GLORIETA CREEK FINAL LEVEE REMOVAL

EARTHMOVING AND EROSION CONTROL

SCOPE OF WORK

11-22-2011

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I. PROJECT OVERVIEW AND GENERAL CONDITIONS

A. GENERAL DESCRIPTION

Pecos National Historical Park (PECO) is responsible for managing riparian and wetland habitats along lower Glorieta Creek, a half-mile stretch of which was mined for sand and gravel before becoming part of the park. Once mining ended in the mid-1980s, ranchers bulldozed the remaining material into a series of levees, dams, and reservoirs. In the late 1990s, at the request of PECO, the NPS Water Resources Division (WRD) and collaborators from Colorado State University (CSU) developed a restoration plan to create a more stable, functional riparian-wetland ecosystem. A final grading and planting plan was implemented in 1999 and 2000, entailing extensive site regrading and the planting of willows, cottonwoods, sedges, rushes, bulrushes, and spikerushes to create riparian-wetland habitat.

Although the majority of the levee material was removed in 1999, portions of the upper reservoir levees were left in place to protect the newly excavated and planted site from being eroded by floods until the stabilizing floodplain vegetation could take hold. During a site assessment in 2007, the original design team determined that sufficient plant establishment had occurred to allow the removal of the remaining levee separating Glorieta Creek from the adjacent, restored floodplain, providing an opportunity for full restoration of natural channel-floodplain functions. This project involves the removal of levee material running along the western and southern edges of the site, parallel to Glorieta Creek, the placement of excavated material in a disposal site located on the northern edge of the project area, and regrading of the levee area to an elevation suitable for the establishment and support of wetland vegetation. In addition to earthmoving, the project entails final grading of the new wetland area (beneath the excavated levee) and the disposal area and performing seeding and erosion control for the disposal area and access road.

B. SUMMARY OF WORK TO BE ACCOMPLISHED

The major components of work to be accomplished under these specifications include the following:

1. Completion and submission of a Stormwater Pollution Prevention Plan as required for the NPDES permit.
2. Site preparation including placement of a temporary bridge over Glorieta Creek to access main work area.
3. Clearing, grubbing, removing, and otherwise disposing of vegetation, large rocks, debris and other objectionable material within the grading limits.
4. Performing all earthwork activities including excavation, hauling and placing of excavated levee material in the designated fill disposal site. Excavation of 2850 cubic yards (in place volume) of material comprising the levee and placement and compaction of excavated material in the designated fill disposal area.
5. Shaping, finishing and fine-grading of areas in the restored wetland and the fill disposal site.
6. Purchase and placement of seed in the fill disposal area and the temporary access route following design specifications.

7. Purchase and installation of Curlex Netfree erosion control fabric on fill disposal area and temporary access route.
8. Site clean-up and demobilization.

C. LOCATION

The project site is located along Glorieta Creek within Pecos National Historical Park (Latitude: 35.53770, Longitude: -105.67874), approximately 2 miles south of Pecos, NM and 25 miles east of Santa Fe (Figure 1). The only access and egress route at the site will be the dirt road leading from Hwy 63, across Glorieta Creek at the designated crossing point. All vehicles and equipment must remain within the designated work zones shown in the drawing included in Appendix 1. Work zones will be clearly marked with boundary ropes and/or flagging. Work zone boundaries will be reviewed with the contractor prior to the initiation of the grading. No vehicles or equipment may move outside of the designated work areas for any reason. Violation of this requirement will result in a $1000 fine to the Contractor for the first infraction, and $2000 for any subsequent infractions.

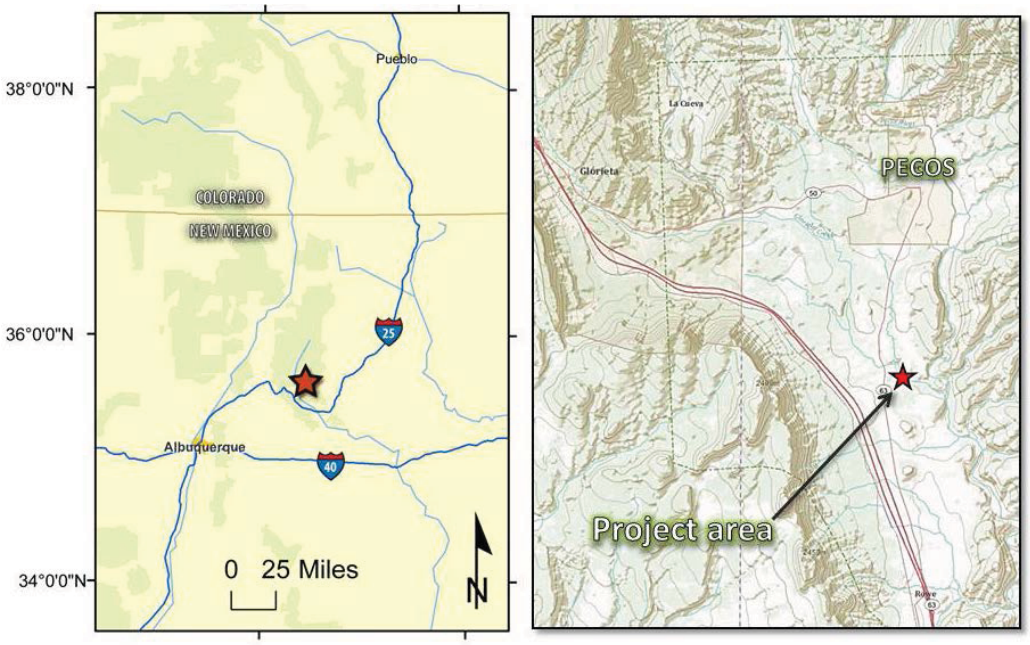


Figure 1. Location of project area.

D. CONTRACTOR'S USE OF PREMISES

1. Staging Area: A staging area will be permitted on the west side of the project work area. Confine storage of materials to staging area and temporary office as approved by the Contracting Officer and as shown on drawings.
2. Preservation of Natural and Cultural resources is the primary purpose for the establishment of Pecos National Historical Park. Any damage to natural or cultural features or to park property that occurs will result in an immediate stoppage of operations so that restoration or repair can be prescribed and procedures for preventing any similar occurrences can be implemented.

3. The cost of any project delays and any repair work that occurs as a result of any damage to any natural or cultural features or to NPS property will be the responsibility of the contractor and will result in no additional expense to the Government. The contractor shall confine all operations to the work limits of the project delineated on drawings.

E. SPECIAL CONSTRUCTION REQUIREMENTS

1. Construction Season: Work shall be conducted between **(add date)** and **(add date)** when water levels are typically low.
2. Holiday Work Restrictions: No on-site work shall be performed during National Holidays unless otherwise approved by the contracting officer.
3. Pecos National Historical Park (NHP) regulations require that work only be conducted between 8:00 AM and 5:00 PM, Monday through Friday. At all other times the gate leading to the site will be locked.
4. Should onset of adverse weather conditions force the Contractor to stop work prior to completion, the site shall be left in a condition that minimizes safety hazards and risk of erosion by heavy storm events. Temporary erosion control measures may be required.
5. Contractor shall remove from the project site all debris and waste created during construction activities.

F. EQUIPMENT

1. All vehicles and equipment (including shovels, wheelbarrows, etc.) entering the project area must be clean of plant seeds, mud, and soil and free from oil, fuel or hydraulic fluid leaks. Contractor must pressure wash all construction equipment to thoroughly remove all dirt, plant, and other foreign material prior to arrival on site. Particular attention must be given to the undercarriage, wheels, tracks, and any other surface where soil containing non-native plant seeds or aquatic organisms such as the New Zealand mud snail or zebra mussel may reside. These efforts are critical to prevent the introduction and establishment of non-native plant or animal species into the project area. Equipment that has not been adequately cleaned will be turned away.
2. Equipment found operating on the project that has not been inspected and approved by the Contract Officer or has oil, fuel, or hydraulic fluid leaks will be shut down and subject to citation and removal from the premises.

G. HEALTH AND SAFETY

1. The Contractor must abide by all state and federal regulations pertaining to Health and Safety in the work place.
2. All workers must be provided with and use the necessary protective equipment, including boots, gloves and hard-hats where appropriate, and must be allowed sufficient rest breaks during the workday.
3. All workers must refrain from practices that might endanger themselves or others. Particular attention is drawn to state and federal regulations pertaining to drug and alcohol use in the work place.

H. CLEAN UP

1. At the completion of this scope of work, Contractor shall remove from the job site and properly dispose of all remaining debris, waste materials, excess materials, and equipment required of or created by Contractor.
2. Disposal of waste materials shall be solely the responsibility of Contractor and shall be done in accordance with applicable waste disposal regulations.

I. PERMITS

The NPS will obtain a Clean Water Act Section 404 permit and an NPDES stormwater permit for the project, and will provide copies to the contractor prior to commencement of construction. The contractor shall be responsible for:

1. Following all 404 permit requirements and conditions during mobilization, construction, and demobilization.
2. Developing and submitting a Storm Water Pollution Prevention Plan (SWPPP) to the NPS at least 30 days prior to commencement of construction that meets the requirements of the NPDES permit as issued by the state.

J. PROTECTION OF SENSITIVE FEATURES

1. Cultural Resources:

   A. No cultural resource sites are known to lie within the work area. Prior to work implementation, the park's archeologist or his/her representative will instruct all project personnel about the sensitivity and importance of park resources and their historic significance. Project personnel will specifically be instructed regarding:

      - The illegality of collecting artifacts on federal lands to avoid any potential Archeological Resource Protection Act (ARPA) violations.
      - Notification of appropriate park staff in the event unidentified cultural resources or human remains are discovered.

   B. If any unidentified cultural resources or human remains are encountered, work will be halted in the vicinity of those resources and the park archeologist (or otherwise designated NPS staff member) will immediately be notified.

2. Natural Resources

   A. Compliance procedures will follow those stated in the park Resource Management Plan, and those currently recommended by resource managers. In general, natural resource compliance will occur prior to implementation of any project work.

   B. Qualified staff will conduct appropriate review and survey of the project area for plant and animal species of concern prior to work in the project area. No listed threatened or endangered species are known to be located in work unit.

3. National Environmental Policy Act and National Historic Preservation Act Compliance

   Compliance with the National Environmental Policy Act and the National Historic Preservation Act will be documented prior to any work taking place.

4. Sensitive features within the work area will be identified and marked with center stakes/flags and/or pin flags before work commences.

5. Mitigations to protect sensitive features from unacceptable damage/loss from work activities will be identified and be in place before any work commences in the project area.

6. In general, contract personnel will avoid entering (vehicle or foot) any marked or otherwise identified sensitive feature unless directed to do so by the cultural/natural resource manager assigned to the project.

II. SCOPE OF SERVICES

A. GENERAL

1. Ground work will be scheduled between **(add date)** and **(add date)** when water levels are typically low.
2. The Contractor shall furnish all equipment, supplies, materials, and manpower required for project completion.
3. The Contractor shall ensure that all materials are handled in a manner conducive to safe transport, haulage, and placement.
4. It is the Contractor's responsibility to clean-up any end haul materials spilled, dropped, or otherwise neglected during hauling and placement and shall bear all costs associated with clean-up of spilled end haul materials. Adequate clean-up of these materials will be determined in the field based on the Contracting Officer's visual inspection.
5. The Contractor shall provide dust control and other safety measures to adequately protect the health and safety of all onsite personnel and to protect all facilities and the surrounding environment during excavation, hauling, and placement of end haul materials.

B. VEHICLE MAINTENANCE AND REFUELING

1. To avoid the potential for contamination of surface water and groundwater, vehicle refueling must be done away from the main work area, within the designated refueling area on the western side of Glorieta Creek near the staging area indicated on the map in Appendix 1.
2. The contractor must provide a spill absorbent mat under the site where fueling will occur.
3. All vehicle maintenance and overnight and other parking must also be done at the refueling area, and the contractor will also provide spill absorbent mats for these uses.
4. All oil, fuel or other petroleum-based spills shall be cleaned up immediately utilizing an approved "spill kit," as manufactured by Sorbent Products Company, or equivalent.
5. Violation of these requirements will result in a $1000 fine to the Contractor per infraction. This clause does not absolve the Contractor from any other legal responsibility that may incur due to a fuel spill. Vehicles that appear to be leaking oil or fuel onto the ground will be required to leave the work area until they are repaired.

C. GENERAL EROSION CONTROL

1. Prior to starting work, and as necessary throughout all phases of the project, the Contractor will properly install and maintain erosion/sediment control measures (e.g., silt fences) per product specifications to control the movement of sediment beyond the work zone and disposal site boundaries and into existing aquatic habitats.
2. Such erosion and sediment control measures will be in full accordance with all state and federal regulations and permit requirements and conditions, including the Storm Water Pollution Prevention Plan (SWPPP) and the Clean Water Act Section 404 permit described previously.

D. STAGING AND SITE PREPARATION

1. Prior to starting work, the Contractor will construct a temporary crossing over Glorieta Creek at the point indicated on Appendix 1. The crossing must be sufficiently robust to enable earth moving and grading equipment to access the site throughout the time that earthwork will occur.
2. The crossing shall be constructed so that the flow of Glorieta Creek is not obstructed or diverted and so that no material erodes from the crossing to pollute the creek.
3. The contractor must use highway plates or another bridging method that protects the vegetation on either side of and within the creek, and keeps equipment and sediments out of the creek. Placement of a filled/culverted crossing will not be allowed.

E. CLEARING AND GRUBBING

1. Prior to excavation and hauling of levee material, the levee shall be cleared by felling of any trees and disposal of stumps, down trees, brush, shrubs, windfalls, logs, limbs, sticks, vegetation, and other objectionable matter existing on the levee. Unless specifically designated to be saved by the NPS, all such matter occurring within the limits of the excavation area shall be removed and transported to the disposal area.
2. Grubbing shall consist of the removal and disposal of roots, stumps, stubs, rocks and other objectionable matter embedded within the levee material that would interfere with the subsequent excavation of the levee material or that would create undesirable surface conditions for seeding or placement of the erosion control blanket as described in F-H below.
3. Cleared and grubbed material removed from the levee area shall be transported to the designated disposal area on the north side of the site and covered by subsequent lifts of levee material. The cleared and grubbed material shall be scattered evenly at the bottom of the fill disposal area and not piled or stacked. The Contractor shall not burn any material on the site.

F. TRANSPORTATION AND HAULING

1. Transportation and hauling of end haul materials shall be conducted in accordance with all applicable local, State, and Federal laws, rules, and regulations.
2. The Contractor shall be responsible for all costs resulting from improper handling, transportation, and placement of these materials.

3. The NPS or its designated representative will lay out a designated upland route between the levee and the designated disposal area which all Contractor vehicles must use. The Contractor will then remove the levee indicated on the drawing in Appendixes 1 and 2 so that the grade is lowered to the elevations indicated on the drawing included in Appendix 3 and as staked by the NPS in the field.
4. It is the Contractor's responsibility to remove any end haul materials spilled, dropped, or otherwise neglected during hauling. Adequate removal of these materials will be determined in the field based on the Contracting Officer's visual inspection. The costs resulting from clean-up of these materials shall be borne by the Contractor.
5. To accomplish design grades, the contractor will begin excavation work at the eastern (downstream) end of the levee and proceed westward and then northward such that vehicles and heavy equipment are never driven over near-finished or finished grades at any time.
6. Special care shall be taken by the Contractor during placement activities to ensure that no damage occurs to undisturbed portions of the Glorieta Creek floodplain and wetlands. Any damage caused by the Contractor to this area, as determined by the Contracting Officer, shall be repaired and/or replaced at the Contractor's expense.

G. GRADING SPECIFICATIONS AND TOLERANCES

1. The contractor shall excavate the levee according to project design specifications, as staked in the field by the NPS prior to commencement of construction. Final grading shall not vary more than +/- 0.1 feet (+/- 3 centimeters) from the staked design elevations. The NPS will provide an onsite representative to check final grades continuously as the excavation proceeds to assure that tolerances are achieved. The NPS onsite representative will approve final grades in excavated portions of the levee as the project proceeds. Graded areas approved by the NPS will not be re-entered or re-worked by the contractor without the approval of the NPS COTR or their representative.
2. 2850 cubic yards of fill (in-place volume) will be removed from the levee and placed at the designated fill disposal site (see drawing in Appendix 1).
3. Final grading of the restored wetland areas beneath the levee will be rough, not smooth, as shall be achieved by the teeth of an excavator bucket extended into the wetland area from equipment operating from the existing levee material. To avoid compaction or disturbance of final grades, no vehicles will be allowed on the near-finished or finished grades.

H. DISPOSAL OF EXCAVATED LEVEE MATERIAL

1. All material excavated from the levee as described in section II shall be transported to the disposal area indicated on the drawing in Appendix 1.
2. Access to and from the disposal area shall be limited to a single upland route indicated on the drawing in Appendix 1 and marked in the field by the NPS. The specific route can only be altered with explicit approval by the NPS.
3. Placement of end haul material within the disposal area shall be achieved by spreading the material evenly over the designated disposal site in 12" lifts and blending evenly into existing contours.

4. Construction equipment shall be routed as uniformly as possible over the entire surface of each lift to compact the material.
5. The top 12” lift will be evenly placed over the disposal site and blended evenly into existing contours, but must have minimal compaction in preparation for placement of seed. The Contractor shall “rip” the top 12” lift after placement to achieve the minimal compaction requirement, and then rake or use other smoothing/fine-grading techniques to remove any depressions, rills or dirt clods to create a suitable substrate for seeding and placement of the Curlex Netfree fabric.
6. Before installing Curlex Netfree blankets, the seedbed shall be inspected by the Contract officer or designated representative to ensure it has been properly decompacted and fine graded to remove any existing rills, channels, depressions, or large dirt clods. It shall also be free of obstructions, such as tree roots, projections such as stones, and other foreign objects.
7. The Contract officer or designated representative must approve the final seedbed surface prior to seeding (Section I. below). The Contractor shall fine grade the soil surface by hand dressing where necessary to remove local deviations and shall not proceed until all unsatisfactory conditions have been remedied.

I. SEEDING

1. The contractor is responsible for purchasing 76 lbs of the upland seed mix specified in Table 1, available from Curtis and Curtis Seed (4500 North Prince, Clovis, NM, 88101, PH: 575-762-4759). No substitutions shall be made without explicit written permission of the NPS Contract officer.
2. Once final grades have been achieved, as determined by the Contract officer or its designated representative, seed shall be broadcast by the Contractor at a rate of 2 lbs per 1000 square feet (88 lbs per acre).
3. Once seed is broadcast, the contractor is responsible for lightly raking, by hand, all areas seeded with the upland seed mix, including both the fill disposal area and access route from the staging area.

Table 1. Upland seed mix.

Scientific name	**Common name**	**Percent of mix**
Boutelou gracilis	Blue grama	15%
Achnatherum hymenoides	Indian ricegrass	5%
Agropyron smithii	Western wheatgrass	15%
Bouteloua curtipendula	Sideoats grama	16%
Pleuraphis jamesii	Galleta	2%
Buchloe dactyloides	Buffalograss	30%
Sporobolus airoides	Alkali sacaton	3%
Festuca rubra	Red fescue	10%
Schizachyrium scoparium	Little bluestem	4%

J. INSTALLATION OF CURLEX NETFREE EROSION CONTROL BLANKET

1. The Contract Officer or their representative must approve seed placement and treatment (Section I. above) prior to installation of the Curlex Netfree erosion control fabric.
2. Upon approval of seed placement and treatment, Curlex-brand NetFree erosion control blankets, manufactured by American Excelsior, Inc., shall be installed by the Contractor to provide a temporary, biodegradable cover material to reduce slope erosion and enhance revegetation.
3. Contractor shall purchase enough Curlex Netfree blanket to cover 38,000 ft^2 of area. This is enough blanket to cover the designated disposal area and temporary access route to the disposal area.
4. Erosion control blanket shall be furnished in rolls and wrapped with suitable material to protect against moisture intrusion and extended ultraviolet exposure prior to placement. Each roll shall be labeled with a date code identification, which allows for sufficient tracking of the product back to date of manufacturing and for quality control purposes.
5. Erosion control blanket shall be of consistent thickness with fibers distributed evenly over the entire area of the blanket and shall be free of defects and voids that would interfere with proper installation or impair performance.
6. Erosion control blanket shall be stored by the Contractor in a manner that protects them from damage by construction activities.
7. After the area has been properly shaped, compacted, seeded and approved by the Contract Officer, the Curlex Netfree blanket shall be rolled out flat, even, and smooth without stretching the material and then anchored to the subgrade using metal staples a minimum of 6 inches in length and having a U-shaped top.
8. Erosion control blanket shall be orientated in vertical strips parallel to the main slope and anchored with metal staples, as identified in the staple pattern guide (Figure 2). Adjacent strips shall be overlapped to allow for installation of a common row of staples that anchor through both blankets. Joints between erosion control blankets located end-to-end shall be sufficiently overlapped with the uphill end of the blanket located lower on the slope placed under the bottom edge of blanket located above on the slope. A common row of staples placed through both blankets will be used to anchor blanket ends.
9. Curlex Netfree blankets shall be trenched at the head of the slope if the blanket cannot be extended three feet over the slope crest or if overland flow is anticipated from upslope areas (Figure 3).

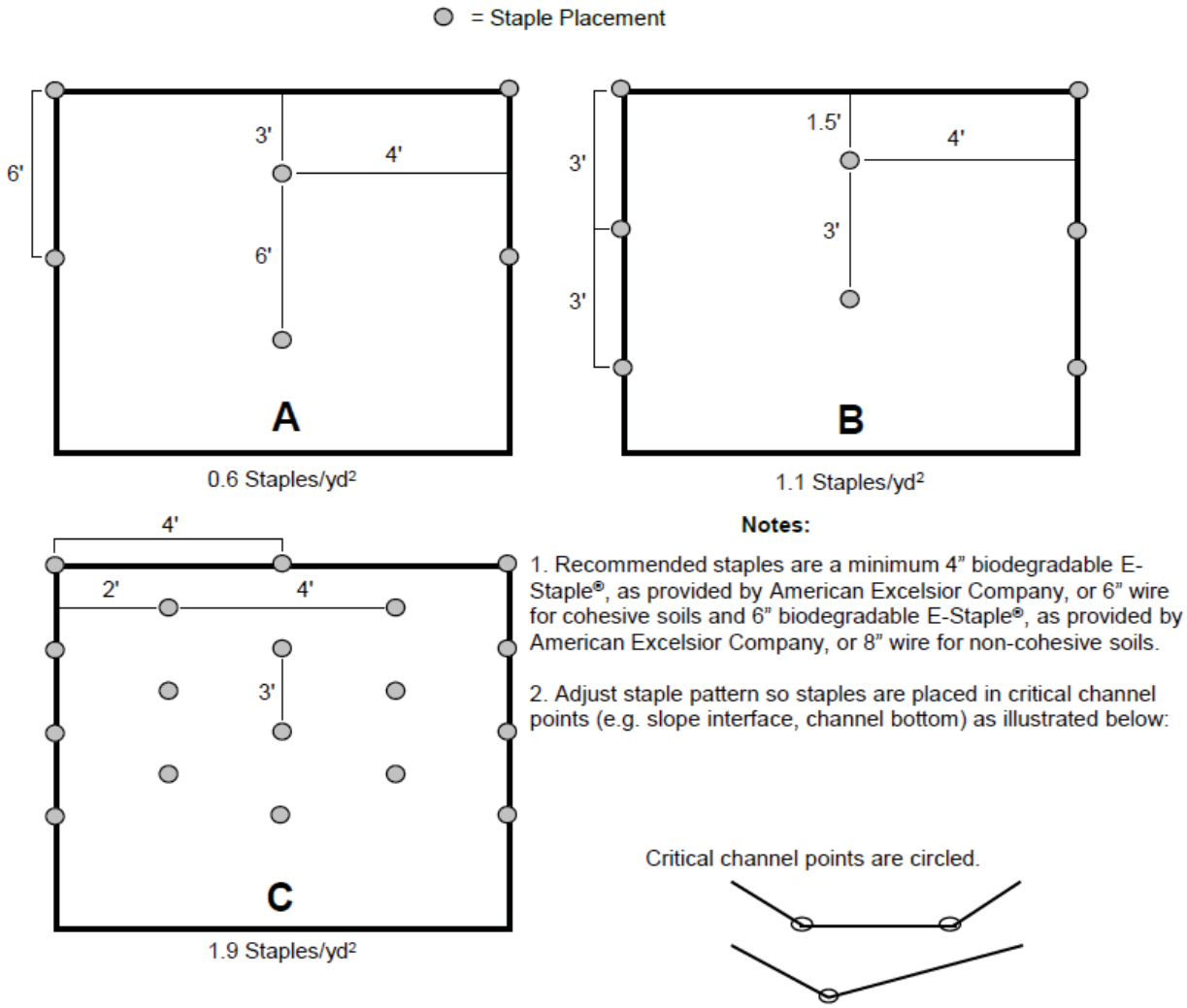


Figure 2. Staple placement patterns for low (panel A; ≤4:1), medium (panel B; ≤3:1), and high (panel C; ≤1:1) slope settings. The pattern in panel C is to be used in channel settings. Patterns are for 8' wide Curlex erosion control blankets; horizontal staple spacing should be adjusted for different sized blankets.

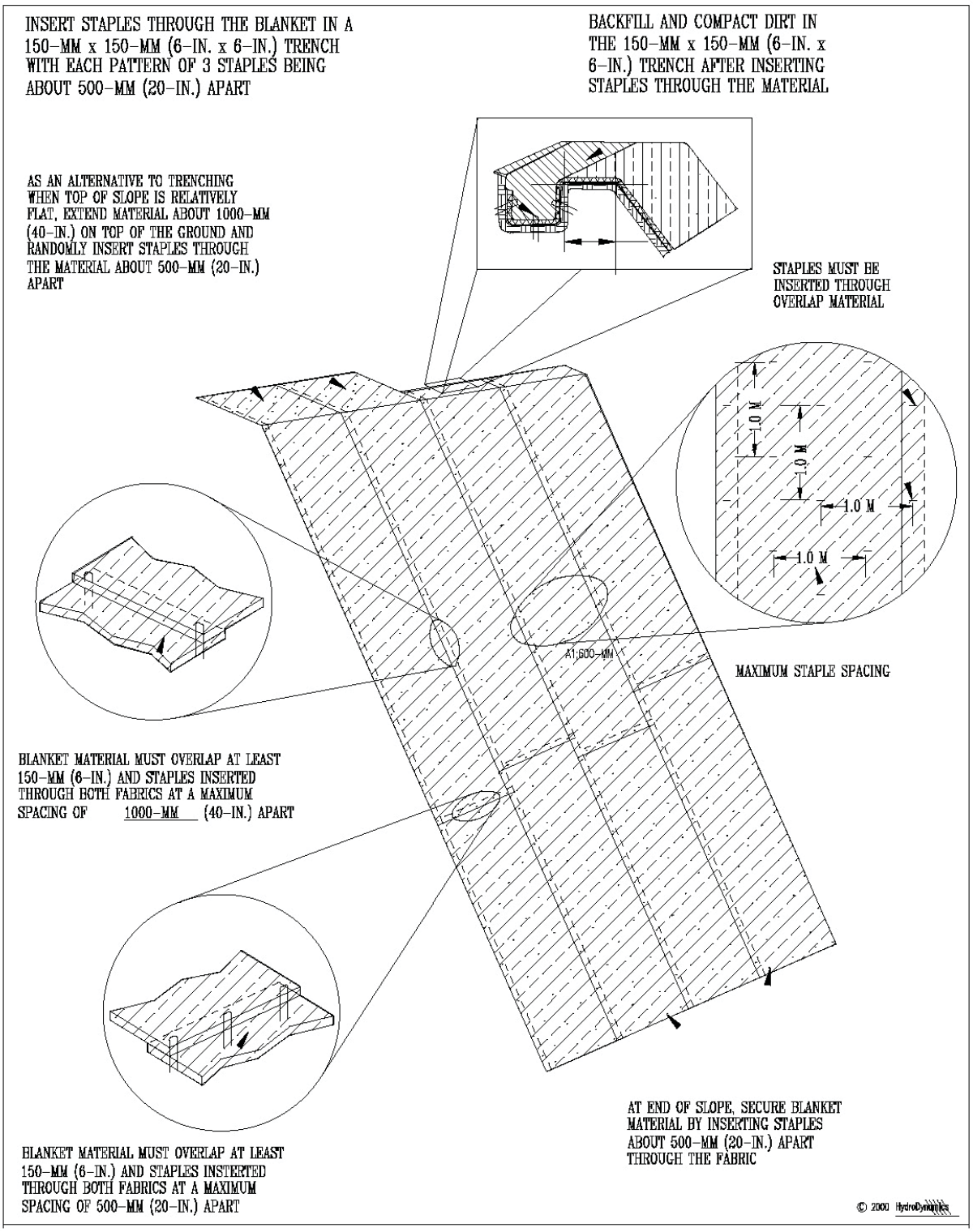


Figure 3. Illustration of key requirements for installation of Curlex erosion control blanket on slopes in fill disposal area.

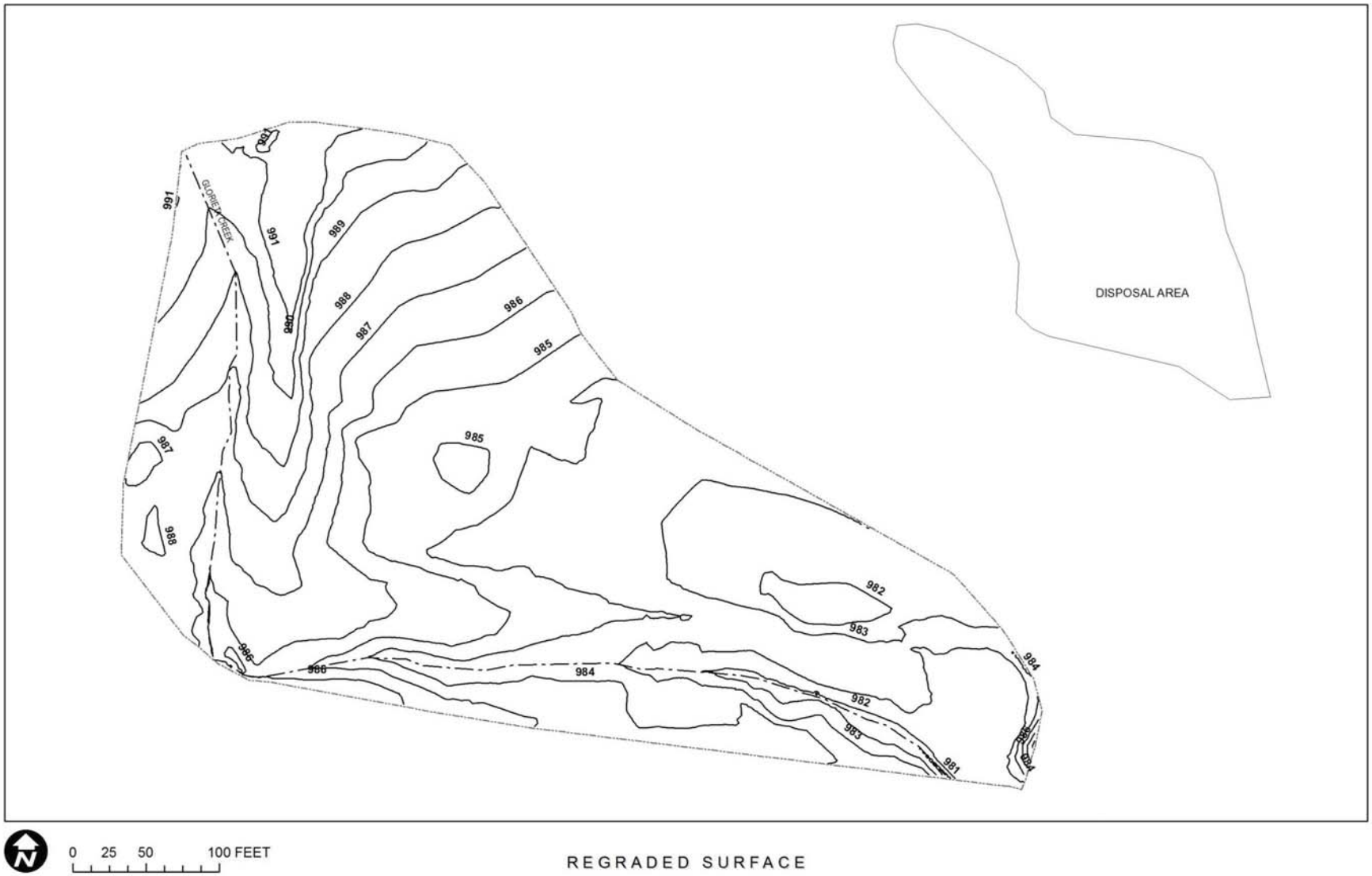
APPENDIX 1. SITE OVERVIEW

PROJECT AREA OVERVIEW

APPENDIX 2. PLAN VIEW: EXISTING TOPOGRAPHY

EXISTING GROUND SURFACE

APPENDIX 3. PLAN VIEW: DESIGN TOPOGRAPHY



APPENDIX 4. PRE AND POST-DESIGN CROSS-SECTIONS