian communities within the borders of the United States whether within the originally or subsequently acquired territory thereof; and
3. All Indian allotments, the Indian titles to which have not been extinguished, including rights-of-ways running through the same.

“Infeasible” – for the purpose of this permit, infeasible means not technologically possible or not economically practicable and achievable in light of best industry practices. DWQ notes that it does not intend for any permit requirement to conflict with state water rights law.

“Install” or “Installation” – when used in connection with storm water controls, to connect or set in position storm water controls to make them operational.

“Intermittent (or Seasonal) Stream” – one which flows at certain times of the year when ground water provides water for stream flow, or during and immediately after some precipitation events or snowmelt.

“Landward” – positioned or located away from a water body, and towards the land.

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

- “Level Spreader” – a temporary storm water control used to spread storm water flow uniformly over the ground surface as sheet flow to prevent concentrated, erosive flows from occurring.
- “Linear Construction Project” – includes the construction of roads, bridges, conduits, substructures, pipelines, sewer lines, towers, poles, cables, wires, connectors, switching, regulating and transforming equipment and associated ancillary facilities in a long, narrow area.
- “Minimize” – to reduce and/or eliminate to the extent achievable using storm water controls that are technologically available and economically practicable and achievable in light of best industry practices.
- “Municipal Separate Storm Sewer System” or “MS4” – defined at 40 CFR §122.26(b)(8) as a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):
1. Owned and operated by a state, city, town, county, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the State;
 2. Designed or used for collecting or conveying storm water;
 3. Which is not a combined sewer; and
 4. Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR §122.2.
- “Native Topsoil” – the uppermost layer of naturally occurring soil for a particular area, and is often rich in organic matter, biological activity, and nutrients.
- “Native Vegetation” – the species of plants that have developed for a particular region or ecosystem and are considered endemic to that area.
- “Natural Buffer” – for the purposes of this permit, an area of undisturbed natural cover surrounding surface waters within which construction activities are restricted. Natural cover includes the vegetation, exposed rock, or barren ground that exists prior to commencement of earth-disturbing activities.
- “Natural Vegetation” – vegetation that occurs spontaneously without regular management, maintenance or species introductions, removals, and that generally has a strong component of native species.
- “New Operator of a New or Existing Project” – an operator that through transfer and/or operation replaces the operator of an already permitted construction project.
- “New Project” – a construction project that commenced construction activities on or the issuance date of this permit.
- “New Source” – for the purpose of this permit, a construction project that commenced construction activities on or after the issuance date of this permit.

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

- “New Source Performance Standards (NSPS)” – for the purposes of this permit, NSPS are technology-based standards that apply to construction sites that are new sources under 40 CFR 450.24.
- “Non-Storm Water Discharges” – discharges that do not originate from storm events. They can include, but are not limited to, discharges of process water, air conditioner condensate, noncontact cooling water, vehicle wash water, sanitary wastes, concrete washout water, paint wash water, irrigation water, or pipe testing water.
- “Non-Turbid” – is a term used in this permit to describe water that appears visually clear and there appears to be no evidence of silt or sediment present in the water.
- “Notice of Intent” (NOI) – the form (electronic or paper) required for authorization of coverage under the Construction General Permit.
- “Notice of Termination” (NOT) – the form (electronic or paper) required for terminating coverage under the Construction General Permit.
- “Operational” – for the purpose of this permit, storm water controls are made “operational” when they have been installed and implemented, are functioning as designed, and are properly maintained.
- “Operator” – for the purposes of this permit and in the context of storm water discharges associated with construction activity, any party associated with a construction project that meets either of the following two criteria:
1. The party which has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications (e.g. in most cases this is the owner of the site, sometimes it is a lessor); or
 2. The party which has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions (e.g., they are authorized to direct workers at a site to carry out activities required by the permit; in most cases this is the general contractor of the project).
- “Ordinary High Water Mark” – the line on the shore established by fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, and/or the presence of litter and debris.
- “Outfall” – see “Discharge Point.”
- “Owner” – for the purpose of this permit an owner has legal ownership of property on which construction activity is taking place. Except in the case of leased property, an owner is the party that has ultimate control over the destiny of a project. This is the lessor in the case of leased property.
- “Permittee” – is the owner and/or operator named in the NOI for the project.
- “Point(s) of Discharge” – see “Discharge Point.”
- “Point Source” – any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

concentrated animal feeding operation, landfill leachate collection system, or vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.

“Pollutant” – defined at 40 CFR §122.2. A partial listing from this definition includes: dredged spoil, solid waste, sewage, garbage, sewage sludge, chemical wastes, biological materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial or municipal waste.

“Pollutant-Generating Activities” – at construction sites (for the purposes of this permit), those activities that lead to or could lead to the generation of pollutants, either as a result of earth disturbance or a related support activity. Some of the types of pollutants that are typically found at construction sites are:

- sediment;
- nutrients;
- heavy metals;
- pesticides and herbicides;
- oil and grease;
- bacteria and viruses;
- trash, debris, and solids;
- treatment polymers; and
- any other toxic chemicals.

“Pollution Prevention Measures” – storm water controls designed to reduce or eliminate the addition of pollutants to construction site discharges through analysis of pollutant sources, implementation of proper handling/disposal practices, employee education, and other actions.

“Polymers” – for the purposes of this permit, coagulants and flocculants used to control erosion on soil or to enhance the sediment removal capabilities of sediment traps or basins. Common construction site polymers include polyacrylamide (PAM), chitosan, alum, polyaluminum chloride, and gypsum.

“Prohibited Discharges” – discharges that are not allowed under this permit, including:

1. Wastewater from washout of concrete;
2. Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;
3. Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance;
4. Soaps or solvents used in vehicle and equipment washing;
5. Toxic or hazardous substances from a spill or other release; and

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

6. Waste, garbage, floatable debris, construction debris, and sanitary waste from pollutant generating activities.

“Provisionally Covered Under this Permit” – for the purposes of this permit, DWQ provides temporary coverage under this permit for emergency-related projects prior to receipt of a complete and accurate NOI. Discharges from earth-disturbing activities associated with the emergency-related projects are subject to the terms and conditions of the permit during the period of temporary coverage.

“Receiving Water” – a “Water of the State into which the regulated storm water discharges. If the discharge is to a storm sewer system, the receiving water is the waterbody to which the storm system discharges.

“Regulatory Authority” – as it pertains to this permit means EPA, DWQ, or a local MS4 that oversees construction activity.

“Run-On” – sources of storm water that drain from land located upslope or upstream from the regulated site in question.

“Semi-Arid Areas” – areas with an average annual rainfall of over 10 to 20 inches.

“Site” – for construction activities, the land or water area where earth-disturbing activities take place, including construction support activities.

“Small Construction Activity” – defined at Utah Administrative Code R317-8-3.9(6)(e)1. and incorporated here by reference. A small construction activity includes clearing, grading, and excavating resulting in a land disturbance that will disturb equal to or greater than one (1) acre and less than five (5) acres of land or will disturb less than one (1) acre of total land area but is part of a larger common plan of development or sale that will ultimately disturb equal to or greater than one (1) acre and less than five (5) acres. Small construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the site.

“Small Residential Lot” – for the purpose of this permit, a lot being developed for residential purposes that will disturb less than 1 acre of land, but is part of a larger residential project that will ultimately disturb greater than or equal to 1 acre.

“Snowmelt” – the conversion of snow into overland storm water and groundwater flow as a result of warmer temperatures.

“Spill” – for the purpose of this permit, the release of a hazardous or toxic substance from its container or containment.

“Stabilization” – the use of vegetative and/or non-vegetative cover to prevent erosion and sediment loss in areas of disturbed soil exposed from the construction process.

“Steep Slopes” –for this permit steep slopes are defined as those that are 70 percent or greater in grade.

“Storm Event” – a precipitation event that results in a measurable amount of precipitation.

“Storm Sewer” – a system of pipes (separate from sanitary sewers) that carries storm water runoff from buildings and land surfaces.

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

- “Storm Sewer System” – a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains) designed or used for collecting or conveying storm water.
- “Storm Water” – storm water runoff from precipitation, snow melt runoff, and surface runoff and drainage.
- “Storm Water Control Measure” - refers to any storm water control, BMP, or other method (including narrative effluent limitations) used to prevent or reduce the discharge of pollutants to waters of the state.
- “Storm Water Controls” – see “Storm Water Control measure.”
- “Storm Water Discharge Associated with Construction Activity” – as used in this permit, a discharge of pollutants in storm water to waters of the state from areas where land disturbing activities (e.g., clearing, grading, or excavation) occur, or where construction materials or equipment storage or maintenance (e.g., fill piles, borrow area, concrete truck chute wash down, fueling), or other industrial storm water directly related to the construction process (e.g., concrete or asphalt batch plants), are located.
- “Storm Water Inlet” or “Storm Drain Inlet” – an entrance or opening to a storm water conveyance system, generally placed below grade so as to receive storm water drainage from the surrounding area.
- “Storm Water Team” – the group of individuals responsible for oversight of the development and modifications of the SWPPP, and oversight of compliance with the permit requirements. The individuals on the “Storm water Team” must be identified in the SWPPP.
- “Subcontractor” – for the purposes of this permit, an individual or company that takes a portion of a contract from the general contractor or from another subcontractor.
- “Surface Water” – for this permit a surface water is defined all open water bodies, streams, lakes, ponds, marshes, wetlands, watercourses, waterways, springs, drainage systems, and all other bodies or accumulations of water on the surface only. Surface water is visible water, standing or flowing, above the surface of the ground.
- “SWPPP” (Storm Water Pollution Prevention Plan) – a site-specific, written document that, among other things: (1) identifies potential sources of storm water pollution at the construction site; (2) describes storm water control measures to reduce or eliminate pollutants in storm water discharges from the construction site; and (3) identifies procedures the operator will implement to comply with the terms and conditions of this general permit.
- “Temporary Stabilization” – a condition where exposed soils or disturbed areas are provided a temporary vegetative and/or non-vegetative protective cover to prevent erosion and sediment loss. Temporary stabilization may include temporary seeding, geotextiles, mulches, and other techniques to reduce or eliminate erosion until either final stabilization can be achieved or until further construction activities take place to re-disturb this area.
- “Thawing Conditions” – for the purposes of this permit, thawing conditions are expected based on the historical likelihood of two or more days with daytime temperatures greater than 32°F. This date can be determined by looking at historical weather data. The estimation of thawing

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

conditions is for planning purposes only. During construction the permittee will be required to conduct site inspections based upon actual conditions (i.e., if thawing conditions occur sooner than expected, the permittee will be required to conduct inspections at the regular frequency).

“Total Maximum Daily Load” or “TMDL” – the sum of the individual wasteload allocations (WLAs) for point sources and load allocations (LAs) for nonpoint sources and natural background. If a receiving water has only one point source discharger, the TMDL is the sum of that point source WLA plus the LAs for any nonpoint sources of pollution and natural background sources, tributaries, or adjacent segments. TMDLs can be expressed in terms of either mass per time, toxicity, or other appropriate measure.

“Toxic Waste” – see “Hazardous Materials.”

“Turbidity” – when the term is used in a narrative it means a condition of water quality characterized by the presence of cloudiness usually caused by suspended solids and/or organic material. It refers to the visual clarity in water and is measured in a test passing light through a sample of water and quantifying the amount of light passing. The measurement is not directly proportional to the quantity of sediment in the water sample it is directly related to the quantity of light that passes through the sample. Particulate size and other factors can affect the amount of light that passes through the sample. This measurement is called nephelometric turbidity units or ntu.

“Uncontaminated Discharge” – a discharge that does not cause or contribute to an exceedance of applicable water quality standards.

“Upland” - the dry land area above and ‘landward’ of the ordinary high water mark.

“Utah Pollutant Discharge Elimination System (UPDES)” – The State of Utah’s program for issuing, modifying, revoking and resissuing, terminating, monitoring, and enforcing permits, and imposing and enforcing pretreatment requirements, under sections 307, 102, 318, and 405 of the Clean water Act (CWA) for the “discharge” of “pollutants” to “Waters of the State”. This program is specifically designed to be compatible with the federal National Pollutant Discharge Elimination System (NPDES) program established and administered by the EPA.

“Water-Dependent Structures” – structures or facilities that are required to be located directly adjacent to a waterbody or wetland, such as a marina, pier, boat ramp, etc.

“Water Quality Standards” –are provisions of State law which consist of a designated use or uses for the waters of the United States, water quality criteria for such waters based upon such uses, and an antidegradation policy to protect high quality waters. Water quality standards protect the public health or welfare, enhance the quality of water and serve the purposes of the Utah Water Quality Act.

“Waters of the State” – means all streams, lakes, ponds, marshes, water-courses, waterways, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface and underground, natural or artificial, public or private, which are contained within, flow through, or border upon this state or any portion thereof, except that bodies of

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

water confined to and retained within the limits of private property, and which do not develop into or constitute a nuisance, or a public health hazard, or a menace to fish and wildlife, shall not be considered to be "waters of the state" under this definition (Section 19-5-102).

“Wetland” – those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. On-site evaluations are typically required to confirm the presence and boundaries of wetlands.

“Work day” – for the purposes of this permit, a work day is a calendar day on which construction activities will take place.

Acronyms

C&D – Construction & Development

CGP – Construction General Permit

CFR – Code of Federal Regulations

CPoD – Common Plan of Development or Sale

CWA – Clean Water Act

DEQ – Department of Environmental Quality

DDW – Division of Drinking Water

DWQ – Division of Water Quality

EPA – United States Environmental Protection Agency

MS4 – Municipal Separate Storm Sewer System

NMFS – United States National Marine Fisheries Service

NOI – Notice of Intent

NOT – Notice of Termination

NPDES – National Pollutant Discharge Elimination System

NRC – National Response Center

NRCS – National Resources Conservation Service

POTW – Publicly Owned Treatment Works

SPCC – Spill Prevention Control and Countermeasure

SW – Storm Water

SWMP – Storm Water Management Plan

SWPPP – Storm Water Pollution Prevention Plan

TMDL – Total Maximum Daily Load

UAC – Utah Administrative Code

UCA – Utah Code Annotated

UPDES – Utah Pollution Discharge Elimination System

UWQA – Utah Water Quality Act

WQS – Water Quality Standard

Appendix A

Buffer Requirements

The purpose of this appendix is to assist you in complying with the requirements in Part 2.2.1 of the permit regarding the establishment of natural buffers and/or equivalent sediment controls. This appendix is organized as follows:

A.1. SITES THAT ARE REQUIRED TO PROVIDE AND MAINTAIN NATURAL BUFFERS AND/OR EQUIVALENT EROSION AND SEDIMENT CONTROLS.....	A-2
A.2. COMPLIANCE ALTERNATIVES AND EXCEPTIONS	A-2
A.2.1. Compliance Alternatives.....	A-2
A.2.2. Exceptions to Compliance Alternatives	A-3
A.2.3. Requirements for Providing and Maintaining Natural Buffers	A-4
A.2.4. Guidance for Providing the Equivalent Sediment Reduction as a 50-foot Buffer	A-7
A.3. SMALL RESIDENTIAL LOT COMPLIANCE ALTERNATIVES.....	A-11
A.3.1. Small Residential Lot Compliance Alternative Eligibility.....	A-11
A.3.2. Small Residential Lot Compliance Alternatives	A-12
Attachment 1 –Sediment Removal Efficiency Tables	A-16
Attachment 2 – Using the Sediment Removal Efficiency Tables – Questions and Answers	A-18
Attachment 3 – Example of How to Use the Sediment Removal Efficiency Tables.....	A-19

A.1 SITES THAT ARE REQUIRED TO PROVIDE AND MAINTAIN NATURAL BUFFERS AND/OR EQUIVALENT EROSION AND SEDIMENT CONTROLS

The requirement in Part 2.2.1 to provide and maintain natural buffers and/or equivalent erosion and sediment controls applies for any discharges to waters of the state located within 50 feet of your site's earth disturbances. If the water of the state is not located within 50 feet of earth-disturbing activities, Part 2.2.1 does not apply. See Figure A-1.

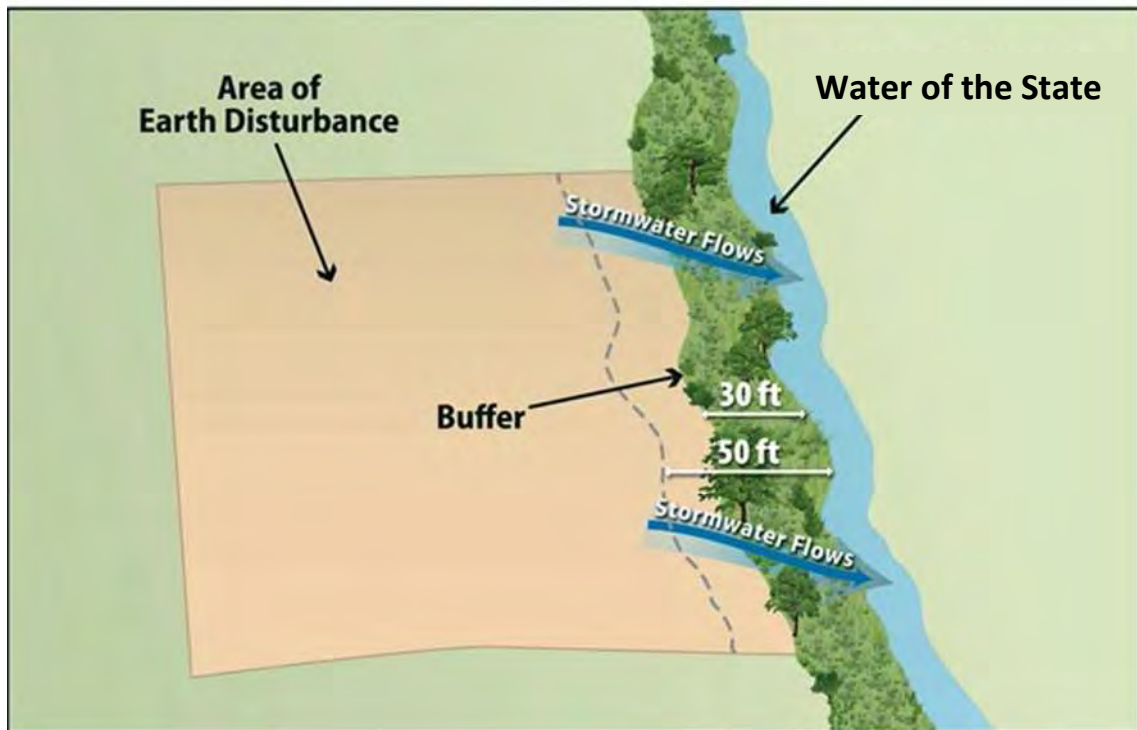


Figure A-1 Example of earth-disturbing activities within 50 feet of a water of the state.

A.2 COMPLIANCE ALTERNATIVES AND EXCEPTIONS

A.2.1. Compliance Alternatives

If Part 2.2.1 applies to your site, you have three compliance alternatives from which you can choose, unless you qualify for any of the exceptions (see below and Part 2.2.1.a):

1. Provide and maintain a 50-foot undisturbed natural buffer; or
2. Provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by erosion and sediment controls that achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer; or
3. If infeasible to provide and maintain an undisturbed natural buffer of any size, implement erosion and sediment controls to achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

The compliance alternative selected must be maintained throughout the duration of permit coverage.

See Part A.2.2 below for exceptions to the compliance alternatives.

See Part A.2.3 for requirements applicable to providing and maintaining natural buffers under compliance alternatives 1 and 2 above.

See Part A.2.4 for requirements applicable to providing erosion and sediment controls that achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer under compliance alternatives 2 and 3 above.

A.2.2. Exceptions to the Compliance Alternatives

The following exceptions apply to the requirement to implement one of the Part 2.2.1.a compliance alternatives (see also Part 2.2.1.b):

- The following disturbances within 50 feet of a water of the state are exempt from the requirements Part 2.2.1 and this Appendix:
 - Construction approved under a CWA Section 404 permit; or
 - Construction of a water-dependent structure or water access areas (e.g., pier, boat ramp, trail).
- If there is no discharge of storm water to waters of the state through the area between the disturbed portions of the site and any waters of the state located within 50 feet of your site, you are not required to comply with the requirements in Part 2.2.1 and this Appendix. This includes situations where you have implemented controls measures, such as a berm or other barrier that will prevent such discharges.
- Where no natural buffer exists due to preexisting development disturbances (e.g., structures, impervious surfaces) that occurred prior to the initiation of planning for the current development of the site, you are not required to comply with the requirements in Part 2.2.1 and this Appendix.

Where some natural buffer exists but portions of the area within 50 feet of the water of the state are occupied by preexisting development disturbances, you are required to comply with the requirements in Part 2.2.1 and this Appendix. For the purposes of calculating the sediment load reduction for either compliance alternative 2 or 3, you are not expected to compensate for the reduction in buffer function that would have resulted from the area covered by these preexisting disturbances. Clarity about how to implement the compliance alternatives for these situations is provided in A.2.3 and A.2.4 below.

If during your project, you will disturb any portion of these preexisting disturbances, the area removed will be deducted from the area treated as a “natural buffer.”

- For “linear construction sites” (see Definitions), you are not required to comply with this requirement if site constraints (e.g., limited right-of-way) make it infeasible to implement one of the Part 2.2.1.a compliance alternatives, provided that, to the extent feasible, you limit disturbances within 50 feet of any waters of the state and/or you provide supplemental erosion and sediment controls to treat storm water discharges from earth

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

disturbances within 50 feet of the water of the state. You must also document in your SWPPP your rationale for why it is infeasible for you to implement one of the Part 2.2.1.a compliance alternatives, and describe any buffer width retained and supplemental erosion and sediment controls installed.

- For “small residential lot” construction (i.e., a lot being developed for residential purposes that will disturb less than 1 acre of land, but is part of a larger residential project that will ultimately disturb greater than or equal to 1 acre), you have the option of complying with one of the “small residential lot” compliance alternatives in Part A.3 of this appendix.

Note that you must document in your SWPPP if any disturbances related to any of the above exceptions occurs within the buffer area on your site.

A.2.3. Requirements for Providing and Maintaining Natural Buffers

This part applies to you if you choose compliance alternative 1 (50-foot buffer), compliance alternative 2 (a buffer of < 50 feet supplemented by additional erosion and sediment controls that achieve the equivalent sediment load reduction as the 50-foot buffer), or if you are providing a buffer in compliance with one of the “small residential lot” compliance alternatives in Part A.3.

Buffer Width Measurement

Where you are retaining a buffer of any size, the buffer should be measured perpendicularly from any of the following points, whichever is further landward from the water:

4. The ordinary high water mark of the water body, defined as the line on the shore established by fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, and/or the presence of litter and debris; or
5. The edge of the stream or river bank, bluff, or cliff, whichever is applicable.

Refer to Figure A-2 and Figure A-3. You may find that specifically measuring these points is challenging if the flow path of the water of the state changes frequently, thereby causing the measurement line for the buffer to fluctuate continuously along the path of the waterbody. Where this is the case, DWQ suggests that rather than measuring each change or deviation along the water’s edge, it may be easier to select regular intervals from which to conduct your measurement. For instance, you may elect to conduct your buffer measurement every 5 to 10 feet along the length of the water.

Additionally, note that if earth-disturbing activities will take place on both sides of a water of the state that flows through your site, to the extent that you are establishing a buffer around this water, it must be established on both sides. For example, if you choose compliance alternative 1, and your project calls for disturbances on both sides of a small stream, you would need to retain the full 50 feet of buffer on both sides of the water. However, if your construction activities will only occur on one side of the stream, you would only need to retain the 50-foot buffer on the side of the stream where the earth- disturbance will occur.

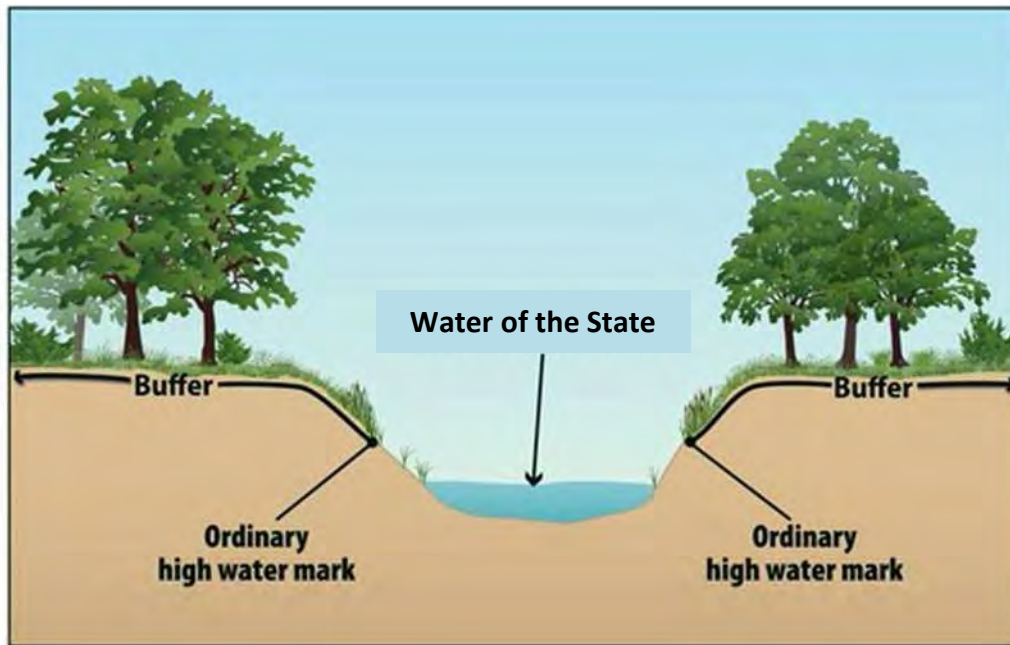


Figure A-2 Buffer measurement from the ordinary high water mark of the water body, as indicated by a clear natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, and/or the presence of litter/debris.

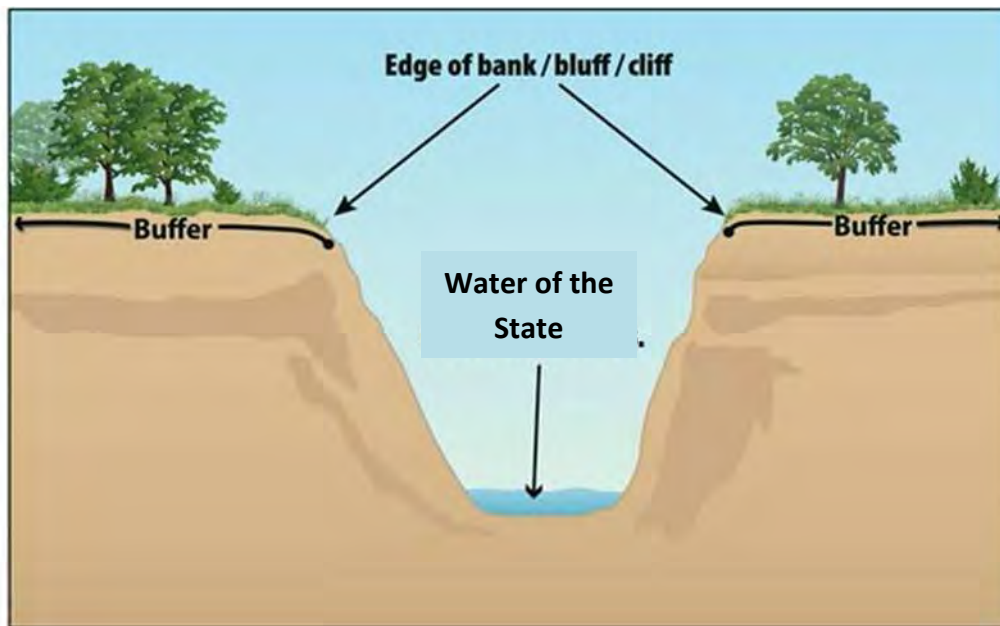


Figure A-3 Buffer measurement from the edge of the bank, bluff, or cliff, whichever is applicable.

Limits to Disturbance Within the Buffer

You are considered to be in compliance with the requirement to provide and maintain a natural buffer if you retain and protect from construction activities the natural buffer that existed prior to the commencement of construction. If the buffer area contains no vegetation prior to the

commencement of construction (e.g., sand or rocky surface), you are not required to plant vegetation. As noted above, any preexisting structures or impervious surfaces may occur in the natural buffer provided you retain and protect from disturbance the buffer areas outside of the preexisting disturbance.

To ensure that the water quality protection benefits of the buffer are retained during construction, you are prohibited from conducting any earth-disturbing activities within the buffer during permit coverage. In furtherance of this requirement, **prior to commencing earth-disturbing activities on your site, you must delineate, and clearly mark off, with flags, tape, or a similar marking device, the buffer area on your site.** The purpose of this requirement is to make the buffer area clearly visible to the people working on your site so that unintended disturbances are avoided.

While you are not required to enhance the quality of the vegetation that already exists within the buffer, you are encouraged to do so where such improvements will enhance the water quality protection benefits of the buffer. (Note that any disturbances within the buffer related to buffer enhancement are permitted and do not constitute construction disturbances.) For instance, you may want to target plantings where limited vegetation exists, or replace existing vegetation where invasive or noxious plant species (see <http://plants.usda.gov/java/noxiousDriver>) have taken over. In the case of invasive or noxious species, you may want to remove and replace them with a diversity of native trees, shrubs, and herbaceous plants that are well-adapted to the climatic, soil, and hydrologic conditions on the site. You are also encouraged to limit the removal of naturally deposited leaf litter, woody debris, and other biomass, as this material contributes to the ability of the buffer to retain water and filter pollutants.

If a portion of the buffer area adjacent to the water of the state is owned by another party and is not under your control, you are only required to retain and protect from construction activities the portion of the buffer area that is under your control. For example, if you comply with compliance alternative 1 (provide and maintain a 50-foot buffer), but 10 feet of land immediately adjacent to the water of the U.S. is owned by a different party than the land on which your construction activities are taking place and you do not have control over that land, you must only retain and protect from construction activities the 40-foot buffer area that occurs adjacent to the property on which your construction activities are taking place. DWQ would consider you to be in compliance with this requirement regardless of the activities that are taking place in the 10-foot area that is owned by a different party than the land on which your construction activities are taking place that you have no control over.

Discharges to the Buffer

You must ensure that all discharges from the area of earth disturbance to the natural buffer are first treated by the site's erosion and sediment controls (for example, you must comply with the Part 2.2.3 requirement to install sediment controls along any perimeter areas of the site that will receive pollutant discharges), **and if necessary to prevent erosion caused by storm water flows within the buffer, you must use velocity dissipation devices.** The purpose of this requirement is to decrease the rate of storm water flow and encourage infiltration so that the pollutant filtering functions of the buffer will be achieved. To comply with this requirement,

construction operators typically will use devices that physically dissipate storm water flows so that the discharge entering the buffer is spread out and slowed down.

SWPPP Documentation

You are required to document in your SWPPP the natural buffer width that is retained. For example, if you are complying with alternative 1, you must specify in your SWPPP that you are providing a 50-foot buffer. Or, if you will be complying with alternative 2, you must document the reduced width of the buffer you will be retaining (and you must also describe the erosion and sediment controls you will use to achieve an equivalent sediment reduction, as required in Part A.2.4 below). Note that you must also show any buffers on your site map in your SWPPP consistent with Part 7.3.3.h. Additionally, if any disturbances related to the exceptions in Part A.2.2 occur within the buffer area, you must document this in the SWPPP.

A.2.4 Guidance for Providing the Equivalent Sediment Reduction as a 50-foot Buffer

This part applies to you if you choose compliance alternative 2 (provide and maintain a buffer that is less than 50 feet that is supplemented by erosion and sediment controls that achieve the sediment load reduction equivalent to a 50-foot buffer) or compliance alternative 3 (implement erosion and sediment controls to achieve the sediment load reduction equivalent to a 50-foot buffer).

Determine Whether it is Feasible to Provide a Reduced Buffer

EPA recognizes that there will be a number of situations in which it will be infeasible to provide and maintain a buffer of any width. While some of these situations may exempt you from the buffer requirement entirely (see A.2.2), if you do not qualify for one of these exemptions, there still may be conditions or circumstances at your site that make it infeasible to provide a natural buffer. For example, there may be sites where a significant portion of the property on which the earth-disturbing activities will occur is located within the buffer area, thereby precluding the retention of natural buffer areas.

Therefore, you should choose compliance alternative 2 if it is feasible for you to retain some natural buffer on your site. (Note: For any buffer width retained, you are required to comply with the requirements in Part A.2.3, above, concerning the retention of vegetation and restricting earth disturbances.) Similarly, if you determine that it is infeasible to provide a natural buffer of any size during construction, you should choose alternative 3.

Design Controls That Provide Equivalent Sediment Reduction as 50-foot Buffer

You must next determine what additional controls must be implemented on your site that, alone or in combination with any retained natural buffer, achieve a reduction in sediment equivalent to that achieved by a 50-foot buffer.

Note that if only a portion of the natural buffer is less than 50 feet, you are only required to implement erosion and sediment controls that achieve the sediment load reduction equivalent to the 50-foot buffer for discharges through that area. You would not be required to provide additional treatment of storm water discharges that flow through 50 feet or more of natural buffer. See Figure A-4.

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

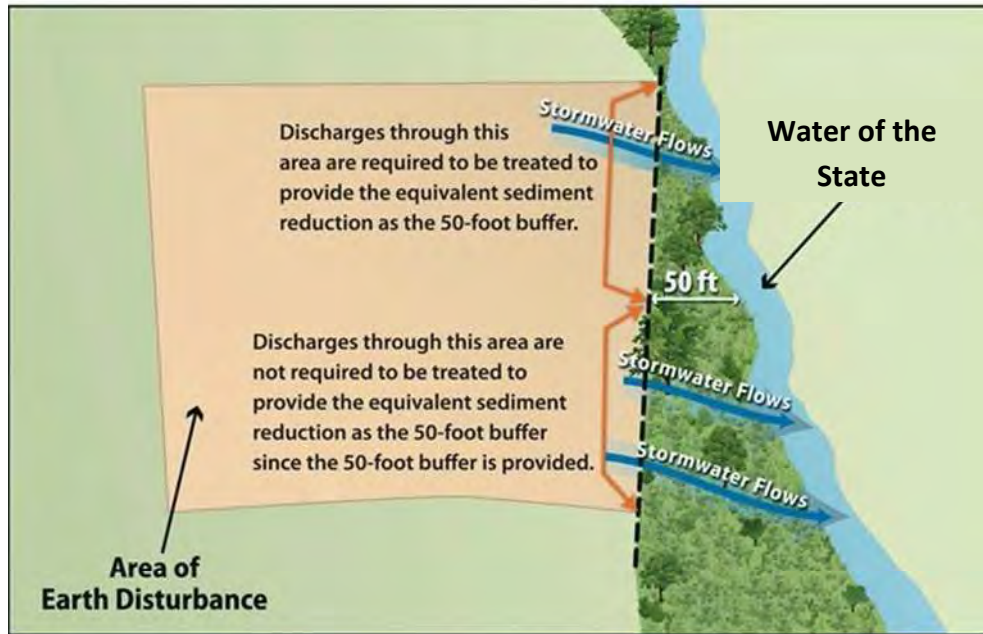


Figure A-4 Example of how to comply with the requirement to provide the equivalent sediment reduction when only a portion of your earth-disturbances discharge to a buffer of less than 50- feet.

Steps to help you meet compliance alternative 2 and 3 requirements are provided below.

Step 1 - Estimate the Sediment Reduction from the 50-foot Buffer

In order to design controls that match the sediment removal efficiency of a 50-foot buffer, you first need to know what this efficiency is for your site. The sediment removal efficiencies of natural buffers vary according to a number of site-specific factors, including precipitation, soil type, land cover, slope length, width, steepness, and the types of erosion and sediment controls used to reduce the discharge of sediment prior to the buffer. EPA has simplified this calculation by developing buffer performance tables covering a range of vegetation and soil types for the areas covered by the CGP. See Attachment 1 of this Appendix, Tables A-8 and A-9. Note: buffer performance values in Tables A-8 and A-9 represent the percent of sediment captured through the use of perimeter controls (e.g., silt fences) and 50-foot buffers at disturbed sites of fixed proportions and slopes.³⁹ The number of tables has been reduced since many were irrelevant and

³⁹ EPA used the following when developing the buffer performance tables:

- The sediment removal efficiencies are based on the U.S. Department of Agriculture's RUSLE2 ("Revised Universal Soil Loss Equation 2") model for slope profiles using a 100-foot long denuded slopes.
- Sediment removal was defined as the annual sediment delivered at the downstream end of the 50-foot natural buffer (tons/yr/acre) divided by the annual yield from denuded area (tons/yr/acre).
- As perimeter controls are also required by the CGP, sediment removal is in part a function of the reduction due to a perimeter control (i.e., silt fence) located between the disturbed portion of the site and the upstream edge of the natural buffer and flow traveling through a 50-foot buffer of undisturbed natural vegetation.
- It was assumed that construction sites have a relatively uniform slope without topographic features that accelerate the concentration for erosive flows. (footnote continues on next page)

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

Table A-8 for Idaho most closely represents northern Utah, and Table A-9 for New Mexico most closely represents southern Utah.

Using Table A-8 for northern Utah or A-9 for southern Utah (see Attachment 1 of this Appendix), you can determine the sediment removal efficiency of a 50-foot buffer for your geographic area by matching the vegetative cover type that best describes your buffer area and the type of soils that predominate at your site. For example, if your site is located in Idaho (northern Utah --Table A-8), and your buffer vegetation corresponds most closely with that of tall fescue grass, and the soil type at your site is best typified as sand, your site's sediment removal efficiency would be 44 percent.

In this step, you should choose the vegetation type in the tables that most closely matches the vegetation that would exist naturally in the buffer area on your site regardless of the condition of the buffer. However, because you are not required to plant any additional vegetation in the buffer area, in determining what controls are necessary to meet this sediment removal equivalency in Step 2 below, you will be able to take credit for this area as a fully vegetated "natural buffer."

Similarly, if a portion of the buffer area adjacent to the water of the state is owned by another party and is not under your control, you can treat the area of land not under your control as having the equivalent vegetative cover and soil type that predominates on the portion of the property on which your construction activities are occurring.

For example, if your earth-disturbances occur within 50 feet of a water of the state, but the 10 feet of land immediately adjacent to the water of the state is owned by a different party than the land on which your construction activities are taking place and you do not have control over that land, you can treat the 10 foot area adjacent to the stream as having the equivalent soil and vegetation type that predominates in the 40 foot area under your control. You would then make the same assumption in Step 2 for purposes of determining the equivalent sediment removal (which would be 44% in this case).

Alternatively, you may do your own calculation of the effectiveness of the 50-foot buffer based upon your site-specific conditions, and may use this number as your sediment removal equivalency standard to meet instead of using Tables A-8 and A-9. This calculation must be documented in your SWPPP.

Step 2 - Design Controls That Match the Sediment Removal Efficiency of the 50-foot Buffer

-
- It was assumed that vegetation has been removed from the disturbed portion of the site and a combination of cuts and fills have resulted in a smooth soil surface with limited retention of near-surface root mass.

To represent the influence of soil, EPA analyzed 11 general soil texture classifications in its evaluation of buffer performance. To represent different types of buffer vegetation, EPA evaluated 4 or more common vegetative types for each state/territory covered under the permit. For each vegetation type evaluated, EPA considered only permanent, non-grazed, and non-harvested vegetation, on the assumption that a natural buffer adjacent to the water of the U.S. will typically be undisturbed. EPA also evaluated slope steepness and found that sediment removal efficiencies present in Tables A-8 and A-9 are achievable for slopes that are less than nine percent.

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

Once you determine the estimated sediment removal efficiency of a 50-foot buffer for your site in Step 1, you must next select storm water controls that will provide an equivalent sediment load reduction. These controls can include the installation of a single control, such as a sediment pond or additional perimeter controls, or a combination of storm water controls. Whichever control(s) you select, you must demonstrate in your SWPPP that the controls will provide at a minimum the same sediment removal capabilities as a 50-foot natural buffer (Step 1). You may take credit for the removal efficiencies of your required perimeter controls in your calculation of equivalency, because these were included in calculating the buffer removal efficiencies in Tables C-8 through C-9. (Note: You are reminded that the controls must be kept in effective operating condition until you complete final stabilization on the disturbed portions of the site discharging to the water of the state)

To make the determination that your controls and/or buffer area achieve an equivalent sediment load reduction as a 50-foot buffer, you should use a model or other type of calculation. As mentioned above, there are a variety of models available that can be used to support your calculation, including USDA's RUSLE-series programs and the WEPP erosion model, SEDCAD, SEDIMOT, or other models. An example is provided in Attachment 3 to help illustrate how this determination could be made.

If you retain a buffer of less than 50 feet, you may take credit for the removal that will occur from the reduced buffer and only need to provide additional controls to make up the difference between the removal efficiency of a 50 foot buffer and the removal efficiency of the narrower buffer. For example, if you retain a 30 foot buffer, you can account for the sediment removal provided by the 30 foot buffer retained, and you will only need to design controls to make up for the additional removal provided by the 20 feet of buffer that is not being provided. To do this, you would plug the width of the buffer that is retained into RUSLE or another model, along with other storm water controls that will together achieve a sediment reduction equivalent to a natural 50-foot buffer.

As described in Step 1 above, you can take credit for the area you retained as a "natural buffer" as being fully vegetated, regardless of the condition of the buffer area.

For example, if your earth-disturbances occur 30 feet from a water of the state, but the 10 feet of land immediately adjacent to the water of the U.S. is owned by a different party than the land on which your construction activities are taking place and you do not have control over that land, you can treat the 10-foot area as a natural buffer, regardless of the activities that are taking place in the area. Therefore, you can assume (for purposes of your equivalency calculation) that your site is providing the sediment removal equivalent of a 30-foot buffer, and you will only need to design controls to make up for the additional removal provided by the 20-foot of buffer that is not being provided.

Step 3 - Document How Site-Specific Controls Will Achieve the Sediment Removal Efficiency of the 50-foot Buffer

In Steps 1 and 2, you determined both the expected sediment removal efficiency of a 50-foot buffer at your site, and you used this number as a performance standard to design controls to be installed at your site, which alone or in combination with any retained natural buffer, achieves

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

the expected sediment removal efficiency of a 50-foot buffer at your site. The final step is to document in your SWPPP the information you relied on to calculate the equivalent sediment reduction as an undisturbed natural buffer.

DWQ will consider your documentation to be sufficient if it generally meets the following:

- For Step 1, refer to the table in Attachment 1 that you used to derive your estimated 50-foot buffer sediment removal efficiency performance. Include information about the buffer vegetation and soil type that predominate at your site, which you used to select the sediment load reduction value in Tables A-8 and A-9. Or, if you conducted a site-specific calculation for sediment removal efficiency, provide the specific removal efficiency, and the information you relied on to make your site-specific calculation.
- For Step 2, (1) Specify the model you used to estimate sediment load reductions from your site; and (2) the results of calculations showing how your controls will meet or exceed the sediment removal efficiency from Step 1.

If you choose compliance alternative 3, you must also include in your SWPPP a description of why it is infeasible for you to provide and maintain an undisturbed natural buffer of any size.

A.3 SMALL RESIDENTIAL LOT COMPLIANCE ALTERNATIVES

EPA has developed two additional compliance alternatives applicable only to “small residential lots” that are unable to provide and maintain a 50 foot buffer.

The following steps describe how a small residential lot operator would achieve compliance with one these 2 alternatives.

A small residential lot (Common Plan Lot) is a lot or grouping of lots being developed for residential purposes that will disturb less than 1 acre of land, but that is part of a larger residential project that will ultimately disturb greater than or equal to 1 acre.

A.3.1 Small Residential Lot Compliance Alternative Eligibility

In order to be eligible for the small residential lot compliance alternatives, the following conditions must be met:

6. The lot or grouping of lots meets the definition of “small residential lot”; and
7. The operator must follow the guidance for providing and maintaining a natural buffer in Part A.2.3 of this Appendix, including:
 - Ensure that all discharges from the area of earth disturbance to the natural buffer are first treated by the site’s erosion and sediment controls, and use velocity dissipation devices if necessary to prevent erosion caused by storm water within the buffer;
 - Document in the SWPPP the natural buffer width retained on the property, and show the buffer boundary on your site plan; and

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

- Delineate, and clearly mark off, with flags, tape, or other similar marking device, all natural buffer areas.

A.3.2. Small Residential Lot Compliance Alternatives

You must next choose from one of two small residential lot compliance alternatives and implement the storm water control practices associated with that alternative.

Note: The compliance alternatives provided below are not mandatory. Operators of small residential lots can alternatively choose to comply with the any of the options that are available to other sites in Part 2.2.1.a and A.2.1 of this Appendix.

Small Residential Lot Compliance Alternative 1

Alternative 1 is a straightforward tiered-technology approach that specifies the controls that a small residential lot must implement based on the buffer width retained. To meet the requirements of small residential lot compliance alternative 1, you must implement the controls specified in Table A-1 based on the buffer width to be retained. See footnote 40, below, for a description of the controls you must implement.

For example, if you are an operator of a small residential lot that will be retaining a 35-foot buffer and you choose Small Residential Lot Compliance Alternative 1, you must implement double perimeter controls between earth disturbances and the water of the state.

In addition to implementing the applicable control, you must also document in your SWPPP how you will comply with small residential lot compliance alternative 1.

Table A-1 Alternative 1 Requirements⁴⁰

Retain 50 foot Buffer	Retain <50 and >30 Buffer	Retain ≤30 foot Buffer
No Additional Requirements	Double Perimeter Controls	Double Perimeter Controls and 7-Day Site Stabilization

Small Residential Lot Compliance Alternative 2

Alternative 2 specifies the controls that a builder of a small residential lot must implement based on both the buffer width retained and the site's sediment discharge risk. By incorporating the

⁴⁰Description of Additional Controls Applicable to Small Residential Lot Compliance Alternatives 1 and 2:

- **No Additional Requirements:** If you implement a buffer of 50 feet or greater, then you are not subject to any additional requirements. Note that you are required to install perimeter controls between the disturbed portions of your site and the buffer in accordance with Part 2.2.3.
- **Double Perimeter Control:** In addition to the reduced buffer width retained on your site, you must provide a double row of perimeter controls between the disturbed portion of your site and the water of the U.S. spaced a minimum of 5 feet apart.
- **Double Perimeter Control and 7-Day Site Stabilization:** In addition to the reduced buffer width retained on your site and the perimeter control implemented in accordance with Part 2.2.3, you must provide a double row of perimeter controls between the disturbed portion of your site and the water of the U.S. spaced a minimum of 5 feet apart, and you are required to complete the stabilization activities specified in Parts 2.2.14 within 7 calendar days of the temporary or permanent cessation of earth-disturbing activities.

sediment risk, this approach may result in the implementation of controls that are more appropriate for the site's specific conditions.

Step 1 – Determine Your Site's Sediment Risk Level

To meet the requirements of Alternative 2, you must first determine your site's sediment discharge "risk level" based on the site's slope, location, and soil type. To help you to determine your site's sediment risk level, EPA developed five different tables for different slope conditions. You should select the table that most closely corresponds to your site's average slope.

For example, if your site's average slope is 7 percent, you should use Table C-4 to determine your site's sediment risk.

After you determine which table applies to your site, you must then use the table to determine the "risk level" (e.g., "low", "moderate", or "high") that corresponds to your site's location and predominant soil type.⁴¹

For example, based on Table C-3, a site located in Northern Utah with a 4 percent average slope and with predominately sandy clay loam soils would fall into the "low" risk level.

Table A-2 Risk Levels for Sites with Average Slopes of ≤ 3 Percent

Soil Type Location					
	Clay	Silty Clay Loam or Clay- Loam	Sand	Sandy Clay Loam, Loamy Sand or Silty Clay	Loam, Silt, Sandy Loam or Silt Loam
Idaho (Northern Utah)	Low	Low	Low	Low	Low
New Mexico (Southern Utah)	Low	Low	Low	Low	Low

Table A-3 Risk Levels for Sites with Average Slopes of > 3 Percent and ≤ 6 Percent

Soil Type Location					
	Clay	Silty Clay Loam or Clay- Loam	Sand	Sandy Clay Loam, Loamy Sand or Silty Clay	Loam, Silt, Sandy Loam or Silt Loam
Idaho (Northern Utah)	Low	Low	Low	Low	Low
New Mexico (Southern Utah)	Low	Low	Low	Low	Moderate

⁴¹ One source for determining your site's predominant soil type is the USDA's Web Soil Survey located at <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>.

Table A-4 Risk Levels for Sites with Average Slopes of > 6 Percent and ≤ 9 Percent

Soil Type Location	Clay	Silty Clay Loam or Clay-Loam	Sand	Sandy Clay Loam, Loamy Sand or Silty Clay	Loam, Silt, Sandy Loam or Silt Loam
Idaho (Northern Utah)	Low	Low	Low	Low	Low
New Mexico (Southern Utah)	Low	Low	Low	Low	Moderate

Table A-5 Risk Levels for Sites with Average Slopes of > 9 Percent and ≤ 15 Percent

Soil Type Location	Clay	Silty Clay Loam or Clay-Loam	Sand	Sandy Clay Loam, Loamy Sand or Silty Clay	Loam, Silt, Sandy Loam or Silt Loam
Idaho (Northern Utah)	Low	Low	Low	Low	Low
New Mexico (Southern Utah)	Low	Moderate	Low	Moderate	Moderate

Table A-6 Risk Levels for Sites with Average Slopes of > 15 Percent

Soil Type Location	Clay	Silty Clay Loam or Clay-Loam	Sand	Sandy Clay Loam, Loamy Sand or Silty Clay	Loam, Silt, Sandy Loam or Silt Loam
Idaho (Northern Utah)	Low	Low	Low	Low	Moderate
New Mexico (Southern Utah)	Moderate	Moderate	Moderate	Moderate	High

Step 2 – Determine Which Additional Controls Apply

Once you determine your site’s “risk level”, you must next determine the additional controls you need to implement on your site, based on the width of buffer you plan to retain. Table A-7

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

specifies the requirements that apply based on the “risk level” and buffer width retained. See footnote 40, above, for a description of the additional controls that are required.

For example, if you are the operator of a small residential lot that falls into the “moderate” risk level, and you decide to retain a 20-foot buffer, using Table A-7 you would determine that you need to implement double perimeter controls to achieve compliance with small residential lot compliance alternative 2.

You must also document in your SWPPP your compliance with small residential lot compliance alternative 2.

Table A-7. Alternative 2 Requirements

Risk Level Based on Estimated Soil Erosion	Retain \geq 50' Buffer	Retain <50' and >30' Buffer	Retain \leq 30' and >10' Buffer	Retain \leq 10' Buffer
Low Risk	No Additional Requirements	No Additional Requirements	Double Perimeter Control	Double Perimeter Control
Moderate Risk	No Additional Requirements	Double Perimeter Control	Double Perimeter Control	Double Perimeter Control and 7-Day Site Stabilization
High Risk	No Additional Requirements	Double Perimeter Control	Double Perimeter Control and 7-Day Site Stabilization	Double Perimeter Control and 7-Day Site Stabilization

ATTACHMENT 1

Sediment Removal Efficiency Tables⁴²

EPA recognizes that very high removal efficiencies, even where theoretically achievable by a 50-foot buffer, may be very difficult to achieve in practice using alternative controls. Therefore in the tables below, EPA has limited the removal efficiencies to a maximum of 90%. Efficiencies that were calculated at greater than 90% are shown as 90%, and this is the minimum percent removal that must be achieved by alternative controls.

For the Utah CGP only the tables for Idaho and New Mexico are shown. The table for Idaho substitutes for northern Utah and the table for New Mexico substitutes for southern Utah.

Table A-8 Estimated 50-foot Buffer Performance in Idaho* (Northern Utah)

Type of Buffer Vegetation**	Estimated % Sediment Removal				
	Clay	Silty Clay Loam or Clay-Loam	Sand	Sandy Clay Loam, Loamy Sand or Silty Clay	Loam, Silt, Sandy Loam or Silt Loam
Tall Fescue Grass	42	52	44	48	85
Medium-density Weeds	28	30	28	26	60
Low-density Warm-season Native Bunchgrass (i.e., Grama Grass)	25	26	24	24	55
Northern Mixed Prairie Grass	28	30	28	26	50
Northern Range Cold Desert Shrubs	28	28	24	26	50

* Applicable for sites with less than nine percent slope

** Characterization focuses on the under-story vegetation

Table A-9 Estimated 50-foot Buffer Performance in New Mexico* (Southern Utah)

Type of Buffer Vegetation **	Estimated % Sediment Removal				
	Clay	Silty Clay Loam or Clay-Loam	Sand	Sandy Clay Loam, Loamy Sand or Silty Clay	Loam, Silt, Sandy Loam or Silt Loam
Tall Fescue grass	71	85	80	86	90

⁴² The buffer performances were calculated based on a denuded slope upgradient of a 50-foot buffer and a perimeter controls, as perimeter controls are a standard requirement (see Part 2.2.3).

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

Medium-density Weeds	56	73	55	66	78
Low-density Warm-season Native Bunchgrass (i.e., Grama Grass)	53	70	51	62	67
Southern Mixed Prairie Grass	53	71	52	63	50
Southern Range Cold Desert Shrubs	56	73	55	65	53

* Applicable for sites with less than nine percent slope

** Characterization focuses on the under-story vegetation

ATTACHMENT 2

Using the Sediment Removal Efficiency Tables – Questions and Answers

- **What if my specific buffer vegetation is not represented in Tables A-8 and A-9?** Tables A-8 and A-9 provide a range of factors affecting buffer performance; however, there are likely instances where the specific buffer vegetation type on your site is not listed. If you do not see a description of the type of vegetation present at your site, you should choose the vegetation type that most closely matches the vegetation type on your site. You can contact your local Cooperative Extension Service Office (<http://nifa.usda.gov/partners-and-extension-map>) for assistance in determining the vegetation type in Tables C-8 through C-9 that most closely matches your site-specific vegetation.
- **What if there is high variability in local soils?** EPA recognizes that there may be a number of different soil type(s) on any given construction site. General soil information can be obtained from USDA soil survey reports (<http://websoilsurvey.nrcs.usda.gov>) or from individual site assessments performed by a certified soil expert. Tables A-8 and A-9 present eleven generic soil texture classes, grouping individual textures where EPA has determined that performance is similar. If your site contains different soil texture classes, you should use the soil type that best approximates the predominant soil type at your site.
- **What if my site slope is greater than 9 percent after final grade is reached?** As indicated in the buffer performance tables, the estimated sediment removal efficiencies are associated with disturbed slopes of up to 9 percent grade. Where your graded site has an average slope of greater than 9 percent, you should calculate a site-specific buffer performance.
- **How do I calculate my own estimates for sediment reduction at my specific site?** If you determine that it is necessary to calculate your own sediment removal efficiency using site-specific conditions (e.g., slopes at your site are greater than 9 percent), you can use a range of available models that are available to facilitate this calculation, including USDA's RUSLE- series programs and the WEPP erosion model, SEDCAD, SEDIMOT, or other equivalent models.
- **What is my estimated buffer performance if my site location is not represented by Tables A-8 and A-9?** If your site is located in an area not represented by Tables A-8 and A-9, you should use the table that most closely approximates conditions at your site (Table A-8 generally represents northern Utah, Table A-9 generally represents southern Utah). You may instead choose to conduct a site-specific calculation of the buffer performance.
- **What if only a portion of my site drains to the buffer area?** If only a portion of your site drains to a water of the State, where that water is within 50 feet of your earth disturbances, you are only required to meet the equivalency requirement for the storm water flows corresponding to those portions of the site. See Attachment 3 for an example of how this is expected to work.

ATTACHMENT 3

Example of How to Use the Sediment Removal Efficiency Tables

Arid Location With Pre-existing Disturbances in the Natural Buffer (6.5 acre site located in southern Utah)

An operator of a site in southern Utah determines that it is not feasible to provide a 50-foot buffer, but a 28-foot buffer can be provided. Because the operator will provide a buffer that is less than 50 feet, the operator must determine which controls, in combination with the 28-foot buffer, achieve a sediment load reduction equivalent to the 50-foot buffer. In this example, the project will disturb 6.5 acres of land, but only 1.5 acres of the total disturbed area drains to the buffer area. Within the 28-foot buffer area is a preexisting concrete walkway. The equivalence analysis starts with Step 1 in Part A.2.4 of this Appendix with a review of the southern Utah buffer performance (Table A-9). The operator determines that the predominate vegetation type in the buffer area is prairie grass, the soil type is similar to silt, and the site is of a uniform, shallow slope (e.g., 3 percent grade). Although the operator will take credit for the disturbance caused by the concrete walkway as a natural buffer in Step 2, here the operator can treat the entire buffer area as being naturally vegetated with prairie grass. Based on this information, the operator refers to Table A-9 to estimate that the 50-foot buffer would retain 50 percent of eroded soil.

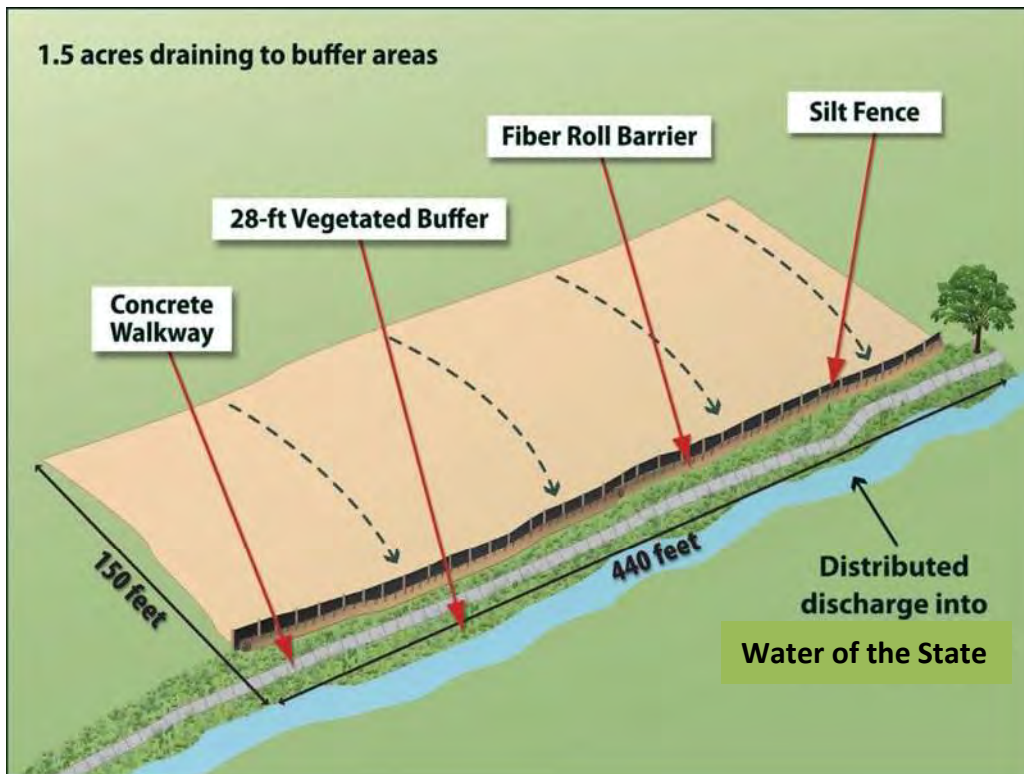


Figure A-5 Example – Equivalent Sediment Load Reductions at a 6.5 ac Site in Southern Utah.

The second step is to determine, based on the 50 percent sediment removal efficiency found in Table A-9, what sediment controls, in combination with the 28-foot buffer area, can be implemented to reduce

CONSTRUCTION GENERAL STORM WATER PERMIT (CGP)

sediment loads by 50 percent or more. The operator does not have to account the reduction in buffer function caused by the preexisting walkway, and can take credit for the entire 28-foot buffer being fully vegetated in the analysis. For this example, using the RUSLE2 profile model, the operator determined that installing a fiber roll barrier between the silt fence (already required by Part 2.2.3) and the 28-foot buffer will achieve an estimated 84 percent sediment removal efficiency. See Figure A-5. Note that this operator is subject to the requirement in Part A.2.3 of this Appendix to ensure that discharges through the silt fence, fiber roll barrier, and 28-foot buffer do not cause erosion within the buffer. The estimated sediment reduction is greater than the required 50 percent; therefore the operator will have met the buffer alternative requirement.

Appendix E

**UDOT Environmental Control
Supervisor (ECS) Training Certificates**

(See SECTION 10.1)

Certificate of Achievement presented to

Justin DeCaro

for the successful completion of
Environmental Control Supervisor (ECS)
Training

02-MAY-2022



StormwaterONE

Certifies that

Larkin McCormack

has successfully completed the required courses of
study and is recognized as a

**Qualified Preparer of Storm Water
Pollution Prevention Plans (QPswpppp /
QCIS)**

Completion Date 08/01/2021

Expiration Date 08/01/2023

Certification Number 1b27444b



PDHs: 2.5

Andrew Demers
Andrew Demers, President

Training Log

Stormwater Pollution Prevention Training Log

Project Name:
Project Location:
Instructor's Name(s):
Instructor's Title(s):
Course Location:
Date:
Course Length (hours):

Stormwater Training Topic: *(check as appropriate)*

<input type="checkbox"/>	Erosion Control BMPs	<input type="checkbox"/>	Emergency Procedures
<input type="checkbox"/>	Sediment Control BMPs	<input type="checkbox"/>	Good Housekeeping BMPs
<input type="checkbox"/>	Non-Stormwater BMPs		

Specific Training Objective:

Attendee Roster: *(attach additional pages as necessary)*

No.	Name of Attendee	Company
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Appendix F

Inspection Reports



UPDES STORMWATER INSPECTION EVALUATION FORM FOR SWPPP COMPLIANCE



BACKGROUND INFORMATION

Project Name:		Project PIN:		MS4 Name:		
Project Location:					County:	
UPDES Permit #:		Permit Effective Date:		Permit Expiration Date:		
Average Annual rainfall at the project site: <input type="checkbox"/> 20 inches or less <input type="checkbox"/> Greater than 20 inches						
Total Project Area (acre):		Total Disturbed Area (acre):		Receiving Waters:		
Project Type:	<input type="checkbox"/> Subdivision <input type="checkbox"/> Commercial <input type="checkbox"/> Industrial <input type="checkbox"/> Liner (Road/Pipe/Power) <input type="checkbox"/> Land Disturbance					

CONTACT INFORMATION

	NAME	PHONE NUMBER	E-MAIL
Owner:			
Contact Person:			
General Contractor:			
Contact Person:			

PRE-LAND DISTURBANCE INSPECTION



1. Has the SWPPP been signed by both UDOT and Contractor personnel?	<input type="checkbox"/> Yes <input type="checkbox"/> No
2. Has the Notice of Intent (NOI) been obtained from the Department of Water Quality (DWQ), and is a copy included with the SWPPP?	<input type="checkbox"/> Yes <input type="checkbox"/> No
3. Are any Best Management Practices (BMPs) that are required to be in place before land disturbing activities begin, installed?	<input type="checkbox"/> Yes <input type="checkbox"/> No
4. Have the BMPs been installed according to design specifications or manufacturer's standards?	<input type="checkbox"/> Yes <input type="checkbox"/> No
5. Does the Stormwater Pollution Prevention Plan (SWPPP) require any BMPs which must be installed immediately after land disturbing activities begin?	<input type="checkbox"/> Yes <input type="checkbox"/> No
6. Has the entirety of the project area been inspected, to ensure no site conditions have changed since the pre-construction phase of project?	<input type="checkbox"/> Yes <input type="checkbox"/> No

NOTICE OF TERMINATION (NOT) INSPECTION

Date of Evaluation:		Time:		Weather:	<input type="checkbox"/> Sunny <input type="checkbox"/> Cloudy <input type="checkbox"/> Rainy <input type="checkbox"/> Snowy
Inspected By (Owner):			Inspected By (Contractor):		
1. Has the site been properly stabilized according to the Utah Construction General Permit requirements?					<input type="checkbox"/> Yes <input type="checkbox"/> No
2. Have all temporary BMPs been removed?					<input type="checkbox"/> Yes <input type="checkbox"/> No
3. Have post-construction (permanent storm water system) elements been constructed and inspected in accordance with approved project drawings?					<input type="checkbox"/> Yes <input type="checkbox"/> No
4. Has construction equipment and debris/waste been removed?					<input type="checkbox"/> Yes <input type="checkbox"/> No

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Owner:				
	(Print Name)	(Title)	(Signature)	(Date)
General Contractor:				
	(Print Name)	(Title)	(Signature)	(Date)

 UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY WATER QUALITY	<h2 style="margin: 0;">SWPPP COMPLIANCE INSPECTION FORM</h2>	 LTDOT Keeping Utah Moving	
BACKGROUND INFORMATION			
Project Name:	Project PIN:		MS4 Name:
Project Location:	County:		
Owner:	General Contractor:	UPDES Permit #:	
Project Contact:	Phone:	Permit Expiration:	
INSPECTION INFORMATION			
Date of Inspection:	Start time:	Start time:	Date of Last Rain Event:
Reason for Inspection:	<input type="checkbox"/> Scheduled <input type="checkbox"/> > 0.5" Rain <input type="checkbox"/> Random		Duration (hrs):
Weather:	<input type="checkbox"/> Sunny <input type="checkbox"/> Cloudy <input type="checkbox"/> Rainy <input type="checkbox"/> Snowy		Approx. Rainfall (in):
1. Is the SWPPP on site and accessible, or is the SWPPP location posted in an obvious place and reasonably accessible (in a short time)?			<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
2. Are erosion control, sediment control, and good housekeeping BMP's installed on the site as shown in the SWPPP?			<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
3. Has the SWPPP been updated to reflect the current site conditions (modifications dated & initialed on site map, new BMPs on site map, discontinued BMPs crossed off site map, new BMP details & spec's in SWPPP, SWPPP amendment Log, etc.)?			<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
4. Are on-site inspections being performed and recorded by a qualified person on a weekly or biweekly basis, reporting items required by permit? (Inspector name & qualifications, weather, problems/repairs, corrective action, new BMPs, removed BMPs, discharges, etc.)			<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
5. Have all corrective action items from previous inspections been addressed and documented within the time frame allotted by the inspector?			<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
6. Are SW flows entering and leaving the construction site controlled, managed, or diverted around the site? (e.g. perimeter controls, berms, silt fence, upgradient boundary diversion, down gradient boundary sediment control, etc.)			<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
7. Is there evidence of sediment discharge such as mud flows or soil deposits from the construction site in downstream locations?			<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
8. Is there evidence of vehicles tracking soil off the construction site?			<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
9. Is there soil, construction material, landscaping items, or other debris piled on impervious surfaces (roads, drives) that could be washed with SW to a storm drain or water body?			<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
10. Is there a need to repair, maintain, or improve erosion control BMPs (temporary stabilization, erosion blankets, mulch, vegetated strips, rip rap, surface roughening, pipe slope drain, dust control, etc)?			<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
11. Is there a need to repair, maintain, or improve sediment control BMPs (silt fence, check dams, fiber rolls, sediment trap/basin, inlet protection, waddles, straw bails, curb cut-back, etc)?			<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
12. Is there a need to repair, maintain, or improve good housekeeping controls (clean track out pad, sweeping, construction materials management, litter/trash control, port-o-potties staked down, fueling areas, concrete wash out area, proper curb ramps, spill prevention, etc)?			<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
13. Are there disturbed areas that have not had construction activities for 14 to 21 days without stabilization? (except snow or frozen ground)?			<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
14. Are there places where BMPs are needed and should be installed or not needed and should be removed?			<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
<i>I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.</i>			
Owner:	(Print Name)	(Title)	(Signature)
General Contractor:	(Print Name)	(Title)	(Signature)



COMMENTS AND CORRECTIVE ACTIONS FOR SWPPP COMPLIANCE



Project Name:		Date of Inspection:		Page		of	
Project Location:							

COMMENTS

[illegible]

CORRECTIVE ACTIONS

Identify the problem and its location. If appropriate, describe (in general terms) what needs to be completed.

#	SEV Code	Location and Description of Deficiency, Spill, or Permit Violation	Corrective Action Needed
1			
2			
3			
4			
5			
6			

SEV Codes and Descriptions

DOR11	Discharge without a permit	BR19B	Failure to properly operate and maintain BMP's
DOR18	Failure to apply for a Notice of Termination	BR19A	Failure to properly install/implement BMP's
BOR12	Failure to conduct inspections	EOR16	Failure to submit required report (non-DMR)
BOC17	Failure to develop any or adequate SWPPP/SWMP	AOR22	Narrative effluent violation
BOC18	Failure to implement SWPPP/SWMP	DOR12	Failure to submit required permit information
BOR41	Failure to maintain records	AOR12	Numeric effluent violation
COR11	Failure to monitor	BOR42	Violation of a milestone in an order

Storm water Construction Site Inspection Report					
General Information					
Project Name:					
Date of Inspection:		Start Time:		End Time:	
Inspectors Name:					
Inspectors Title:					
Inspectors Information:	Contact	(Phone)		(Email)	
Inspection Information					
Type of Inspection <input type="checkbox"/> Regular <input type="checkbox"/> Pre-storm event <input type="checkbox"/> During-storm event <input type="checkbox"/> Post-storm event					
Weather Information					
Has there been a storm event since the last inspection? <input type="checkbox"/> Yes <input type="checkbox"/> No					
Storm Date & Time:		Storm Duration (hrs):		Approx. amount of precipitation (in):	
Weather at time of inspection? <input type="checkbox"/> Clear <input type="checkbox"/> Cloudy <input type="checkbox"/> Rain <input type="checkbox"/> Snow <input type="checkbox"/> Sleet <input type="checkbox"/> Wind <input type="checkbox"/> Other:					
Temperature:					
#	BMP Description/Location	Installed & Operation Properly?	Corrective Action Needed	Notes	
1		Yes No			
2		Yes No			
3		Yes No			
4		Yes No			
5		Yes No			
6		Yes No			
7		Yes No			
8		Yes No			
9		Yes No			
10		Yes No			

11		Yes No		
12		Yes No		
13		Yes No		
14		Yes No		
15		Yes No		
16		Yes No		
17		Yes No		
18		Yes No		
19		Yes No		
20		Yes No		
21		Yes No		
22		Yes No		
23		Yes No		
24		Yes No		
25		Yes No		
26		Yes No		
27		Yes No		
28		Yes No		
29		Yes No		
30		Yes No		

Appendix G

Corrective Action and Enforcement Action Log

UDOT Enforcement Action Log

Record all verbal warnings, disincentives, warning letters, stop work orders, notices of violation, and any other enforcement action below.

[illegible]

Appendix H –Grading and Stabilization Log

Project Name:
SWPPP Contact:

[illegible]

Appendix I – Recommended Seed Mix

Recommended Seed Mix for Reclamation

BLM Erosion Control Blend Details
<p><u>BLM Seed Mix Recommendation:</u></p> <p>Based on the existing vegetation observed, and through consultation with the Bureau of Land Management, these species were recommended for reseeding vegetated areas disturbed by construction activities. Details for this seed mix are included below:</p>
<p><u>Estimated Project Disturbance to be seeded:</u> 127 acres</p>
<p><u>Application Rate:</u></p> <p>Recommended Method—Drill Seeding or Hydroseeding Rate: 15 lbs. / acre Alternate Method—Broadcast Seeding and Harrow Rate: 20 lbs. / acre</p>
<p><u>The disturbed areas will be reseeded with a mix of these species:</u></p> <ul style="list-style-type: none"> • <i>Gutierrezia sarothrae</i> • <i>Dipterostemon capitatus</i> • <i>Coleogyne ramosissima</i> • <i>Asclepias asperula</i> • <i>Eriogonum fasciculatum</i> • <i>Senecio flaccidus</i> • <i>Rumex hymenosepalus</i> • <i>Penstamon eatonii</i> • <i>Purshia tridentata</i> • <i>Salvia dorrii</i> • <i>Artemisia tridentata</i> <p>Individual percentages may be determined by the contractor.</p>