

SPECIAL TECHNICAL SPECIFICATIONS

FOR

**MIDDLE ROSEWOOD CREEK
STREAM ENVIRONMENT ZONE RESTORATION – AREA A
PWP-WA-2012-307
WASHOE COUNTY, NEVADA**

FOR USE WITH

Standard Specifications, as referred to in these Special Technical Specifications, are the Standard Specifications for Public Works Construction – Washoe County “Orange Book,” current edition. The Special Technical Specifications are supplemental to the Standard Specifications.



6/13/12

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APPENDIX:

A – Storm Water Pollution Prevention Plan (SWPPP)

B – Project Permits

C – Geotechnical Exploration Report

D – Private property rights-of-entry and easement documents

100 GENERAL

The work described herein shall conform to the Plans, Contract Documents, Standard Specifications, these Special Technical Specifications, and the Storm Water Pollution Prevention Plan (SWPPP). Standard Specifications, as referred to in these Special Technical Specifications, are the Standard Specifications for Public Works Construction – Washoe County “Orange Book,” current edition. The Special Technical Specifications are supplemental to the Standard Specifications. All work shall be in accordance with all local, county, regional, state and federal regulations and all permits associated with this Project.

In case of conflict between the Standard Specifications and these Special Technical Specifications, the Special Technical Specifications shall govern, take precedence over, and be used in lieu of such conflicting portions.

105 CONTRACTOR QUALIFICATIONS

105.01 Description

In addition to any bidder qualifications and experience requirements noted elsewhere in the Contract Documents, Project Plans, Standard Specifications, and these Special Technical Specifications, each bidder shall attach sufficient documentation to the bid forms to clearly demonstrate his/her ability to meet the minimum experience qualifications stated in this section. The following items shall be included in the bid submittal:

1. Project descriptions of similar Projects to the Middle Rosewood Creek SEZ Restoration – Area A Project including:
 - a. Location of Project
 - b. Dates Project was initiated and completed by the Contractor
 - c. Total contract costs
 - d. Client/agency contact in responsible charge (owner of the work)
2. Other references demonstrating contractor qualifications on similar Projects. These references shall only include regulatory, funding and/or local agency representatives or licensed Professional Engineers working on similar Projects within the Lake Tahoe Basin.

The above items shall clearly demonstrate the Contractor’s experience qualifications to perform the work associated with the Middle Rosewood Creek SEZ Restoration – Area A Project and past similar experience on other Projects. The experience qualifications to be demonstrated above are required to meet the following minimum requirements:

- A. The Contractor is required to have successfully performed and completed a minimum of two (2) projects, within the past five (5) years, which included work components of a similar scope and nature (within a US Army Corp of Engineers regulated wetland area, or TRPA Stream Environment Zone) as to that which is indicated herein, and consisted of minimum project total costs of \$1,000,000 and contract times exceeding 90 days.
- B. The Contractor is required to have successfully performed and completed a minimum of one (1) project, within the past five (5) years, which required a multi-year/seasonal contract and winterization components similar in scope and nature as to that which is indicated herein.
- C. The Contractor is required to have successfully performed and completed up to one (1) project, within the past five (5) years, which involved working within waterways under an NDEP or equivalent regulatory agency permit, and preferably within the Lake Tahoe basin.
- D. All landscape and revegetation work required as part of this project shall be performed by a licensed Landscape Contractor (C-10 in Nevada). The licensed Landscape Contractor is required to have successfully performed and completed a minimum of three (3) projects, within the past five (5) years, which included landscape and revegetation work components of a similar scope and nature as

to that which is indicated herein (within a US Army Corp of Engineers regulated wetland area, or TRPA Stream Environment Zone). In addition at least two (2) of these representative projects shall include revegetation and/or bank stabilization work within waterways under an NDEP or equivalent regulatory agency permit, and preferably within the Lake Tahoe basin.

Failure of the Contractor to submit the bidder qualification and experience requirements as identified herein or as noted elsewhere in the Contract Documents may warrant the Contractor's bid submittal incomplete and non-responsive.

105.02 Measurement and Payment

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with performing all the work involved in provisions of this section, complete in place as shown on the Project Plans, as specified in the Contract Documents, Project Permits(s), Standard Specifications, these Special Technical Specifications, the SWPPP, and as directed by the Engineer, shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for.

110 ORDER OF WORK

110.01 Description

Order of work shall conform to the Contract Documents, Plans, Standard Specifications, these Special Technical Specifications, and SWPPP. All work shall be in accordance with all local, county, regional, state and federal regulations and all permits associated with this Project.

The project requires coordination with several different public entities - Washoe County (County), Incline Village General Improvement District (IVGID), Southwest Gas Corporation, NV Energy, AT & T, Tahoe Regional Planning Agency (TRPA), Nevada Division of Environmental Protection (NDEP), Army Corps of Engineers (ACOE), Nevada Department of Wildlife (NDOW), Nevada Division of State Lands (NDSL), Nevada Department of Transportation (NDOT) and Nevada Tahoe Conservation District (NTCD), in addition to various private property owners – Third Creek Homeowners Association (HOA), Club Tahoe, and Craig Robinson (for additional information see Project Plans). The Contractor will be responsible for coordinating with all entities (named above and any other entity having jurisdiction) and with all other Contractors working in the area (whether listed in these Special Technical Specifications or not).

The Contractor shall submit, within at least seven (7) calendar days prior to the Pre-Construction Meeting, a sequence and schedule of the entire work (i.e. construction schedule) for review and acceptance by the Engineer, in accordance with the provisions of this section, these Special Technical Specifications, the Standard Specifications, the Contract Documents, and Plans. This schedule shall include all work necessary for a full and complete project as shown on the Plans and as described in these Special Technical Specifications. In addition the Contractor's construction schedule/order of work shall be in accordance with all local, regional, state and federal regulations, including what has been stated in the Stormwater Pollution Prevention Plan (SWPPP) and the TRPA, NDEP and other project permits.

The standard hours of work for the Project will be in accordance with TRPA and County regulations and must occur between 8:00 AM and 6:30 PM Monday through Friday, non-holiday (Federal Holiday). No project work will be allowed on weekends, holidays, or nights. Due to the proximity to residential properties, the hours of work will be strictly enforced.

For road closures on Northwood Boulevard (see Section 160, "Traffic Control") the Contractor shall adhere to the following restrictions / parameters for construction operations within the Washoe County right-of-way as shown on the Project Plans.

- Any full width road closure on Northwood Blvd (restricted to project limits as shown on Plans) shall only be implemented for a singular period of time, and is restricted to a maximum of four (4) weeks in length (i.e. to minimize confusion to the public, road closures shall be continuous over a definitive time period or window; multiple start and end times is prohibited).
- A full width road closure on Northwood Blvd (restricted to project limits as shown on Plans) shall commence no earlier than September 4, 2012 (or day after Labor Day if contractor performs work in year other than 2012).
- A full width road closure on Northwood Blvd (restricted to project limits as shown on Plans) shall conclude no later than October 8, 2012 (or one week prior to annual grading season restriction of October 15 if contractor performs work in year other than 2012).
- Nighttime and/or weekend work periods (outside of the standard hours of work as identified in the specifications) may be allowed only for construction operations related to the culvert replacement within Northwood Blvd, as accepted by the Engineer and Washoe County, including compliance (or approved exceptions) with any noise ordinances and standards as established by TRPA and the local jurisdictions.

Due to the complex nature of the Project and that the work is being performed on private property (through a right-of-entry obtained by NTCDD) the Project will require a particular order of work to be followed. The Contractor will be required to complete one work area before moving onto work in another work area; upon acceptance of the Engineer. These work areas and associated tasks are described in general by each item (number) in the order of work shown below. The project order of work shall be as follows (where plan sheets and general task descriptions are identified below, in no way does it represent the complete work efforts and improvements required for that phase or the project in full):

Phase 1 Activities:

1. Notice to Proceed,
2. Submittal of SWPPP, construction schedule, traffic control plan, truck haul route plan, shop drawings, and all other required submittals,
3. Pre-Construction Meeting,
4. Marking / verification of all underground utilities within the project area,
5. Installation of project sign,
6. Construction of Phase 1 temporary erosion control measures and establishment of storage and staging areas (reference Sheets S-1, EC-1a thru EC-1d2, and as described in the SWPPP and these Special Technical Specifications),
7. TRPA pre-grade inspection and approval,
8. Installation of Temporary Traffic Control Measures, and potholing of utilities,
9. Construction of channel, floodplain, revegetation and associated facilities (including installation and establishment of temporary irrigation system) between approximately stations PR-2+50 and PR-14+80 within the limits of Phase 1 identified on the Erosion Control Plan Sheets (EC Sheets) and as described in the SWPPP and these Special Technical Specifications (all work as shown on Sheets P-1 thru PR-3 and R-1 thru R-3),
10. Construction of utility relocations, RCB culvert structure, temporary roadway reconstruction, floodplain, revegetation and associated facilities between approximately stations PR-19+00 thru PR-19+80 within the limits of Phase 1 identified on the Erosion Control Plan Sheets (EC Sheets) and as described in the SWPPP and these Special Technical Specifications (reference Sheet P-4 and R-4),

11. Construction of channel, grade control structures, floodplain, revegetation and associated facilities (including installation and establishment of temporary irrigation system) between approximately stations PR-15+20 and PR-19+00 within the limits of Phase 1 identified on the Erosion Control Plan Sheets (EC Sheets) and as described in the SWPPP and these Special Technical Specifications (all work as shown on Sheets P-3 thru PR-4 and R-3 thru R-4), ***note that work in this area shall not be started until construction of the proposed RCB culvert structure is complete, or the use of this area is no longer required as a staging and storage site for work on the proposed RCB culvert structure,***
12. Restoration of all disturbed areas within the Project area,
 - a. Removal of access roads,
 - b. Removal of all staging and storage areas,
 - c. Revegetation of access road areas,
 - d. Revegetation of staging and storage areas,
 - e. Installation of landscaped screening,
 - f. Restoration/revegetation of all other areas disturbed by the Contractor's operations,
13. Phase 1 Pre-Final site walk with Engineer, Contractor, NTCD, NDSL, TRPA, NDEP, plus private property owners HOA, Club Tahoe, and Craig Robinson,
14. Development of Phase 1 project punchlist by Engineer,
15. Installation of revegetation warning signs,
16. Removal of all construction limit fencing,
17. Completion of Phase 1 punchlist items,
18. Phase 1 Final site walk with Engineer, Contractor, NTCD, NDSL, TRPA, NDEP, plus private property owners HOA, Club Tahoe, and Craig Robinson,
19. Shut down of temporary irrigation system (schedule for shut down to be weather dependent and directed by Engineer; shut down anticipated to occur between October 1 and November 1), and
20. Completion/close of Phase 1 activities will be determined by the Engineer and is expected to occur on or about October 15th of the initial calendar year of the construction contract.

Phase 2 Activities:

Phase 2 efforts are primarily focused on the growth, establishment, and maintenance of the vegetation treatments for the channel and floodplain (all disturbed areas of Phase 1 efforts). Phase 2 duration will be dependent on the establishment success of the revegetation and the ability of the restored areas to receive channel and floodplain flow, as determined by the Engineer, Revegetation Specialist, NTCD, NDSL, TRPA, and NDEP. The duration of Phase 2 efforts, not including the initial year of installation, will at the least make allowance for the completion of one full annual year growing season or at the most make allowances for the completion of two full annual year growing seasons prior to start of any Phase 3 activities (basis for consideration of a full annual year growing season is generally April 1 to November 15). Each portion of the Phase 2 efforts is identified in the bid list under separate bid schedules and paid for in accordance with these Special Technical Specifications.

Phase 2, Year 1 efforts (shall commence immediately upon completion of Phase 1 activity):

1. Winterization and maintenance of project site, including all revegetated areas, temporary erosion control measures and irrigation system (continual through entire Phase 2, Year 1, duration),
2. Start up of temporary irrigation system (schedule for start up to be weather dependent and directed by Engineer; start up anticipated to occur between April 1 and June 1),
3. Phase 2, Year 1, June (1st-growing season) revegetation establishment project inspection by Engineer, Revegetation Specialist, NTCD, NDSL, TRPA, and NDEP,
4. Phase 2, Year 1, June (1st-growing season) revegetation establishment punchlist development by Engineer and Revegetation Specialist,

5. Replacement and/or Repair of items identified on the Phase 2, Year 1, June (1st-growing season) revegetation establishment punchlist,
6. Phase 2, Year 1, August (1st-growing season) revegetation establishment project inspection by Engineer, Revegetation Specialist, County, NTCD, NDSL, TRPA, and NDEP,
7. Phase 2, Year 1, August (1st-growing season) revegetation establishment punchlist development by Engineer and Revegetation Specialist,
8. Replacement and/or Repair of items identified on the Phase 2, Year 1, August (1st-growing season) revegetation establishment punchlist,
9. Phase 2, Year 1, Prelim First Growing Season site walk with Engineer, Contractor, NTCD, NDSL, TRPA, NDEP, plus private property owners HOA, Club Tahoe, and Craig Robinson,
10. Development of Phase 2, Year 1, First Growing Season project punchlist by Engineer,
11. Completion of Phase 2, Year 1, First Growing Season punchlist items,
12. Phase 2, Year 1, Final First Growing Season site walk with Engineer, Contractor, NTCD, NDSL, TRPA, NDEP, plus private property owners HOA, Club Tahoe, and Craig Robinson,
13. Shut down of temporary irrigation system (schedule for shut down to be weather dependent and directed by Engineer; shut down anticipated to occur between October 1 and November 1),
14. Winterization and continued maintenance of project site, including all revegetated areas, temporary erosion control measures and irrigation system,
15. Second Growing Season start up of temporary irrigation system (schedule for start up to be weather dependent and directed by Engineer; start up anticipated to occur between April 1 and June 1),
16. Phase 2, Year 1, June (2nd-growing season) revegetation establishment project inspection by Engineer, Revegetation Specialist, NTCD, NDSL, TRPA, and NDEP,
17. Phase 2, Year 1, June (2nd-growing season) revegetation establishment punchlist development by Engineer and Revegetation Specialist,
18. Replacement and/or Repair of items identified on the Phase 2, Year 1, June (2nd-growing season) revegetation establishment punchlist, and
19. Completion/close of Phase 2, Year 1 activities will be determined by the Engineer and is expected to occur on or about July 15th of the third calendar year of the construction contract.

Upon completion of the Phase 2, Year 1, June (2nd-growing season) revegetation establishment project inspection the Engineer, Revegetation Specialist, NTCD, NDSL, TRPA, and NDEP will determine if Phase 3 efforts can commence in this calendar year (third calendar year of construction contract) or not. The Engineer will notify the Contractor on or before July 15 informing the Contractor of the decision.

****In the event Phase 3 will commence in the third calendar year of construction contract, the Contractor will not be required to perform the Phase 2, Year 2 activities. The Contractor's work efforts will then be directed to Phase 3 efforts. No compensation will be allowed for the bid item(s) for the Phase 2, Year 2 efforts.***

****In the event Phase 3 does not commence in the third calendar year of construction contract, the work associated with Phase 2, Year 2 shall be undertaken by the Contractor; and the Contractor will be compensated in accordance with these Special Technical Specifications.***

****Phase 2, Year 2 efforts (shall commence immediately upon completion of Phase 2, Part A activity):***

1. Maintenance of project site, including all revegetated areas, temporary erosion control measures and irrigation system (continual through entire Phase 2, Year 2, duration),
2. Phase 2, Year 2, August (2nd-growing season) revegetation establishment project inspection by Engineer, Revegetation Specialist, NTCD, NDSL, TRPA, and NDEP,

3. Phase 2, Year 2, August (2nd-growing season) revegetation establishment punchlist development by Engineer and Revegetation Specialist,
4. Replacement and/or Repair of items identified on the Phase 2, Year 2, August (2nd-growing season) revegetation establishment punchlist,
5. Phase 2, Year 2, Prelim Second Growing Season site walk with Engineer, Contractor, NTCD, NDSL, TRPA, NDEP, plus private property owners HOA, Club Tahoe, and Craig Robinson,
6. Development of Phase 2, Year 2, Second Growing Season project punchlist by Engineer,
7. Completion of Phase 2, Year 2, Second Growing Season punchlist items,
8. Phase 2, Year 2, Final Second Growing Season site walk with Engineer, Contractor, NTCD, NDSL, TRPA, NDEP, plus private property owners HOA, Club Tahoe, and Craig Robinson,
9. Shut down of temporary irrigation system (schedule for shut down to be weather dependent and directed by Engineer; shut down anticipated to occur between October 1 and November 1), and
10. Winterization and continued maintenance of project site, including all revegetated areas, temporary erosion control measures and irrigation system, (continual through commencement of Phase 3 activities).
11. Completion/close of Phase 2, Year 2 activities will be determined by the Engineer and is expected to occur on or about May 1 of the fourth calendar year of the construction contract.

Phase 3 Activities:

***** In the event the Contractor is not required to perform the Phase 2, Year 2 efforts, the Contractors operation will commence with item 7 below (except for the inclusion of items 1 and 2) at the direction of the Engineer. In the event the Contractor is required to complete Phase 2, Year 2 efforts the Contractors operations will commence with item 1 below at the direction of the Engineer.***

1. Phase 3 Notice to Proceed issued by Engineer,
2. Maintenance of all revegetated areas, temporary erosion control measures and irrigation system (continual through entire Phase 3, duration),
3. ** Start up of temporary irrigation system (schedule for start up to be weather dependent and directed by Engineer; start up anticipated to occur between April 1 and June 1),
4. ** Phase 3, June revegetation establishment project inspection by Engineer, Revegetation Specialist, NTCD, NDSL, TRPA, and NDEP,
5. ** Phase 3, June revegetation establishment punchlist development by Engineer and Revegetation Specialist,
6. ** Replacement and/or Repair of items identified on the Phase 3, June revegetation establishment punchlist,
7. Marking / verification of all underground utilities within the project area,
8. Construction of Phase 3 temporary erosion control measures (as shown on Sheets EC-3a thru EC-3d3 and as described in the SWPPP and these Special Technical Specifications),
9. TRPA pre-grade inspection and approval,
10. Installation and establishment of WPC-1 (as shown on Sheet DIV-1 and as described in the SWPPP and these Special Technical Specifications),
11. Installation and establishment of Diversion 1 (as shown on Sheet DIV-1 and as described in the SWPPP and these Special Technical Specifications),
12. Construction of downstream proposed/existing channel tie-in (as shown on Sheets TI-1 through TI-4),
13. Installation and establishment of Diversion 2 (as shown on Sheet DIV-2 and as described in the SWPPP and these Special Technical Specifications),
14. Construction of proposed channel and existing channel crossing (as shown on Sheets TI-5 through TI-13),

15. Installation and establishment of Diversion 3 (as shown on Sheet DIV-3 and as described in the SWPPP and these Special Technical Specifications),
16. Construction of upstream proposed/existing channel tie-in and all other improvements upstream of Northwood Boulevard (as shown on Sheets TI-15 through TI-19),
17. Flushing and rewetting of the entire proposed channel in accordance with the Project Plans, Special Technical Specifications, Project Permits and the Project SWPPP,
 - a. Work on future efforts will not be allowed for until the proposed channel (entire length) demonstrates the ability to convey water without turbidity and permission is granted by the Engineer, NTCD, NDSL, TRPA, and NDEP.
18. Introduction of creek flows to the new channel (entire length),
 - a. Work on future efforts will not be allowed for until the proposed channel (entire length) demonstrates the ability to convey water without turbidity and permission is granted by the Engineer, NTCD, NDSL, TRPA, and NDEP.
19. Removal of Diversion 3 and establishment of full flow in proposed channel,
 - a. Removal will not be allowed for until turbidity levels and other requirements are met and final acceptance is granted by the Engineer, NTCD, NDSL, TRPA, and NDEP.
20. Removal of Diversion 2,
 - a. Removal will not be allowed for until turbidity levels and other requirements are met and final acceptance is granted by the Engineer, NTCD, NDSL, TRPA, and NDEP.
21. Removal of Diversion 1,
 - a. Removal will not be allowed for until turbidity levels and other requirements are met and final acceptance is granted by the Engineer, NTCD, NDSL, TRPA, and NDEP.
22. Removal of WPC-1,
 - a. Removal will not be allowed for until turbidity levels and other requirements are met and final acceptance is granted by the Engineer, NTCD, NDSL, TRPA, and NDEP.
23. Removal of existing pipe culverts, installation of cut-off walls, roadway restoration, backfill and compaction of existing channel, construction of floodplain, construction of valley grade control structures and associated facilities and Revegetation (including installation and establishment of temporary irrigation system) between approximately stations EX-18+00 and EX-23+00 within the limits of Phase 3 identified on the Erosion Control Plan Sheets (Sheets EC-3c through EC-3d3) and as described in the SWPPP and these Special Technical Specifications (all work as shown on Sheets P-3 thru PR-4 and R-3 thru R-4),
 - a. Stationing is approximate, the backfill and compaction of the existing channel, revegetation and all other efforts for a full and complete project shall be accomplished for a smooth and finished surface throughout the entire project area when complete as directed by the Engineer.
24. Backfill and Compaction of existing channel, Construction of floodplain, construction of valley grade control structures and associated facilities and Revegetation between approximately stations EX-3+50 and EX-17+50 within the limits of Phase 3 identified on the Erosion Control Plan Sheets (Sheets EC-3a through EC-3c) and as described in the SWPPP and these Special Technical Specifications (all work as shown on Sheets P-1 thru PR-3 and R-1 thru R-3),
 - a. Stationing is approximate, the backfill and compaction of the existing channel, revegetation and all other efforts for a full and complete project shall be accomplished for a smooth and finished surface throughout the entire project area when complete as directed by the Engineer.
25. Restoration of all disturbed areas within the Project area,
 - a. Removal of access roads,
 - b. Removal of all staging and storage areas,
 - c. Revegetation of access road areas,
 - d. Revegetation of staging and storage areas,
 - e. Installation of landscaped screening,

- f. Restoration/revegetation of all other areas disturbed by the Contractor's operations,
26. Phase 3, Pre-Final site walk with Engineer, Contractor, NTCD, NDSL, TRPA, NDEP, plus private property owners HOA, Club Tahoe, and Craig Robinson,
 27. Development of Phase 3, project punchlist by Engineer,
 28. Completion of Phase 3, punchlist items,
 29. Phase 3, Final site walk with Engineer, Contractor, NTCD, NDSL, TRPA, NDEP, plus private property owners HOA, Club Tahoe, and Craig Robinson,
 30. Shut down of temporary irrigation system (schedule for shut down to be weather dependent and directed by Engineer; shut down anticipated to occur between October 1 and November 1),
 31. Maintenance of project site, including all revegetated areas, any applicable temporary erosion control measures and irrigation system for duration of the revegetation maintenance and bonding period as described in the Special Technical Specifications.

In addition to the work outline above the Contractor will be responsible for the continual maintenance, and potential re-installation, of all temporary erosion control measures and protection fencing shown on the Plans, described in these Special Technical Specifications, described in the Project Permits and as described in the SWPPP for the entire length of the Project, both during active construction and non-construction times, including "winter down time" (typical Oct 15 to May 1 of any given year).

The order of work as noted above is a guideline for development of the Contractor's project construction schedule. Should the Contractor choose to revise this order of work, the Contractor shall submit a proposed order of work (as part of the construction schedule) to the Engineer for review and acceptance. In the event the Engineer does not accept the Contractor's proposed order of work, the above order of work shall hold for the contract.

Work shall be performed in a manner that will minimize inconvenience to residents, and the public, including the amount of time that a property ingress/egress is closed. In order to minimize the impact to the residents in and adjacent to the project area, the Contractor shall work diligently in one area until all work is completed prior to starting work in another area; this excludes temporary erosion control measures. The Contractor shall not open trench or disturb any more area than can be reasonably backfilled and/or protected by the end of the work day or if eminent rain is forecasted, etc.

The Contractor will be responsible for meeting all the requirements of the SWPPP, as well as all regulations and requirements set forth by the County, IVGID, TRPA, NDEP, and all other permitting, regulatory and funding agencies and utilities having jurisdiction in the Project area. In the event fines are levied by any of these agencies (or any other agency/fine), either to the County, NTCD or the Contractor, the Contractor shall be solely responsible for all costs associated with these fines. In the event the project receives a stop work order by any entity, the Contractor will not be granted any additional working days or compensation for lost time/delays. Additionally, the working days during which no work is performed will be counted as contract working days, though the Contractor is unable to work due to the stop work order.

The Contractor shall notify property owners and the Engineer a minimum of forty-eight (48) hours prior to closing off access to any property. The Contractor shall notify the owner by attempting to contact the property owner at the property and also by posting a message on the main entrance door of the building (if there are multiple main entrances, or it is unclear which door is the main entrance the contractor shall post multiple doors). The Contractor shall develop the notification to be used and receive acceptance by the Engineer prior to any work being commenced. In the event the Contractor does not provide this notification in the timeline outlined above, to either the property owner or Engineer, no work will be allowed which affects access to the property and no delay claims, extra working days or extra compensation will be allowed for.

110.02 Measurement and Payment

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with performing all the work involved in provisions of this section, complete in place as shown on the Project Plans, as specified in the Contract Documents, Project Permits(s), Standard Specifications, these Special Technical Specifications, the SWPPP, and as directed by the Engineer, shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for.

120 PROJECT PERMITS

120.01 Description

This project is located within Washoe County, Nevada and the Lake Tahoe Basin, which is regulated by the Tahoe Regional Planning Agency (TRPA) in addition to the Nevada Division of Environmental Protection (NDEP). Additionally the Project falls within Washoe County, which will additionally issue a permit for the Project. Furthermore the project is constructing improvements in a US Army Corp of Engineers jurisdictional wetland, which requires the issuance of a nationwide permit from the US Army Corp of Engineers. Finally, a portion of the work is within the NDOT right-of-way, which requires the issuance of an encroachment permit by NDOT.

The project permits have not been received for the project at the time of Bid, however the contractor will be responsible for all permit requirements upon receipt of the permits for the project and no additional compensation shall be allowed for. The project permit(s) will have specific requirements covering work to be performed under this contract. The Contractor shall meet the permit(s) requirements for grading season restrictions, stormwater discharges, Best Management Practices (BMPs), selection of staging and storage areas, dewatering and diversion practices, revegetation and restoration requirements, and all other agency approval conditions. The Contractor shall note that the project is located in sensitive lands (TRPA Stream Environment Zone and US Army Corp of Engineers Wetlands) and thus require special care during construction.

In addition to TRPA and NDEP stormwater discharges and temporary erosion control and BMP requirements, the Contractor shall be responsible for complying with all Washoe County and NDOT permits and other agency requirements and responsibilities as provided in the project permit(s), Contract Documents, Plans, Standard Specifications, these Special Technical Specifications, and the SWPPP. **The Contractor is required to procure a street cut permit from Washoe County prior to initiating any work within the County right-of-way.**

The Contractor shall maintain a copy of all permit(s) at the construction site and shall make the permit(s) available to operating personnel during construction activities; also upon request these permit(s) must be made available for public inspection.

It shall be the Contractor's responsibility to completely inform him or herself of the conditions of all Project Permit(s) and conduct construction operations accordingly. Any requested change to an agency's permit conditions of approval, proposed by the Contractor, shall be submitted to the Engineer for transmittal to TRPA, NDEP, or other agency for their approval. The Contractor shall also be responsible for adhering to the requirements of the TRPA Code of Ordinances relating to this project. Should conflicts arise between the Standard Specifications and the TRPA Code of Ordinances, the TRPA Code of Ordinances shall supersede the Standard Specifications.

The Contractor is responsible for coordinating the pre-grading meeting with TRPA to allow for review of the project site and determination of the adequacy of temporary erosion control measures and

BMPs deployed by the Contractor. The Contractor shall coordinate the meeting so that the Contractor, Engineer, TRPA, NDEP, and NTCDD staff are present. The Contractor shall follow the requests of the reviewing environmental agencies as necessary to bring the construction site temporary erosion control devices and BMPs into compliance with the permit(s) requirements, regulations, and other provisions of these Special Technical Specifications, and the SWPPP. The Contractor shall maintain all temporary erosion control devices and BMPs until all work is complete and the project site is stabilized per acceptance of the Engineer and all relevant agencies in review of the project site at the “Final Walk Through”. The Contractor can remove temporary erosion control devices and BMPs only upon approval by the Engineer, TRPA, and NDEP to do such. Attention is directed to the revegetation requirements found elsewhere in these Special Technical Specifications.

The Contractor shall comply with all noxious weed requirements per the United States Forest Service (USFS) and other regulatory agencies. These requirements include but are not limited to the following:

- All tools, equipment and vehicles used for project implementation are required to be weed-free. All tools, equipment and vehicles will be cleaned of all attached mud, dirt, and plant parts. This will be done at a vehicle washing station or steam cleaning facility (power or high pressure cleaning) before the equipment and vehicles enter the project area, and before vehicles enter the Lake Tahoe Basin (if they originate from outside the Basin).
- All soil, fill, gravel, rock, mulch, seed, organic matter or other imported materials are required to be weed-free. Use onsite soils, gravel, rock, or organic matter when possible. Otherwise, obtain materials from pits, quarries, nurseries, and other sources that are certified or have been determined to be weed-free by the noxious weed coordinator of the USFS Lake Tahoe Basin Management Unit.
- Minimize the amount of ground and vegetation disturbance in the construction areas. Reestablish vegetation on all disturbed bare ground to minimize weed establishment and infestation.
- Use weed-free mulches, and seed sources. Salvage topsoil from project area for use in onsite revegetation, unless contaminated with noxious weeds. All activities that require seeding or planting must utilize locally collected native seed sources when possible. Plant and seed material should be collected from or near the project area, from within the same watershed, and at a similar elevation when possible. Persistent non-native such as *Phleum pratense* (cultivated timothy), *Dactylis glomerata* (orchard grass), or *Lolium* spp. (ryegrass) will not be used. This requirement is consistent with the USFS Region 5 policy that directs the use of native plant material for revegetation and restoration for maintaining “the overall national goal of conserving the biodiversity, health, productivity, and sustainable use of forest, rangeland, and aquatic ecosystems.” Seed mixes should be accepted by the Revegetation Specialist.
- Staging areas for equipment, materials, or crews shall not be sited in weed infested areas.

The Contractors attention is directed to Section 210.03, “Noxious Weed Treatment,” of these Special Technical Specifications for additional information and requirements relative to noxious weeds.

The project is located within a sensitive land capability class area (1b SEZ) as classified by the TRPA. Therefore the Contractor will be required to use extreme caution in all activities associated with the project. The Contractor will be required to meet all of the requirements shown on the Plans, as described in the Project Permit(s), these Special Technical Specifications and as stated in the SWPPP. The Contractor is restricted from parking equipment, and storing materials within the Project limits, except as shown on the Plans or as directed by the Engineer. Soil and other materials shall not be stored, stockpiled, or otherwise placed within areas or on a surface that is not designated for such treatment on the drawings. Refueling of equipment will not be allowed within the floodplain project work areas or other SEZ areas.

The Contractor is further required to only use “low impact equipment” for this project. No equipment having a ground pressure that will disturb and/or compact the ground (generally ground pressures less than 25 psi) will be allowed off of paved areas, or designated temporary truck haul routes under any circumstance. All equipment on the project site, (off paved areas or designated truck haul routes), shall meet this low pressure requirement. TRPA prefers the use of “rubber track” equipment as low impact equipment and the Contractor is encouraged to use “rubber track” equipment in sensitive land capability areas. The Contractor shall provide detailed information, (manufacture’s data brochure, or other product specific materials), to the Engineer for review and acceptance prior to any equipment being mobilized to the project site and placed in the work.

The Contractor shall meet all of the requirements of the SWPPP, and the project permit(s) as issued by the permitting agencies, and any provisions for rights-of-entries issued by land owners. The Contractor will be responsible for adhering to all requirements of the permit(s), and no additional compensation will be allowed for. The following project permits may be found as appendices to the Contract Documents:

- Tahoe Regional Planning Agency
- Nevada Department of Environmental Protection – *Stormwater General Permit, 401 Water Quality Certification, Temporary Authorization to Discharge, Working in Waterways*
- US Army Corp of Engineers – *NWP#27*
- NDOT – *Right-of-way Occupancy*
- Washoe County – *Grading, Street Cut, Revocable Encroachment*

120.02 Measurement and Payment

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with performing all the work involved in provisions of this section, complete in place as shown on the Project Plans, as specified in the Contract Documents, Project Permits(s), Standard Specifications, these Special Technical Specifications, the SWPPP, and as directed by the Engineer, shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for.

130 STORM WATER POLLUTION PREVENTION COMPLIANCE

130.01 Description

The Contractor shall implement the requirements for erosion control due to storm water and construction related runoff from construction sites as established under Nevada Revised Statutes (NRS) and Nevada Administrative Code (NAC) 445A. It shall be the Contractor’s responsibility to provide day-to-day operational control of activities and the implementation of Best Management Practices (BMPs) that are necessary to control and reduce the pollution of Waters of the US from stormwater discharges and other pollutants and runoff associated with construction activities, and to ensure compliance with the requirements of National Pollutant Discharge Elimination System (NPDES) permit coverage. Work shall include, but is not limited to:

- Complete and submit a Notice of Intent (NOI) including any permit and filing fees
- Develop and Implement a Storm Water Pollution Prevention Plan (SWPPP)
- Furnishing all materials
- Implementing all practices and installing, constructing and maintaining all BMPs and temporary and/or permanent control measures for the duration of the project
- Submit a Notice of Termination (NOT) upon completion of the project

For coverage under the NDEP stormwater general permit, an NOI must be submitted no later than two (2) days prior to the start of construction. The Contractor shall complete the NOI form and electronically file it with NDEP on-line at the following website: http://ndep.nv.gov/bwpc/storm_cont03.htm. After filing

the NOI electronically the applicant must print, sign and submit the confirmation page, including any permit and filing fees, to NDEP by mail to the following address:

Stormwater Coordinator
Bureau of Water Pollution Control
Nevada Division of Environmental Protection
901 South Stewart Street, Suite 4001
Carson City, NV 89701
Phone: (775) 687-4670

In accordance with NAC 445A.269, NDEP may require a general stormwater permit holder to apply for and obtain an individual permit.

130.02 Storm Water Pollution Prevention Plan

The Storm Water Pollution Prevention Plan (SWPPP) shall include, but is not limited to:

- Project Description
- Stormwater Controls
- Material Storage Areas
- Stabilization Practices
- Erosion and Sediment Controls
- Structural Practices
- Spill Contingency Plan
- Post Construction Stormwater Management
- Non-Storm Water Discharge Maintenance
- Maintenance and Inspection Requirements
- Dewatering and Diversion Requirements
- Watering/Dust Control Requirements
- Sampling and Analysis Plan

The SWPPP will describe and ensure the implementation of practices that will assure compliance with the terms and conditions of all of the project permits in accordance with good Engineering practices and cost-effective approaches as outlined in Regional BMP Manuals, TRPA handbook, Nevada Contractors Field Guide for Construction Site BMPs and other related documents.

A draft SWPPP is provided in the appendix of the Contract Documents, which has been accepted by the applicable permitting agencies in relation to this project. This draft plan will provide the Contractor with a basis for the requirements of the project SWPPP. **The Contractor, within ten (10) days after the effective date of the executed Contract, shall acknowledge and certify the project SWPPP.** Any requested revisions to the draft SWPPP (i.e. amendments) shall be submitted to the Engineer for review and acceptance, including applicable permitting agencies prior to any modifications being implemented by the Contractor. Such requested modifications shall be noted in red on the original plan (or other suitable format that is clear). Subcontractors shall also sign (i.e. certify) the SWPPP and must comply with the requirements of all of the project permits under the supervision of the Contractor.

Attention is directed to Section 180, "Temporary Erosion Control Measures and BMPs," of these Special Technical Specifications, and the applicable Project Plan sheets for Temporary Erosion Control and Dewatering and Diversion operations.

A copy of the Contractor's NOI, SWPPP, and applicable inspection and maintenance records shall be provided to the Engineer at least seven (7) calendar days prior to start of construction and shall

be posted at the construction site with other project records; upon request these records, NOI, and SWPPP must also be made available for public inspection.

130.03 Measurement and Payment

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with performing all the work involved in provisions of this section, complete in place as shown on the Project Plans, as specified in the Contract Documents, Project Permit(s), Standard Specifications, these Special Technical Specifications, the SWPPP, and as directed by the Engineer, shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for.

140 MOBILIZATION & DEMOBILIZATION, WINTERIZATION

140.01 Mobilization

This item shall consist of mobilization of the Contractor's forces (where applicable to each Phase of the work) which shall include obtaining all bonds, insurance, and permits; purchasing, transportation, setup, staging and storage of equipment and materials; establishing a field office at the project site; plus furnishing all labor, materials, tools, equipment, and incidentals required for performance and completion of the work as shown on the Project Plans, and specified in the Contract Documents, Project Permit(s), Standard Specifications, these Special Technical Specifications, the SWPPP, and as directed by the Engineer. Mobilization shall also include but not be limited to the following items:

- Provide on-site sanitary facilities;
- Post all Occupational Safety and Health Administration (OSHA) required notices;
- Post all prevailing wage requirements;
- Prepare and transmit all submittals as noted on the Plans, and as specified in the Contract Documents, Standard Specifications, and these Special Technical Specifications;
- Wash and clean all tools and equipment prior bringing on site, as specified in the Project Permits, Contract Documents, Standard Specifications, these Special Technical Specifications, and as required by TRPA.

140.02 Project Sign

Mobilization shall include construction and erection of one project sign. The project sign shall be constructed in accordance with details provided within the Project Plans, and located as directed by the Engineer. The project sign shall be constructed within ten (10) working days after notice to proceed. Maintenance of the project sign is the Contractor's responsibility until the sign is removed by the Contractor at the end of the construction contract. For this project, one (1) project sign will be erected.

140.03 Construction Staging and Storage Areas

The staging and storage areas as identified on the Project Plans are allowed for use by the Contractor in accordance with the Contract Documents, Project Permit(s), SWPPP, Standard Specifications, these Special Technical Specifications, and any easement provisions. These staging/storage areas are controlled by various private and public entities and shall be maintained at all times in a clean and safe environment, including any provisions for rights-of-entries issued by land owners. The Contractor's use of the designated staging/storage areas shall be limited to and/or controlled by the time allowances and other restrictions as noted on the Project Plans, Project Permits, rights of entry, and elsewhere in these Special Technical Specifications.

Storage of construction materials, supplies, and equipment within the public right-of-way is prohibited, except where accepted by the Engineer, Washoe County, and TRPA. At no time shall materials, supplies, or equipment be stored or stockpiled within twenty (20) feet of a travel lane unless separated by guardrail

or concrete barrier rail in accordance with Washoe County permits, requirements and the Standard Specifications. Under no circumstance shall anything be stored in any portion of the NDOT Right-of-Way.

If the Contractor wishes to make use of additional areas, for staging/storage activities, not identified on the Plans, it will be the Contractor's sole responsibility to secure use of these areas with agreements with the individual property owners; and file a copy of said authorization with the Engineer. The Contractor shall further be responsible for establishing all necessary and required temporary erosion control protections and updating the Project SWPPP. The Contractor will be responsible for bearing all costs with securing these areas, and all efforts associated with the approvals, setup, maintenance, decommissioning and restoration, with no additional compensation allowed for.

The Contractor shall be responsible for appropriate security and safety measures at all staging/storage areas to protect property and the public.

Set-up, use and restoration of all staging/storage areas requires the Contractor to protect all existing facilities, equipment, vegetation, utilities (above and below ground/grade) and surface features (such as, but not limited to, fences, posts, signs, boulders, landscaping, slopes, etc.) in place. Should the Contractor's operations damage any of these items the Contractor shall replace, in kind, the damaged or destroyed item. The damage or destruction of any item will be determined by the Engineer during the course of construction or at the final punchlist development. In the event the Contractor needs to relocate any item (boulder, fence, etc.) the Contractor shall replace the item to its original location. If the relocated item is damaged, as determined by the Engineer, the Contractor will be required to replace the damaged item with an in-kind replacement. No additional compensation will be allowed for any relocation, or replacement of damaged items, this will be at the sole cost to the Contractor.

The Contractor shall not proceed with any construction until truck haul routes and temporary haul roads have been identified and accepted to the satisfaction of the Engineer, NTCD, NDEP and TRPA. **The Contractor shall submit four (4) copies of a proposed truck haul route plan, along with the proposed project construction schedule and traffic control plan, to the Engineer for review and acceptance at least seven (7) calendar days prior to the scheduled Pre-Construction Meeting.** Any days lost due to the lack of an accepted truck haul plan will be charged against the Contractor's allowable work days. The Contractor's truck haul route plan shall include, but not be limited to, the following:

- Proposed construction zone;
- Proposed storage areas;
- Location of flaggers (to control truck access, where applicable);
- Construction phasing (including phasing of intersection construction and detours, if any); and,
- Proposed truck route (including the location of other construction projects which impact, or may be impacted by, the proposed haul route.)

All staging/storage areas shall comply with the SWPPP and TRPA's requirements for BMPs while storing or stockpiling materials. The Contractor shall be responsible for locating staging/storage areas and will need to install all temporary erosion controls and BMPs and maintain them at all times during construction and until project closeout. The limits of the staging/storage areas shall be reviewed and accepted by the Engineer, NTCD, NDEP and TRPA prior to use. All necessary temporary BMPs shall be installed at the staging/storage areas prior to the TRPA Pre-Grade Meeting and will be inspected during said meeting to ensure proper installation and controls are in place.

Attention is directed to the Section 140.04, "Winterization and Maintenance of Project Site" of these Special Technical Specifications for additional requirements for the staging/storage areas, at the

conclusion of an active grading season (typical May 1 to Oct 15) and as part of the winterization of the project site for any given year (where applicable to each Phase of the work).

The Contractor shall conform to the following additional measures and provisions, for use of the temporary staging and storage area to the south of Northwood Blvd within the floodplain area (approx station PR 18+00 to PR 19+00 as shown on Plans). Use of this area for stockpiling activities is restricted to Phase 1, in particular during the construction of the proposed reinforced concrete box (RCB) culvert structure within Northwood Blvd. All areas within the floodplain/SEZ proposed for use by the Contractor shall be cleared and grubbed, and all topsoil salvaged as directed elsewhere in these Special Technical Specifications, prior to initiation of any stockpiling and/or soil processing activities. Upon completion of the RCB culvert structure and/or use of this designated area, all equipment, materials and stockpiled soils, in association with the construction of the RCB culvert structure, shall be removed from this temporary staging and storage area prior to initiation of activities to construct any of the proposed improvements (i.e. proposed creek channel, grade control structures, floodplain grading, etc.) within said area, as shown on the Project Plans.

At the completion of each phase of the work or when no longer required for use, all construction staging/storage areas shall be cleared of all equipment, tools, materials, trash, debris, etc to produce a clean area and returned, as nearly as possible, to the lines and grades which existed prior to construction. The restored staging/storage areas, if areas exist as an unpaved condition, shall be treated with the final Revegetation Treatment Type as shown on the Plans (if any areas for Staging/Storage are used and not shown on the Revegetation Plans, the Contractor shall treat the area with Revegetation Treatment Type G or as directed by the Revegetation Specialist) and as described in these Special Technical Specifications. For storage and staging areas in paved areas, the areas shall be swept clean and returned to the existing condition, prior to use. The Engineer will inspect the pave areas, and if damage has occurred, whether by fault of the contractor's operations or not, the contractor will be required to make remedial action, including complete pavement restoration. No additional compensation shall be allowed for any remedial restoration work of paved areas, including complete replacement of the pavement areas.

140.04 Winterization and Maintenance of Project Site

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary to winterize, secure, and effectively maintain the project site during "winter down time" (typical Oct 15 to May 1 of any given year) during all phases of the work. All work under this item shall be in conformance with the Project Plans, Contract Documents, Standard Specifications, these Special Technical Specifications, SWPPP, Project Permit(s), and as directed by the Engineer.

Routine inspection of the project site by the Contractor shall be conducted in order to effectively secure, maintain, and check the project site and all associated project improvements and temporary measures for any damages, in accordance with the following guidelines:

- Site inspections shall occur at the least on a bi-weekly basis for the duration of a "winter down time" (typical Oct 15 to May 1 of any given year),
- Site inspections shall occur at least three times per week (Mon, Wed, Fri) during the active grading season (typical May 1 to Oct 15 of any given year), and
- Any additional site visits as deemed necessary by the Contractor in order to effectively secure and maintain the project site, and operate the temporary irrigation system.

The Contractor's attention is directed to Sections 130 "Storm Water Pollution Prevention Compliance", 180 "Temporary Erosion Control Measures & BMPs", 190 "Water Filled Barrier", and 600 "Revegetation Treatments" of these Special Technical Specifications.

Installation, operation, maintenance, winterization, protection, and security of all components of the temporary irrigation system shall be as described elsewhere in these Special Technical Specifications.

At the conclusion of an active grading season (typical May 1 to Oct 15) and as part of the winterization of the project site for any given year (where applicable to each Phase of the work), the applicable staging/storage areas shall be cleared of all unnecessary equipment, tools, materials, trash, debris, etc to produce a clean area. All disturbed areas shall be stabilized and all applicable BMPs secured. Temporary soil stabilization within each applicable staging/storage area or other general disturbed area within the project site shall be per one of the following methods, dependent on the future use of the area and as directed by the Engineer:

- Staging/Storage area or other general disturbed area to be used/accessed in the following construction season:
 - Uniformly cover with native and/or locally produced wood chips (at least 95% by volume particle size - 0.5 to 3 inches in length, and not less than 0.5 inch in width or 0.125 inch in thickness) to a depth of at least 2-inches (*only where slopes are less than 3:1*), or
 - Apply a hydraulic matrix of wood fiber mulch and tackifier using a hydraulic application machine to achieve complete coverage at no less than: 2000 lb/acre wood fiber mulch, and 150 lb/acre of tackifier, or
 - Combination of wood chips plus wood fiber mulch and tackifier, or
- Staging/Storage area or other general disturbed area to be used/accessed in a future phase, but not in the following construction season:
 - Install temporary erosion control blanket over all disturbed areas, plus install as directed sediment logs at the top, mid-slope, and/or toe of applicable sloped areas.

All temporary erosion control measures and BMPs, temporary soil stabilization mulch/blankets, signage, temporary wood chip surface, water filled barrier, and all revegetation treatments shall be effectively secured and maintained (as described in the applicable sections of these Special Technical Specifications) for the duration of a “winter down time” of any given year and/or construction phase. Any necessary repairs or modifications to temporary erosion control measures and BMPs, temporary soil stabilization mulch/blankets, signage, temporary wood chip surface, and/or water filled barrier shall be made immediately upon discovery. As described in Section 600 “Revegetation Treatments”, of these Special Technical Specifications, temporary stabilization and/or repairs to any revegetation treatment areas that are damaged and/or vandalized, over the course of the “winter down time” shall be made immediately upon discovery. Other modifications and/or additional installation of revegetation treatments during the Phase 2 work active grading season (May 1 to Oct 15) shall be as directed by the Engineer and Revegetation Specialist (RS).

The Contractor is responsible to maintain the water filled barrier (WFB) at all times that it is placed in the work. As a precaution the Contractor shall have extra materials on-site at all times to repair and/or replace the WFB as necessary. Any repairs shall be made as directed by the manufacturer.

All construction limit and tree protection fencing (CLF) is required to be removed from the project site at the conclusion of the Phase 1 work, prior to leaving the project site for the winter down time. The intent of this provision is to limit the visual impact to the adjacent residential properties, and reduce the potential maintenance requirements of a CLF at the project site during a “winter down time” and the Phase 2 activities (i.e. growth, establishment, and maintenance of the vegetation treatments). An exception during the Phase 2 work active grading season (May 1 to Oct 15) may be re-establishment of a portion of a staging and storage area, where some CLF may be required. The costs incurred by the Contractor to meet this requirement (removal of CLF) shall be considered as included in the contract prices paid for the CLF, and no additional compensation shall be allowed. The Contractor is hereby advised that reinstallation of the subject construction limit fencing, plus any other additional CLF as

identified on the Plans or directed by the Engineer, and where required for the Phase 3 work, shall be paid for at the unit bid price (i.e. the Contractor shall be paid for all CLF that is properly installed and accepted, as identified on the Plans and/or directed by the Engineer, during each Phase of the work, excluding any applicable maintenance and repairs).

All trucks and/or heavy equipment utilized as part of this work may not enter upon or access the floodplain/SEZ or other sensitive areas during the “winter down time” and are restricted to paved areas only. During the “winter down time” period, hand tools and other small devices (i.e. wheel barrow) shall be used to complete any maintenance, repair, modifications, temporary stabilization, etc. of any temporary erosion control measures and BMPs, signage, temporary wood chip surface, water filled barrier, and all revegetation treatments, as described herein or elsewhere in these Special Technical Specifications.

140.05 Demobilization

Demobilization (only where applicable to each Phase of the work) shall consist of the removal of all materials, equipment, signage, temporary pollution control materials, trash, debris, and all other items imported to or generated on-site as a result of the work completed by the Contractor and his/her operations. Furthermore, demobilization shall include repairing all pavements, walkways, infrastructure, signage, landscape, trails, or other public or private facilities damaged by construction activities to their pre-construction conditions using comparable materials as accepted and directed by the Engineer. All disturbed areas shall be returned, as nearly as possible, to the lines and grades which existed prior to construction except where modified as part of the work so designated on the Plans. Attention is directed to Section 335, “Cleanup,” of the Standard Specifications.

At the conclusion of the Phase 3 work, final acceptance of the Project improvements must be in the form of a written “Notice of Completion.”

140.06 Record Drawings

The Contractor shall keep accurate records on a set of project black line prints (24 inches x 36 inches) of all additions and deletions to the work and of all changes in location, elevation, and character of the work not otherwise shown or noted on the Project Plans. NTCD will furnish up to six (6) sets of full size black line prints for use at no cost to the Contractor.

Record drawings plans shall be provided to the Engineer for acceptance within one (1) calendar month after substantial completion of each phase of work of the project as defined by the Engineer (end of Phase 1, Phase 2- year 1, Phase 2 – year 2 and Phase 3). Release of retention monies will not occur prior to submittal and acceptance of the final record drawings at the end of Phase 3, which shall be a comprehensive set of Record Drawings detailing all phases and all aspects of the Project. One (1) set at the end of Phase 1, Phase 2 – year 1 and Phase 2 – year 2 and Two (2) sets of full sized (24x36) hard copy record drawings shall be provided with changes to the original Contract work shown in red color, including revision clouds. All redline changes and details to be shown on the record drawings shall include, but not be limited to, difference in quantities of the original plans vs. actual installation (as appropriate), modifications to the location and elevations of public utility and storm drainage facilities, any utility relocations, any signage or traffic control devices, and any other modifications, additions or adjustments to any other facilities not shown or as modified on the Project Plans.

Record drawings plans shall be signed and dated by the Contractor or the sub-contractor that actually constructed the facility. In addition, company names of the Contractor and sub-contractors shall be added to the Title Sheet of the record drawings. Should the Contractor not provide this information to the Engineer in the time specified in this section, or to the acceptance of the Engineer (record drawings do not note all changes to the project) the Engineer will not accept the record drawings, retention shall not be

released on the project, the record plans will be returned to the Contractor and the Contractor shall re-submit the record drawings to meet the requirements of this section to the acceptance of the Engineer.

140.07 Measurement and Payment

Mobilization and Demobilization, as described above shall be considered one bid item. Project Sign, as described above shall be considered as included with MOBILIZATION/DEMobilIZATION, PHASE 1 and no additional compensation shall be allowed for. Record Drawings, as described above shall be considered as included with MOBILIZATION/DEMobilIZATION, PHASE 1, MOBILIZATION/DEMobilIZATION, PHASE 2 – YEAR 1; MOBILIZATION/DEMobilIZATION, PHASE 2 – YEAR 2 and MOBILIZATION/DEMobilIZATION, PHASE 3 and no additional compensation shall be allowed for. MOBILIZATION/DEMobilIZATION, PHASE 1, MOBILIZATION/DEMobilIZATION, PHASE 2 – YEAR 1; MOBILIZATION/DEMobilIZATION, PHASE 2 – YEAR 2 and MOBILIZATION/DEMobilIZATION, PHASE 3 shall be measured on a lump sum basis, completed and accepted by the Engineer as conforming to all the requirements in the complete work.

The contract price paid for each of MOBILIZATION/DEMobilIZATION, PHASE 1, MOBILIZATION/DEMobilIZATION, PHASE 2 – YEAR 1; MOBILIZATION/DEMobilIZATION, PHASE 2 – YEAR 2 and MOBILIZATION/DEMobilIZATION, PHASE 3 shall include full compensation for mobilizing the Contractor's forces which shall include but not be limited to: bonds, insurance, permits, record drawings, purchasing, transportation equipment, setup, temporary power source and installation, project signs, establishment of a field office, sanitation facilities, and furnishing all labor, materials, tools, equipment, and incidentals required for performance and completion of the work; including full compensation for operations required to demobilize the Contractor's forces which shall include but not be limited to: the removal of all equipment, materials, debris, project signs, field office, sanitation facilities, temporary BMPs, tree protection fencing, and project clean-up; for the contract lump sum price bid, as shown on the Plans, in accordance with the Contract Documents, Standard Specifications, these Special Technical Specifications, SWPPP, project permit(s), and to the satisfaction of the Engineer.

Partial payments paid for each of MOBILIZATION/DEMobilIZATION, PHASE 1, MOBILIZATION/DEMobilIZATION, PHASE 2 – YEAR 1; MOBILIZATION/DEMobilIZATION, PHASE 2 – YEAR 2 and MOBILIZATION/DEMobilIZATION, PHASE 3 shall be made as follows:

- When 5% of the total original contract amount per applicable phase of the work is earned from other bid items, 50% of the amount bid for mobilization/demobilization, or 5% of the total original contract amount per applicable phase of the work, whichever is the least, will be paid.
- When 10% of the total original contract amount per applicable phase of the work is earned from other bid items, 100% of the amount bid for mobilization, or 10% of the total original contract amount per applicable phase of the work, whichever is the least, will be paid.

“CONSTRUCTION STAGING AND STORAGE AREAS, PHASE 1”, “CONSTRUCTION STAGING AND STORAGE AREAS, PHASE 2 – YEAR 2”, “CONSTRUCTION STAGING AND STORAGE AREAS, PHASE 2 – YEAR 2”, and “CONSTRUCTION STAGING AND STORAGE AREAS, PHASE 3” shall be measured on a lump sum basis, accepted by the Engineer as conforming to all the requirements in the complete work.

The contract price paid for each of “CONSTRUCTION STAGING AND STORAGE AREAS, PHASE 1”, “CONSTRUCTION STAGING AND STORAGE AREAS, PHASE 2 – PART A”, “CONSTRUCTION STAGING AND STORAGE AREAS, PHASE 2 – PART B”, and “CONSTRUCTION STAGING AND STORAGE AREAS, PHASE 3” shall include set-up of all staging and storage areas and installation of any applicable temporary erosion control measures and BMPs

(except where otherwise paid for) and furnishing all labor, materials, tools, equipment, and incidentals required for performance and completion of the work; including full compensation for operations required to remove and dispose of all materials, clean-up, and restore/revegetate the site to its pre-construction condition, unless otherwise shown on the Plans; for the contract lump sum price bid, as shown on the Plans, in accordance with the Contract Documents, Standard Specifications, these Special Technical Specifications, SWPPP, Project Permit(s), and to the satisfaction of the Engineer.

The schedule for payment for “CONSTRUCTION STAGING AND STORAGE AREAS, PHASE 1”, “CONSTRUCTION STAGING AND STORAGE AREAS, PHASE 2 – PART A”, “CONSTRUCTION STAGING AND STORAGE AREAS, PHASE 2 – PART B”, and “CONSTRUCTION STAGING AND STORAGE AREAS, PHASE 3” shall be in direct proportion to the percentage of work completed for the applicable phase of the work; i.e. if 20% of the project phase is completed, the Contractor may request payment for 20% of the lump sum total of the bid item for construction staging and storage areas. Measurement of the percentage of work completed per each phase shall be based on the percentage of work billed by the Contractor based on the total dollar amount of the contract bid price. Increases in the total contract price for any reason do not justify an increase in the lump sum price paid for any of the construction staging and storage areas bid items. The Engineer and the Owner reserves the right to adjust the partial payment amounts of these said bid items based on any adjustments made to other pay items on the payment request by the Engineer or the Owner.

“WINTERIZATION AND MAINTENANCE OF PROJECT SITE, PHASE 2 – YEAR 1”, and “WINTERIZATION AND MAINTENANCE OF PROJECT SITE, PHASE 2 – YEAR 2” shall be measured on a lump sum basis, completed and accepted by the Engineer as conforming to all the requirements in the complete work.

The contract price paid for each of “WINTERIZATION AND MAINTENANCE OF PROJECT SITE, PHASE 2 – YEAR 1”, and “WINTERIZATION AND MAINTENANCE OF PROJECT SITE, PHASE 2 – YEAR 2” shall be deemed full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved to winterize, secure, and effectively maintain the project site as described in these Special Technical Specifications, in conformance with the Project Plans, Contract Documents, Standard Specifications, these Special Technical Specifications, SWPPP, Project Permit(s), and as directed by the Engineer, and making any required modifications due to field conditions, including the removal and disposal of all the resulting waste materials from the Tahoe Basin.

The schedule for payment for “WINTERIZATION AND MAINTENANCE OF PROJECT SITE, PHASE 2 – YEAR 1”, and “WINTERIZATION AND MAINTENANCE OF PROJECT SITE, PHASE 2 – YEAR 2” shall be in direct proportion to the percentage of work completed for the applicable phase of the work; i.e. if 20% of the project phase is completed, the Contractor may request payment for 20% of the lump sum total of the bid item for winterization and maintenance of project site. Measurement of the percentage of work completed per each phase shall be based on the percentage of work billed by the Contractor based on the total dollar amount of the contract bid price. Increases in the total contract price for any reason do not justify an increase in the lump sum price paid for any of the winterization and maintenance of project site bid items. The Engineer and the Owner reserves the right to adjust the partial payment amounts of these said bid items based on any adjustments made to other pay items on the payment request by the Engineer or the Owner.

Full compensation for conforming to the provisions of this Section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

150 SUBMITTALS

150.01 General

Where required by the Contract Documents, project permit(s), Project Plans, SWPPP, Standard Specifications, elsewhere in these Special Technical Specifications, and/or as indicted herein, the Contractor shall provide submittals, and furnish shop drawings and material certifications to the Engineer for review and acceptance. The required number of submittals, shop drawings and certificates shall be delivered within the specified time frames, including a transmittal letter in conformance with the Contract Documents, Standard Specifications, and these Special Technical Specifications. The transmittal letter at a minimum shall include the following information:

- A. Submittal number and item description
- B. Scheduled date of submittal
- C. Specification section/item number
- D. Supplier and/or manufacturer, plus contact information
- E. Contractor or sub-contractor name and point of contact information

The number of copies to be submitted will be according to the following, unless specified elsewhere:

- Construction Schedule, Traffic Control Plan, and Truck Haul Routes – 4 copies
- Submittals & Shop Drawings – 4 copies
- Certifications – 3 copies (conforming certifications will not be returned)

150.02 Submittals Required

The following items require a submittal, shop drawing, and/or material certification for review and acceptance by the Engineer (this list may not be complete; it is the Contractors responsibility to review and be knowledgeable with all portions of the project permits, SWPPP, Plans, Contract Documents, Standard Specifications, and these Special Technical Provisions for any additional requirements):

- Construction Schedule
- Traffic Control Plan, and Truck Haul Routes
- SWPPP authorization, revisions, and dewatering plans
- NDEP NOI and NOT
- Equipment list for all equipment to be used, including the following minimum information:
 - Manufacturer and Model
 - Ground pressure rating (in psi)
 - Certification for washing/steam cleaning, including date
- Filter fence, sediment coir logs, and other BMP materials
- Construction limit fence
- Engineered fabrics
- Aggregates used in the work
- River run materials used in the work
- Chinking, cobble, boulders and gravel used in the work
- Aggregate base (AB), imported fill, engineered fill, imported topsoil, and bedding materials
- Material testing reports and other data necessary to provide the Engineer with established laboratory values for optimum moisture and maximum dry density, for use of any native soils, imported soils and aggregates requiring density testing.
- Potable water pipe and fittings
- Sanitary sewer pipe and fittings (gravity or force main)
- Shop drawings and installation specifications for concrete structures, including the Reinforced Concrete Box Culvert, headwalls and wing walls
- Concrete mix design(s), admixtures, and curing agents

- Testing and QA/QC certifications for any precast concrete structures
- Asphalt mix design and other bituminous materials used in the work
- Utility boxes, manholes, grates, and other miscellaneous iron/steel products used in the work
- Loose aggregate samples as specified in Section 400 “Gravel, Cobble, Rock, Boulder & Other Aggregates”
- Revegetation items as specified in Section 600 “Revegetation Treatments”
- Record Drawings

150.03 Measurement and Payment

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with performing all the work involved in provisions of this section, complete in place as shown on the Project Plans, as specified in the Contract Documents, Project Permit(s), Standard Specifications, these Special Technical Specifications, the SWPPP, and as directed by the Engineer, shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for.

160 TRAFFIC CONTROL

160.01 Traffic Control Plan

Work under this item shall consist of furnishing all labor, tools, materials, and equipment necessary to complete and maintain all traffic control provisions in accordance with the Plans, Contract Documents, Standard Specifications and these Special Technical Specifications, and as directed by the Engineer during the life of the Contract. All traffic control devices and plans shall conform to the latest editions of the Manual on Uniform Traffic Control Devices (MUTCD) and the State of Nevada Department of Transportation (NDOT) Standard Specifications and Plans for Road and Bridge Construction.

The Contractor shall submit four (4) copies of a proposed traffic control plan, along with the proposed project construction schedule and truck haul route plan, to the Engineer for review and comments at least seven (7) calendar days prior to the scheduled Pre-Construction Meeting. The proposed traffic control plan shall be prepared and signed by a Professional Traffic Operations Engineer (PTOE) or a Traffic Control Supervisor certified by the American Traffic Safety Services Association (ATSSA), hereinafter designated "TCS", if it is to vary in any way from that depicted in the project plans (plan sheets TC-i through TC-3B). If the Contractor makes any changes to the traffic control plans, these changes must also be prepared and signed by the PTOE/TCS. The final traffic control plans, signed by the PTOE/TCS shall be submitted to the Engineer within 5 working days after receipt of review comments to the proposed traffic control plans.

The Contractor's traffic control plans shall include, but not be limited to, the following:

- Designated construction site TCS name and contact information
- Proposed construction zone and existing speed limits
- All construction signing
- Changeable Message Sign locations
- Location of flaggers
- Types and location of traffic control devices
- Temporary lane striping
- Construction phasing (including phasing of intersection construction and detours, if any)
- Lane crossovers between construction phases
- Method for maintaining traffic signal functions
- Intersection Control Strategy

- Special events scheduling
- Detours
- 8 5"x 11" individual access plans for multi-access properties
- Accommodations for pedestrians and bicycles
- Letter of conformance stating that all Category 1 and 2 traffic control devices used on the project meet the evaluation criteria of National Cooperative Highway Research Program (NCHRP) Report 350. Note that a sign together with its portable support is considered as a system, which together must meet the NCHRP Report 350 requirements.

The Engineer and NTCDD personnel will provide written comments and/or corrections to the Traffic Control Plans. If necessary, the Contractor and Engineer will meet to consider the comments and/or corrections to the plan prior to the preconstruction conference to resolve any issue relative to the traffic control plans. Upon resolution of all issues or acceptance of the traffic control plans as submitted, the Engineer shall accept the plans in writing.

Acceptance by the Engineer of the submitted traffic control plans shall in no way relieve the Contractor of the responsibility for safety requirements. Acceptance of the traffic control plans by the Engineer indicates that the plans generally appear to conform to the contract requirements. Such acceptance shall in no way be construed as confirmation of the technical accuracy or adequacy of the contents of the plans and shall not relieve the Contractor of the obligation to institute traffic control measures in full compliance with contract requirements, and which function safely and correctly, and are in conformance with applicable statutes, ordinances, and regulations.

Immediately after set up of new or modified traffic control plans, the Contractor shall have the TCS inspect the controls installed in the field to determine if all required controls have been installed and are operating as intended. The TCS shall submit to the Engineer a written inspection report on the traffic controls conformance with the accepted traffic control plans and contract requirements. If the TCS determines that the traffic controls are not in conformance with the accepted traffic control plans, contract requirements, or determines that the traffic controls are not functioning as intended, the report shall address such deficiencies and make recommendations for changes. The Engineer may require the Contractor's PTOE/TCS to revise the traffic control plans accordingly.

If at any time it is determined that traffic controls have been modified or are not functioning as intended, the Engineer's representative may request the Contractor's PTOE/TCS to evaluate the traffic controls installed by the Contractor. Additionally, if during construction, revisions to the accepted plans are necessary for safety or accommodation to traffic, the Engineer may require such revisions.

Any request by the Contractor to change the traffic control plans shall be submitted in writing and accompanied with drawings, prepared and signed by the PTOE/TCS, showing the appropriate aspects of the traffic control plans at least five (5) working days prior to implementation. Such requests must be accepted in writing by the Engineer prior to implementation. Traffic control plans shall be maintained and must be current with the applicable phase of the work.

160.02 Traffic Control Notification

Upon acceptance of the traffic control plans, and at least 2 working days prior to beginning construction, the Contractor shall notify and submit a copy of the accepted traffic control plans to the Engineer, refuse collection agencies, and appropriate police and fire departments, REMSA, and any other emergency service as directed by the Engineer.

At least 2 mobile four-foot by eight-foot (4' x 8') changeable messages signs (CMSs) shall be utilized to notify the public of construction operations and lane closures within the project area a minimum of 7

calendar days prior to start of any construction. The locations of the CMSs shall be finalized at the preconstruction meeting. The locations of the CMSs may be moved at the direction of the Engineer.

The CMSs shall operate 24 hours a day for the entire duration of the roadway work associated with the Contract (work associated with lane closures and/or detours on any street). The wording at each of the CMSs shall be in accordance with the direction received from the Engineer.

160.03 Traffic Control General Requirements

The Contractor shall designate a construction site TCS who shall be responsible for initializing, installing and maintaining all traffic control devices as shown on the traffic control plans, as specified in the MUTCD, the NDOT Standard Plans for Road and Bridge Construction, applicable Project Plan sheets, and these Special Technical Specifications. The construction TCS shall be under the direct supervision of the construction site Superintendent. The construction TCS shall be available to be contacted by the Engineer's representative 24 hours a day, 7 days a week for the life of this contract, and shall be available to be present on the work site within sixty (60) minutes after notification by the Engineer's representative. The Contractor shall submit the designated construction TCS's name, ATSSA certification number, and qualifications for the Engineer's acceptance at the preconstruction conference. The construction TCS shall:

- Have at least 1 year of field experience directly related to work site traffic control set up in a supervisory or responsible capacity and be certified by ATSSA as a worksite Traffic Control Supervisor
- Understand the contract requirements
- Understand the MUTCD requirements
- During a work day, make at least 3 inspections of the condition and position of all traffic control devices in use each day before beginning work, at mid-shift, and on half (1/2) hour after the end of the shift
- During a non-work day, make at least 1 inspection of the condition and position of all traffic control devices
- Correct all traffic control deficiencies
- Coordinate maintenance of traffic operations with the PTOE/TCS who prepared the traffic control plans, (if a different person)
- Report all corrective actions to maintain and protect traffic through the project
- Review work areas, equipment operation and storage, and material and handling and storage relative to traffic safety
- Furnish weekly written certification to the Design Engineer's Representative that inspections and reviews were conducted and that traffic control devices met or exceeded the contract requirements. Weekly certification shall include daily records of traffic control activities and reviews.

The Contractor shall not proceed with any construction until traffic control plans and the construction TCS have been accepted and the proper traffic control has been provided to the satisfaction of the Engineer. Any days lost due to improper traffic control or lack of a designated construction TCS, will be charged against the Contractor's allowable working days.

The Contractor shall maintain public traffic throughout the project in accordance with the accepted traffic control plan and perform work in a manner that assures the safety and convinces of the public and protect the residents and property adjacent to the project site. During the course of construction, the Contractor shall be prepared to provide access through the construction zone for police, fire or emergency vehicles as necessary to reach their destination with a minimum delay.

Should the Contractor choose to accomplish work methods or phasing which require modification to any part of the traffic control zone in the accepted traffic control plan, the Contractor shall have their PTOE/TCS submit for acceptance a modified traffic control plan at least 5 working days prior to implementation of such work or phasing.

Unless otherwise accepted by the Engineer, the Contractor shall maintain two-way traffic on all roads in and around the project area at all times for the duration of the project. The Contractor shall make special considerations for local access to and from properties adjacent to the construction zone. All efforts shall be made to minimize the inconveniences to the local residents and business owners. All driveways shall be opened and accessible at the end of a shift.

The Contractor shall not allow for any traffic control or disruption of traffic flow to any State Highway.

Type I or Type II barricades will not be permitted for use to prevent vehicle traffic from entering a closed portion of roadway. Only Type III barricades will be used in all such instances. Type III-B barricades used for this purpose will be placed a maximum 4 feet apart. Yellow warning lights may be necessary for some barricade or drum applications.

Traffic control devices shall be removed as soon as they no longer apply to the current construction activities, including daily operations.

160.04 Existing Signs

If existing traffic control device regulatory signage (i.e. stop, yield, speed limit, etc) is removed or damaged due to the Contractor's operations, the Contractor shall notify the local jurisdiction maintenance department and immediately install temporary signs of the same designation as close as possible to the original location.

All existing traffic control devices removed to facilitate construction of the project improvements, shall be salvaged and replaced to its original condition as part of the work. Any materials that are damaged or lost shall be replaced in like kind. All traffic control devices require acceptance of the Engineer.

160.05 Measurement and Payment

"TRAFFIC CONTROL, PHASE 1", "TRAFFIC CONTROL, PHASE 2 – PART A", "TRAFFIC CONTROL, PHASE 2 – PART B", and "TRAFFIC CONTROL, PHASE 3" shall be measured on a lump sum basis, completed and accepted by the Engineer as conforming to all the requirements in the complete work.

The contract price paid for "TRAFFIC CONTROL, PHASE 1", "TRAFFIC CONTROL, PHASE 2 – YEAR 1", "TRAFFIC CONTROL, PHASE 2 – YEAR 2", and "TRAFFIC CONTROL, PHASE 3" shall include full compensation for preparation and submittal of a traffic control plan, and for furnishing all labor, materials, tools, equipments, and incidentals to perform all the work involved in provisions of this section, including but not limited to temporary construction signs and traffic control devices, temporary striping, CMSs, flagging, flasher units, barricades, lights, electrical power, resetting of traffic signs and delineators, and all incidentals and materials necessary to provide these items for the duration of construction.

The schedule for payment for "TRAFFIC CONTROL, PHASE 1", "TRAFFIC CONTROL, PHASE 2 – YEAR 1", "TRAFFIC CONTROL, PHASE 2 – YEAR 2", and "TRAFFIC CONTROL, PHASE 3" shall be in direct proportion to the percentage of work completed for the applicable phase of the work; i.e. if 20% of the project phase is completed, the Contractor may request payment for 20% of the lump sum total of the bid item for traffic control. Measurement of the percentage of work completed per each phase

shall be based on the percentage of work billed by the Contractor based on the total dollar amount of the contract bid price. Increases in the total contract price for any reason do not justify an increase in the lump sum price paid for any of the traffic control bid items. The Engineer and the Owner reserves the right to adjust the partial payment amounts of these said bid items based on any adjustments made to other pay items on the payment request by the Engineer or the Owner.

Full compensation for conforming to the provisions of this Section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

170 CONSTRUCTION STAKING & SURVEY

170.01 General

Work under this item shall consist of furnishing all labor, tools, materials, and equipment necessary to complete all construction staking and survey operations in accordance with the Plans, Contract Documents, Standard Specifications and these Special Technical Specifications.

All surveying work performed by, or for the Contractor, in conformance with this section shall be performed by a registered professional Land Surveyor licensed in the State of Nevada. **The Contractor shall provide the name, license number, and documentation for the required minimum qualifications of the Land Surveyor to be employed by the Contractor for the Project, prior to any work being completed by the Contractor or Surveyor.** No work shall be performed by the Contractor or Surveyor until the Engineer has reviewed and accepted the licensed Land Surveyor qualifications. All labor wage regulations cited in these Special Technical Specifications shall pertain to workers performing construction staking and surveying services and shall further meet all of the requirements of the State of Nevada and Federal Prevailing Wage Rates.

The licensed Land Surveyor to be employed by the Contractor shall meet the minimum experience qualifications as stated below:

- Construction Staking – 10 years continuous experience
- Topographic Surveying – 10 years continuous experience
- General scope of work and project descriptions, plus client references, for a minimum of three (3) projects completed within the last five years that are similar in nature to the required work as described herein

170.02 Construction Staking

The Contractor shall furnish stakes and/or marks to establish lines and grades required for the completion of the work as shown on the Project Plans and as specified in the Contract Documents, Standard Specifications and these Special Technical Specifications. The Contractor shall be responsible for any and all construction staking necessary for the full and complete construction of the Project. The Contractor shall furnish construction survey and staking equipment and the Contractor shall be solely responsible for maintenance and protection of the survey stakes or marks. Construction staking will be verified by the Engineer, at the Engineer's discretion.

In the event the Contractor's operations destroy any of the survey control points (existing prior to construction for horizontal and vertical control set by NTCDD as shown on the Project Plans), the Contractor shall replace such control points at his expense, subject to verification by the Engineer. All resetting and verification costs will be borne by the Contractor. The cost of any such verification or replacement of the control survey points will be deducted from any monies due to the Contractor. The

Contractor will not be allowed any adjustment in working days for such verification or replacement of survey control points.

The Contractor shall furnish labor and surveying equipment necessary for staking the Project for construction purposes. At a minimum, construction staking shall include the following:

- Proposed Clearing and Grubbing Limits (each phase),
- Proposed Channel Alignment (centerline),
- Proposed Channel Types (where change in type occurs, limit of transitions),
- Proposed Floodplain (grade breaks, limits),
- Proposed Channel and Valley-Wide Grade Control Structures (limits, grade breaks, PC's),
- Proposed Buried Protection Structures (Temporary and Permanent),
- Proposed RCB Culvert Structure, headwalls and wingwalls,
- Proposed RCB Culvert Structure inlet and outlet features,
- Northwood Boulevard roadway reconstruction, and
- Any other items required for a full, complete and accurately built project.

All stakes and survey markers will be conspicuously marked with flagging tape or paint by the Contractor. The Contractor shall inform the Subcontractors of the importance of the preservation of all survey markers. The Contractor shall be responsible for protecting and maintaining all stakes from destruction. In the event that one or more of the stakes are damaged or destroyed, the Contractor will replace the stakes at the expense of the Contractor.

The Contractor's surveyor will be provided with the northing, easting and elevation of the control points existing in the field as shown on the Project Plans and as stated in these Special Technical Specifications. The Engineer of Record will also provide the Contractor's surveyor with the final linework file developed in AutoCAD Civil 3D 2009 and 2011. The Contractor's surveyor will be required to be on AutoCAD Civil 3d 2009 and 2011 in order to use the electronic files. Civil 3D information does not transfer to base AutoCAD or older versions of AutoCAD (in some cases some of the files do not transfer between 2009 and 2011 because of database requirements of both versions) and therefore will not be available to Land Surveyors who do not have this program.

170.03 Pre-Construction and Post-Construction Survey

Pre-Construction/Existing Condition:

The Project Plans depict both existing and proposed conditions within the project area. The existing conditions (contours, planimetrics, etc.) depicted on the plans is from ground based surveying performed in the fall of 2008 and does not account for any changes in conditions that may have occurred to the present time. Subsequent to this pre-construction survey, and to the knowledge of the Engineer, the Project area has received a fuels reduction project, which reduced the extent and amount of small to medium size "fuels" within the Project area. Additionally, Rosewood Creek has received continual flow, with some significant storm event flows during this period. These flows may have caused the channel to become more incised, deeper and/or wider than what is depicted on the Project Plans.

The Contractor shall be required to review the Project site to determine if the existing survey information shown on the Plans is accurate enough for use in the determination of the existing topographic surface for use in measurement and payment for all earthwork items for the Project (Bid items 26, 111 and 112). This existing topographic surface will be used as the "existing" condition where by which the final "finished surface" described in this section will be measured against to determine the quantity for all earthwork items (Bid items 26, 111, and 112). This quantitative process is similar to that which was used to determine the engineer's estimate of bid quantities.

In the event the Contractor determines that the existing surface does not adequately represent the existing conditions, then the Contractor, at his/her sole expense, may perform a detailed topographic survey, by a licensed Land Surveyor in the State of Nevada, and provide it to the Engineer for use as the existing surface. The detailed topographic survey shall be performed as described in the “*Required Surveying Description*” noted in this section of these Special Technical Specifications. This existing condition survey, if determined by the Contractor to be needed, shall be performed prior to any work performed, or equipment placed, within any portion of the Project Area. Should the Contractor place any equipment, or perform any work, other than surveying operations, prior to the existing condition survey being 100% complete and accepted by the Engineer, the existing conditions shown on the plans shall be used as the existing condition with no exceptions. Additionally, all costs associated with the existing condition survey, if determined by the Contractor is necessary, shall be borne solely by the Contractor and no additional compensation shall be allowed for.

Post-Construction/Finished Condition:

The proposed improvements as shown on the plans, profiles and typical cross sections depict an approximate finished surface, which may be adjusted in the field at the direction of the Engineer to fit actual field conditions, prior to, or during, the construction of the improvements. In order to properly, and accurately, determine the quantity of earthwork (Bid items 26, 111, and 112) performed as part of the Contractor’s operations, the Contractor is required to complete a post-construction survey of the project area as part of the Project. The post-construction survey shall be completed by a licensed Land Surveyor in the State of Nevada. All survey work will be performed as described in the “*Required Surveying Description*” noted in this section of these Special Technical Specifications.

Required Surveying Description:

The post-construction survey to be performed is to provide detailed topography of the finished condition of the Project area. This is to be used for the determination of earthwork (Bid items 26, 111, and 112) performed by the Contractor, but also for use by Washoe County in a FEMA flood determination. Therefore the locations, extent, accuracy, etc. of the survey is extremely important and is necessary to be accurately and precisely performed as described in this section. Should the Contractor’s Land Surveyor not perform the post-construction survey (and pre-construction survey if performed) in the manner described in these Special Technical Specifications, NTCDC will perform a subsequent survey and deduct all costs associated with the survey from monies owed to the Contractor.

The Contractor will perform a complete cross-sectional survey of the Project area to accurately depict the topography of the Project area. The cross-sections will be of sufficient length to cover any area altered by the work within the Project area (to approximately 10 feet outside of the disturbed area on each boundary of each cross-section). Additionally the cross-sections will be performed at approximately 50-foot stations. These cross-sections will be the same cross-sections as depicted on the Project Plan Cross-Section sheets (Sheets XS-i through XS-34, and all tie in sheets [“TI” sheets of the Project Plans]). The Cross-Sections depicted on the Project Plans portray Cross-Sections at approximately 25-foot stations, and therefore the Post-Construction (and pre-construction survey if performed) will be performed at approximately every other Cross-Section. **The Contractor’s Land Surveyor shall submit a detailed scope/plan of the surveying to be completed to the Engineer for review and acceptance prior to any surveying work being performed.**

The cross-sectional survey shall provide sufficient data to portray the surface, to the best of the surveyor’s abilities. The data collected shall include point shots at all grade breaks along the cross-sectional alignment and at a maximum of 10-foot increments along the cross-section alignment (where no grade breaks exist along the cross-section). A representative sample of shots at a typical cross-section (cross-section 12+99.19 used as an example) is as follows (from left to right looking downstream):

- 1) Left cross-section boundary – no project disturbance occurred,
- 2) Limit of disturbance (offset 8.08),
- 3) Grade break,
- 4) Grade break (top of left bank),
- 5) Grade break (bottom of left bank),
- 6) Grade break (bottom of right bank),
- 7) Grade break (top of right bank),
- 8) Cross-sectional point shot (approximately 20 feet without grade breaks, therefore 2 point shots required),
- 9) Cross-sectional point shot (approximately 20 feet without grade breaks, therefore 2 point shots required),
- 10) Grade break,
- 11) Limit of disturbance for new channel and floodplain,
- 12) Limit of disturbance for existing channel backfill,
- 13) Cross-sectional point shot (approximately 57 feet without grade breaks, therefore 5 point shots required),
- 14) Cross-sectional point shot (approximately 57 feet without grade breaks, therefore 5 point shots required),
- 15) Cross-sectional point shot (approximately 57 feet without grade breaks, therefore 5 point shots required),
- 16) Cross-sectional point shot (approximately 57 feet without grade breaks, therefore 5 point shots required),
- 17) Cross-sectional point shot (approximately 57 feet without grade breaks, therefore 5 point shots required),
- 18) Limit of disturbance (offset 89.92) and
- 19) Right cross-section boundary – no project disturbance occurred.

At the time of completion of the survey (Pre-Construction and/or Post Construction) the Contractor will provide the Engineer with a point file (ASCII format) of the survey (one for pre-construction survey if performed and one for post construction survey). The Engineer will import these points into AutoCAD Civil 3D and develop a finished surface from the point file (similarly for the existing survey if performed). The Engineer will then compute (using AutoCAD Civil 3D) the difference between the existing and finished surfaces to determine the amount of earthwork performed by the Contractor. All quantities shall be based on the theoretical amount of excavated or in-place volumes without respect for shrinkage or swell.

Earthwork is separated into two (2) different bid items, Floodplain Grading (Bid Items 26 and 111), and Backfill of Existing Channel (Bid Item 112). The determination of the amount of earthwork performed for each Bid Item will be determined in AutoCAD Civil 3D with separation between the two items/areas as shown on the cross-sections on the Project Plans. Representative samples of the separation location are as follows, and will be determined on a cross-section, by cross-section analysis by the Engineer:

- Cross-Section 12+99.19
 - Separation location: offset 32.21
- Cross-Section 10+70.45
 - Separation location: offset 54.52
- Cross-Section 6+76.31
 - Separation location: offset 105.28
- Cross-Section 5+39.61
 - Separation location: offset 67.89

These determined values will be the quantity paid to the Contractor for Bid Items 26, 111 and 112 and no additional compensation will be allowed for.

If the Contractor chooses not to accept the calculated earthwork quantity values and/or methods as stated above, the Contractor may use a third party representative to perform additional calculations for validation purposes only. A designated third party representative shall have no apparent conflicts of interest and must be a registered professional engineer in the State of Nevada, licensed to perform such efforts. In addition the engineer shall have adequate experience to perform such efforts, and all produced materials, calculations, quantities, etc shall be bound in a final report, certified (wet stamped and signed) and submitted to the Engineer for review. If the results of these calculated earthwork quantities differ in value by a margin greater than five percent (+/- 5%) then the Contractor and Engineer will negotiate a final quantity that is acceptable to both parties. All costs associated with the work performed by a third party representative for validation of any earthwork quantities as sated herein, shall be borne solely by the Contractor and no additional compensation will be allowed for.

170.04 Measurement and Payment

“CONSTRUCTION STAKING, PHASE 1” and “CONSTRUCTION STAKING, PHASE 3” shall be measured on a lump sum basis, completed and accepted by the Engineer as conforming to all the requirements in the complete work.

The lump sum price paid for “CONSTRUCTION STAKING, PHASE 1” and “CONSTRUCTION STAKING, PHASE 3” shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in setting and maintaining survey controls, grade stakes, alignments, daylight lines, finish grade elevations, excavation limits, and any other survey work required to complete the task.

The schedule for payment for “CONSTRUCTION STAKING, PHASE 1” and “CONSTRUCTION STAKING, PHASE 3” shall be in direct proportion to the percentage of work completed for the applicable phase of the work; i.e. if 20% of the project phase is completed, the Contractor may request payment for 20% of the lump sum total of the bid item for construction staking. Measurement of the percentage of work completed per each phase shall be based on the percentage of work billed by the Contractor based on the total dollar amount of the contract bid price. Increases in the total contract price for any reason do not justify an increase in the lump sum price paid for the construction staking bid item. The Engineer and the Owner reserves the right to adjust the partial payment amounts of these said bid items based on any adjustments made to other pay items on the payment request by the Engineer or the Owner.

“POST-CONSTRUCTION SURVEY, PHASE 3” shall be measured on a lump sum basis, completed and accepted by the Engineer as conforming to all the requirements in the complete work.

The lump sum price paid for “POST-CONSTRUCTION SURVEY, PHASE 3” shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in completing the Post-Construction Survey (and pre-construction survey if the Contractor chooses to perform) as described in these Special Technical Specifications, as shown on the Project Plans, as described in the Standard Specifications and as directed by the Engineer.

Pre-Construction Survey:

All costs associated with a Pre-Construction Survey, if the Contractor chooses to perform the Pre-Construction survey, shall be included in the costs of the Post-Construction survey and no additional compensation shall be allowed for.

Full compensation for conforming to the provisions of this Section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

180 TEMPORARY EROSION CONTROL MEASURES & BMPs

180.01 General

This work shall consist of temporary erosion control measures, devices, and BMPs that may be shown on the Project Plans, and as specified in the Contract Documents, Project Permit(s), Standard Specifications, these Special Technical Specifications the Project SWPPP, or as directed by the Engineer during the life of the contract. Temporary erosion control measures will also be required at staging/storage areas utilized during project construction. Said work is intended to provide prevention, control, and abatement of water and air pollution within the limits of the project and to minimize damage to the work, adjacent properties and Lake Tahoe, streams or other bodies of water.

Attention is directed to Section 130.02, “Storm Water Pollution Prevention Plan,” of these Special Technical Specifications. As part of the SWPPP certification and submittal process, **the Contractor shall submit two (2) copies of any proposed revisions to the applicable Project Plan sheets for Temporary Erosion Control and the Dewatering and/or Diversion operations.** No work shall be started until the SWPPP, applicable plan sheets, schedules and methods of operation for temporary pollution control are reviewed and accepted by the Engineer, NTCD, TRPA, and NDEP. The Contractor is reminded that the project is located within the Lake Tahoe Basin and all pollution control measures and clean-up procedures must satisfy the requirements of TRPA, NDEP and the permit(s) issued for the project. During the course of project construction, the Contractor shall cooperate with the Engineer, TRPA, NDEP and other regulatory officials and take immediate action as directed to protect water bodies and sensitive areas, and provide for erosion or other pollution control.

Installation and maintenance of temporary erosion control measures, devices and BMPs shall conform to the requirements as stated within this section, the SWPPP, and the Nevada Contractors Field Guide for Construction Site BMPs (hard copies are available for purchase from the Truckee Meadows Watershed Committee 775-334-3314, or a free electronic copy “pdf” is available for download from the NDEP website <http://ndep.nv.gov/bwqp/bmp05.htm>).

As Directed Placement

Due to the nature of the project and expected field direction from the Engineer, NTCD, and permitting agencies, the Contractor shall make provisions to furnish all labor, tools, materials, and equipment as necessary to furnish and place additional temporary erosion control devices in the work (i.e. beyond or in addition to what is designated on the Project Plans or in the Project SWPPP) as directed by the Engineer, in conformance with the Contract Documents, Project Permits, SWPPP, Standard Specifications, and these Special Technical Specifications. Installation, maintenance, removal, and disposal of any additional as directed temporary erosion control device shall be considered as included in the applicable “as directed” bid item unit price, and no additional compensation will be allowed. The installation and location of any as directed temporary erosion control device shall only occur as determined and marked in the field by the Engineer.

The intent of the as directed temporary erosion control device bid items, is to provide the Engineer and Contractor with a means and allowance for additional temporary erosion control devices to be incorporated in the work where modifications to the construction sequence, changing field conditions, temporary stockpiles, and other potential minor unknowns can be adequately addressed in order to maintain compliance with the SWPPP and Project permits.

The Contractor will not be compensated for the installation of any additional “as directed” temporary erosion control devices without prior direction and acceptance of the Engineer.

Temporary Soil Stabilization

The Contractor shall install temporary soil stabilization materials for water pollution control in all disturbed work areas that are considered inactive (i.e. excess of 14 days) or before forecast storm events. Should any temporary erosion control of this nature be required elsewhere as directed by the Engineer and/or regulatory agencies, the Contractor shall install within 48 hours of notification. Where applicable and upon acceptance of the Engineer, the Contractor shall furnish and apply/install temporary mulch, temporary hydraulic mulch, temporary erosion control blankets, or temporary covers in conformance with the Standard Specifications and these Special Provisions. Materials and construction methods shall comply with the Standard Specifications and these Special Provisions.

The Contractor shall maintain a temporary cover on all stockpiles at all times. Whenever a temporary cover is removed to perform other work, the temporary cover shall be replaced and secured within one (1) hour of stopping work.

Compensation for the requirements of this section, not otherwise provided for in a specified bid item, shall be considered included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

180.02 Gravel Construction Entrance/Exit

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary to install, maintain, remove, and dispose of this temporary erosion control measure as required by the Project Plans, Contract Documents, Standard Specifications, these Special Technical Specifications, SWPPP, Project Permit(s), and TRPA Best Management Practices.

Gravel construction entrance/exit pads will be constructed for each phase of the work at each entrance and exit access road onto the project site as shown on the Project Plans. Work under this item shall consist of clearing and grubbing, excavation, furnishing and placing reinforcement mat, furnishing and placing rock at each entrance/exit access road, maintenance (i.e. removal of large quantities of captured sediment, and/or placement of additional rock during course of construction), removal, disposal of excess materials, and restoration of disturbed area.

Fabric to be used for the reinforcement mat shall be manufactured from polyester, nylon, or polypropylene material, or any combination thereof. Fabric shall be manufactured from virgin, or recycled or a combination of virgin and recycled, polymer materials. No virgin or recycled materials shall contain biodegradable filler materials that can degrade the physical or chemical characteristics of the finished fabric. The fabric shall be a non-woven, needle-punched fabric. The fabric shall be permeable, not act as a wicking agent, and shall conform to the following:

Test	Test Method	Requirement
Weight, grams per square meter	D 3776	135 min.
Grab Tensile Strength, (25-mm grip), kilonewtons, in each direction)	D 4632	0.40 min.
Elongation at Break, percent	D 4632	30 min.
Toughness, kilonewtons (percent elongation x grab tensile strength)		26 min.
Permittivity, 1/sec.	D 4491	0.5 min.
UV Resistance, percent strength retention @ 500 hrs	D 4355	70 min.

Rocks shall be angular to sub-angular in shape and shall conform to the material quality requirements in Section 200.07, Riprap, of the Standard Specifications for resistance to wear, absorption, apparent specific gravity, and durability. Rocks used for the gravel construction entrance/exit shall conform to the following sizes:

Square Screen Size	Percent Passing
6 inches	100
3 inches	0-20

Each gravel construction entrance/exit shall be of adequate size to prevent the tracking of sediment and materials onto any public right-of-way. At a minimum the size of each gravel construction entrance/exit shall be as shown on the Project Plans.

Each gravel construction entrance/exit shall be maintained to minimize tracking of soil and sediment onto existing public roads and rights-of-way. While the gravel construction entrance/exit is in use, pavement shall be cleaned and sediment removed at least once a day and as often as necessary when directed by the Engineer. Soil and sediment or other extraneous material tracked onto existing pavement shall not be allowed to enter any existing or proposed drainage facilities.

In the event the Contractor's operations are causing excessive tracking of materials the Engineer may direct the Contractor to replace the gravel construction entrance/exit, expand the size (area – length and/or width) of the gravel construction entrance/exit, and/or expand the depth of the gravel construction entrance/exit. In the event this is required the Contractor will not be entitled to any additional payment.

When no longer required as shown on the Project Plans or as determined by the Engineer (where applicable to each Phase of the work), each gravel construction entrance/exit shall become the property of the Contractor and be removed and disposed of in conformance with the Contract Documents, Standard Specifications, Project SWPPP, and these Special Technical Specifications. Under no circumstance shall any of the materials used for gravel construction entrance/exit be re-used on the project. All areas disturbed by the placement and use of each gravel construction entrance/exit shall be graded and restored to its pre-existing condition, including any provisions for revegetation found elsewhere in these Special Technical Specifications.

Gravel construction entrance/exit is considered a temporary erosion control measure or BMP. A fine of \$100 per day will be levied against the Contractor for each day the Contractor delays in responding to the Engineer's request to install new temporary erosion control devices and/or maintain existing temporary erosion control devices, in addition to any other fines levied by any other regulatory agency with no additional compensation allowed for.

180.03 Construction Limit & Tree Protection Fence

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary to install, maintain, remove, and dispose of this BMP as required by the Project Plans, Contract Documents, Standard Specifications, these Special Technical Specifications, SWPPP, Project Permit(s), and TRPA Best Management Practices.

The Contractor shall perform all construction activities that are outside the road right-of-way within the construction limits (and/or grading limits) as shown on the Project Plans and staked by the Contractor's surveyor, and as delineated with construction limit fence installed by the Contractor. Where directed by the Engineer and/or shown on the plans, construction limit fence shall be placed around individual trees or groups of trees that are to remain, in accordance with the Tree Protection and Construction Limit Fence depicted on the project plans.

The area within which the Contractor will be allowed to conduct his/her construction operations will be the area within the limits of the construction limit fencing and/or grading limits as shown on the Project Plans. Where located within the immediate vicinity of any trees (or dripline), the width of the work area will be reduced in order to protect the trees. The Contractor shall review each such location to determine what equipment can be used to install the improvements at these locations or if hand work will be necessary. The costs associated with working within these reduced widths shall be included in the unit price bid for the applicable item of work with no additional compensation therefore. Contractor's attention is directed to the applicable bid item descriptions in these Special Technical Specifications regarding the type of equipment that can be used in construction on sensitive land areas.

Where tree protection fencing cannot be placed at the dripline of the tree, as determined by the Engineer in coordination with TRPA, wood batten (as shown on the Project Plans) with bottom set approximately 3 feet above ground surface shall be strapped to the tree trunk (space between wood batten shall be no more than 6"). The unit price bid for construction limit and tree protection fence shall also apply to this condition (i.e. linear foot measurement of tree circumference where wood batten is attached).

Construction limit and tree protection fencing shall be inspected daily and repaired, secured, and/or replaced as necessary to maintain and preserve its intended purpose. All construction limit and tree protection fencing shall remain in place during any construction activities, except where required to be removed during the "winter down time" and Phase 2 activities, as directed by the Engineer. Attention is directed to Section 140.04, "Winterization of Project Site" of these Special Technical Specifications for additional information.

Tree protection and construction limit fencing is considered a temporary erosion control measure or BMP. A fine of \$100 per day will be levied against the Contractor for each day the Contractor delays in responding to the Engineer's request to install new temporary erosion control devices and/or maintain existing temporary erosion control devices, in addition to any other fines levied by any other regulatory agency with no additional compensation allowed for.

180.04 Revegetation Warning Signage

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary to install, maintain, remove, relocated, reorient and dispose of this temporary erosion control measure and BMP as required by the Project Plans, Contract Documents, Standard Specifications, these Special Technical Specifications, SWPPP, Project Permit(s), and TRPA Best Management Practices.

The Contractor shall furnish, install, and maintain the revegetation warning signs at locations shown on the Project Plans, described in these Special Technical Specifications, and as directed by the Engineer; in addition work shall be in conformance with the applicable provisions of Section 332, "Signs, Permanent

and Temporary” of the Standard Specifications. Installation of the revegetation warning signs shall occur following completion of the subject revegetation treatments, and prior to winterization of the project site at the completion of the Phase 1 work, or completion of the Phase 3 work. The Contractor is hereby notified that installation of additional signs, only as directed by the Engineer, may be required at any time during the subsequent Phases of work for the duration of the project.

All revegetation warning signs shall be routinely inspected and maintained at all times and on a continual basis for the duration of the Project, and are expected to be in good condition at the time the Notice of Completion is issued. Maintenance of the revegetation warning signs is also required for the duration of the revegetation “maintenance and bonding period” (described elsewhere in these Special Technical Specifications). Repair and or replacement of any damaged sign, upon discovery or as directed by the Engineer, shall be considered as included in the prices paid for this bid item of work, and no additional compensation will be allowed. At the conclusion of the revegetation “maintenance and bonding period” each revegetation warning sign shall become the property of the Contractor and be completely removed from the project site and disposed of in conformance with the Contract Documents, Standard Specifications, and these Special Technical Specifications.

Revegetation warning signs are considered a temporary erosion control measure or BMP. A fine of \$100 per day will be levied against the Contractor for each day the Contractor delays in responding to the Engineer’s request to install new temporary erosion control devices and/or maintain existing temporary erosion control devices, in addition to any other fines levied by any other regulatory agency with no additional compensation allowed for.

180.05 Wetland Temporary Construction Access Road, Phase 1

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary to install, maintain, remove, and dispose of this temporary erosion control measure and BMP as required by the Project Plans, Contract Documents, Standard Specifications, these Special Technical Specifications, SWPPP, Project Permit(s), and TRPA Best Management Practices.

The intent of the temporary construction access road(s) is to minimize impact to wetland areas or other designated sensitive areas (i.e. protection of existing herbaceous grasses and soils) and provide for a stable construction access to the project work areas within the meadow and floodplain SEZ areas. All construction access roads installed under this bid item are considered temporary and shall be removed at completion of the subject work or applicable Phase of the work. The designated temporary construction access road(s) shall be utilized whenever possible. The duration of temporary construction access roads and allowable conditions for its use will be at the discretion of the Engineer.

The locations for all temporary construction access roads shall be shown on the Contractor’s truck haul route plan (a required submittal as part of Traffic Control Plan), and shall be conspicuously marked in the field for review and acceptance by the Engineer prior to any disturbance taking place and/or installation of applicable materials for the construction access road.

Temporary construction access roads shall be constructed utilizing materials that are suitable for the intended purpose and provide for a dispersion of the anticipated construction loads. The support structure is expected to provide multi-directional structural support for the distribution or dispersion of point load weight factors (PSI, pounds per square inch) and total weight loading up to eighty (80) tons. The material used for the temporary construction access road shall provide for a sufficient traction surface (or other anchoring method) on both sides to ensure that the material is stable, stays in place without creeping, and allows for the safe passage of equipment during various conditions. A pre-accepted product for construction of the temporary construction access road(s) is: ‘DuraDeck-DD1’ by Signature Systems Group, LLC (1-800-709-8151), or equivalent.

<http://www.duradeckmats.com/heavy-duty-ground-mats.php>

At the discretion of the Contractor, an alternative device and/or plan for temporary construction access roads may be submitted to the Engineer for review and acceptance, in lieu of constructing and utilizing the specified ‘DuraDeck–DD1’ product. The alternative device/method shall be submitted in writing and include a full description of the materials, method and equipment to be used. If authorization is granted, it will be on the condition that the Contractor will be fully responsible for producing work in conformity with the Contract requirements. If, after trial use of the alternative device/method, the Engineer determines that the work produced does not meet Contract requirements, the Contractor shall discontinue the use of the alternative device/method and shall complete the remaining construction with the specified materials/method. The Contractor shall remove the deficient work and replace it with work as specified herein, or take such other corrective action as the Engineer may direct. No change will be made in basis of payment for the construction items involved nor in contract time (working days) as a result of authorizing a change in materials/method under these provisions.

Installation, use, and maintenance of temporary construction access roads shall be per the Manufacture’s requirements, as shown on the Project Plans, as directed by the Engineer, and in conformance with these Special Technical Specifications and the Project Permits. Prior to installation of any construction access road materials, the area to be impacted shall be mowed so that no more than 2 inches of “thatch” remains above the mineral soil (clippings shall be salvaged for use in revegetation work as specified elsewhere in these Special Technical Specifications).

When the temporary construction access road(s) are no longer needed as designated on the Project Plans or as directed by the Engineer (where applicable to each Phase of the work), all materials and any accumulated debris shall be removed in a manner that minimizes and/or prevents damage to the underlying vegetation and soils. All damaged vegetation and/or disturbed areas shall be restored and revegetated as directed by the Engineer and Revegetation Specialists.

180.06 Filter Fence

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary to install, maintain, remove, and dispose of this temporary erosion control measure as required by the Project Plans, Contract Documents, Standard Specifications, these Special Technical Specifications, SWPPP, Project Permit(s), and TRPA Best Management Practices.

Filter (silt) fence shall be manufactured from polyester or polypropylene material. The fabric shall be woven and shall conform to the following:

Test	Test Method	Requirement
Grab Tensile Strength, Newton, (25 millimeter grip, in each direction)	D 4623	400 min.
Elongation at Break, percent	D 4632	20 min.
Apparent Opening Size, Micrometers (um)	D 4751	850 min.
Coefficient of Permeability, cm/sec.	D 4491	0.01 min.
Ultraviolet Resistance, percent strength retention	D 4355	90 min.

The Contractor shall furnish, install, maintain, and remove when no longer required as directed by the Engineer, all filter fence per the Manufacturer’s directions, as shown on the Project Plans and as directed by the Engineer (where applicable to each Phase of the work), including but not limited to the following general requirements:

- A. Filter fence fabric shall be handled and placed in accordance with the manufacturer's recommendations. The fabric shall be aligned and placed in a wrinkle-free manner.
- B. When joints are necessary, filter fence fabric shall be spliced together only at a support post, with a minimum twelve (12) inches overlap and securely sealed or stitched. See manufacturer's recommendations. Should the filter fence fabric be damaged, the torn or punctured section shall be repaired by placing a piece of fabric that is large enough to cover the damaged area and to meet the overlap requirement.
- C. Posts shall be spaced a maximum of ten (10) feet apart at the barrier location or as recommended by the manufacturer if less than ten (10) feet and driven securely into the ground (minimum of 1 foot). The posts and fence shall be angled ten (10) degrees off vertical up-slope for stability.
- D. A trench shall be excavated approximately four (4) inches wide and six (6) inches deep along the line of posts and upslope from the barrier in accordance with manufacturer's recommendations.
- E. A wire mesh support fence shall be fastened securely to the upslope side of the posts using heavy duty wire staples at least one (1) inch long, tie wires or hog rings. The wire mesh shall extend into the trench a minimum of two (2) inches and shall not extend more than three (3) feet above the original ground surface.
- F. The filter fence fabric shall be installed on the upslope side of the wire mesh fence and shall be stapled, wired, or tied to the wire fence and eight (8) inches of the fabric shall be extended into the trench. The fabric shall not extend more than three (3) feet above the original ground surface. Filter fence fabric shall not be stapled to existing trees.
- G. The trench shall be backfilled and the soil compacted over the filter fence fabric.
- H. For installations on slopes less than 20%, slope lengths of 200 feet or less and around drainage inlets, the Contractor has the option to use fiber rolls in lieu of filter fence.
- I. Should the filter fence fabric decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, the fabric shall be replaced promptly.

Filter fence shall remain in place for the complete duration of the project (all Phases of work) as necessary to conform to the Project Permit(s) and SWPPP. All filter fence shall be routinely inspected and maintained at all times and on a continual basis for the duration of the Project, and is expected to be in good condition at the time the Notice of Completion is issued. Maintenance of the filter fence is also required for the duration of the revegetation "maintenance and bonding period" (described elsewhere in these Special Technical Specifications). Repair and or replacement of any damaged filter fence, upon discovery or as directed by the Engineer, shall be considered as included in the prices paid for this bid item of work, and no additional compensation will be allowed. At the conclusion of the revegetation "maintenance and bonding period" or where accepted to occur at an earlier date as directed by the Engineer, TRPA and NDEP, all filter fence shall become the property of the Contractor and be completely removed from the project site and disposed of in conformance with the Contract Documents, Standard Specifications, and these Special Technical Specifications.

Sediment log (fiber roll) shall not be used in place of filter fence without prior acceptance and written consent of the Engineer.

Filter fencing is considered a temporary erosion control measure or BMP. A fine of \$100 per day will be levied against the Contractor for each day the Contractor delays in responding to the Engineer's request to install new temporary erosion control devices and/or maintain existing temporary erosion control devices, in addition to any other fines levied by any other regulatory agency with no additional compensation allowed for.

180.07 Sediment Log (Fiber Roll)

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary to install, maintain, remove, and dispose of this temporary erosion control measure as required by the

Project Plans, Contract Documents, Standard Specifications, these Special Technical Specifications, Project Permit(s), and TRPA Best Management Practices. **The Contractor shall submit a material specification for the sediment log (fiber roll), for acceptance of the Engineer, prior to placement in the work.**

Sediment logs shall be provided in standard lengths of 10 or 20 feet long per the size diameter as shown on the Plans, and shall be prefabricated fiber roll logs or wattles filled with a rice straw, wood excelsior fiber, coconut fiber or other similar filler material, and covered with a biodegradable jute, sisal, or coir fiber netting or open weave containment fabric secured tightly at each end. The use of plastic/photodegradable netting shall not be allowed. All materials shall be certified weed free. Sediment logs with a diameter of 8 to 10 inches shall have a density of at least 1.1 lb/ft, and sediment logs with a diameter of 12-inches shall have a density of at least 3 lb/ft. Its basic purpose is to provide a flexible, lightweight, porous sediment control device demonstrating the ability to conform to terrain details, dissipate water velocity, and capture loose sediment. All fiber rolls shall be properly staked in place, except where its use is intended to be short term (daily operations) or reposition of the fiber roll will occur on a regular basis (i.e. active construction areas, trenching operations and windrows, temporary or active stockpiles, active areas for soil processing/screening operations, spill containment devices, etc.) as determined by the Engineer. In such instances where a fiber roll is not staked, it shall be weighted or secured in place using a sufficient number of gravel bags to control the flow of storm water and capture sediment.

The Contractor shall furnish, install, maintain, and remove when no longer required, all sediment logs per the Manufacturer's directions, as shown on the Project Plans and as directed by the Engineer (where applicable to each Phase of the work), including but not limited to the following general requirements:

- A. Prior to fiber roll installation; the Contractor shall excavate a concave trench along the contour line, three (3) inches to five (5) inches deep. Soil excavated from the trench shall be placed on the uphill or flow side of the roll to prevent water from undercutting the roll.
- B. The Contractor shall place the fiber roll in the trench and stake on both sides of the fiber roll within eight (8) inches of each end and then at a maximum spacing of four (4) feet, using one (1) by two (2) inch stakes.
- C. When more than one fiber roll is placed in a row or check dam, the fiber rolls shall be overlapped in a horizontal configuration to provide a tight joint.

Sediment log shall remain in place, where directed by the Engineer, for the complete duration of the project (all Phases of work) as necessary to conform to the Project Permit(s) and SWPPP. All sediment logs shall be routinely inspected and maintained at all times and on a continual basis for the duration of the Project. Repair and or replacement of any damaged sediment log, upon discovery or as directed by the Engineer, shall be considered as included in the prices paid for this bid item of work, and no additional compensation will be allowed. At the conclusion of the revegetation "maintenance and bonding period" or where accepted to occur at an earlier date as directed by the Engineer, TRPA and NDEP, all sediment log shall become the property of the Contractor and be completely removed from the project site and disposed of in conformance with the Contract Documents, Standard Specifications, and these Special Technical Specifications.

Any sediment logs required or used in the work on a short term basis that are not permanently staked in place or are anticipated to be moved on a daily or routine basis (such as areas immediately adjacent to trench excavations, temporary stockpiles, active areas for soil processing/screening operations, spill containment devices, etc.) shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

Sediment logs are considered a temporary erosion control measure or BMP. A fine of \$100 per day will be levied against the Contractor for each day the Contractor delays in responding to the Engineer's request to install new temporary erosion control devices and/or maintain existing temporary erosion control devices, in addition to any other fines levied by any other regulatory agency with no additional compensation allowed for.

180.08 Gravel Bags

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary to install, maintain, remove, and dispose of this temporary erosion control measure as required by the Project Plans, Contract Documents, Standard Specifications, these Special Technical Specifications, Project Permit(s), and TRPA Best Management Practices.

The gravel bag material should be woven polypropylene, polyethylene or polyamide geotextile fabric, with a minimum unit weight of 4 oz/sq/yd, Mullen burst strength exceeding 300 psi (ASTM D3786), and ultraviolet stability exceeding 70% (ASTM D4355). The gravel bag fill material should be 3/8 to 3/4 inch open graded, non-cohesive, porous gravel, and washed clean and free from clay, organic matter and other deleterious materials.

- A. Temporary gravel bag berm (or other measures which require gravel bags per the Project Plans, Project Permits, these Special Technical Specifications, and the SWPPP) shall consist of a single layer of gravel bags placed with ends abutted tightly and not overlapped; or multiple layers staggered at each overlapping joint where applicable.
- B. The bedding area for a temporary gravel bag berm (or other measures which require gravel bags per the Project Plans, Project Permits, these Special Provisions and the SWPPP) shall be level and firm, and cleared of obstructions including loose rocks, clods, and other debris greater than one (1) inch in diameter prior to installation.
- C. Temporary gravel bag berm (or other measures which require gravel bags per the Project Plans, Project Permits, these Special Provisions and the SWPPP) shall be installed approximately parallel to the slope contour.
- D. The last six (6) inches of the temporary gravel bag berm (or other measures which require gravel bags per the Project Plans, Project Permits, these Special Provisions and the SWPPP) shall be angled up slope and generally turned upstream to help form an effective sediment capture device.

Gravel bags shall remain in place, where directed by the Engineer, as necessary to conform to the Project Permit(s) and SWPPP. All gravel bags shall be routinely inspected and maintained at all times and on a continual basis for the duration of the Project. Repair and or replacement of any damaged gravel bag, upon discovery or as directed by the Engineer, shall be considered as included in the prices paid for the applicable bid item of work, and no additional compensation will be allowed. At the conclusion of the revegetation "maintenance and bonding period" (for gravel bags used in areas other than the gravel bag berms associated with the dewatering and diversion plan) or where accepted to occur at an earlier date as directed by the Engineer, TRPA and NDEP, all gravel bags shall become the property of the Contractor and be completely removed from the project site and disposed of in conformance with the Contract Documents, Standard Specifications, and these Special Technical Specifications.

Gravel bag berms are considered a temporary erosion control measure or BMP. A fine of \$100 per day will be levied against the Contractor for each day the Contractor delays in responding to the Engineer's request to install new temporary erosion control devices and/or maintain existing temporary erosion control devices, in addition to any other fines levied by any other regulatory agency with no additional compensation allowed for.

180.9 Dirt Bag Device

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary to install, maintain, remove, and dispose of this temporary erosion control measure as required by the Project Plans, Contract Documents, Standard Specifications, these Special Technical Specifications, Project Permit(s), and TRPA Best Management Practices. **The Contractor shall submit a material specification for the 'Dirtbag' device, for acceptance of the Engineer, prior to placement in the work.**

Use of any 'Dirtbag' or other similar sediment control filter bag device used in coordination with pumping of sediment laden waters for discharge shall be as shown on the Project Plans and details and conform to the provisions of the Project Permits and SWPPP. The 'Dirtbag' shall be a commercially manufactured nonwoven geotextile fabric bag (polypropylene or equivalent) intended for such use, with a minimum grab tensile strength of 200 psi in any principal direction (ASTM D4632), and permittivity of 0.05 sec (ASTM D4491). For project area soils (source of sediment in waters) with more than 15% by weight passing a No. 200 sieve the fabric shall have an apparent opening size between 50 and 140, and for project area soils (source of sediment in waters) with less than 15% by weight passing a No. 200 sieve the fabric shall have an apparent opening size between 20 and 50. The geotextile fabric material shall contain ultraviolet ray inhibitors and stabilizers to provide an expected usable life comparable to the anticipated construction period; ultraviolet stability shall exceed 70% after 500 hours of exposure (ASTM D4355). The 'Dirtbag' device shall have a fill spout large enough to accommodate a pump four (4) inch discharge hose and attachment straps to secure the hose in place. The 'Dirtbag' device shall be sized to accommodate the applicable flow rates and prohibit release of the target effluent. Location of any 'Dirtbag' device requires acceptance of the Engineer, equipment access for removal and off-site disposal, and the area shall be stable to prevent erosion. Placement of drain rock, fabric, or other suitable substance to create a stable discharge site is the responsibility of the Contractor. Any 'Dirtbag' device shall be fitted with straps strong enough for lifting and the device removed from the Project site and properly disposed of; **cutting open the device and leaving the captured sediment/fines in place is prohibited.** Removal and off-site disposal may be facilitated by placing the 'Dirtbag' device on pallets, crates, trailer, or some other small mobile device to dismiss the need for lifting the 'Dirtbag' device by straps.

180.10 Temporary Concrete Washout Facility

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary to construct, maintain and later remove when no longer required, including all waste materials, a temporary concrete washout facility in accordance with the Project Plans, Contract Documents, Standard Specifications, these Special Technical Specifications, Project Permit(s), Project SWPPP and TRPA Best Management Practices.

When a temporary concrete washout facility is no longer required for the work, as determined by the Engineer, all materials including the hardened concrete and liquid residue are considered the property of the Contractor and shall be removed and disposed of in conformance with the provisions found elsewhere in these Special Technical Specifications, and the Standard Specifications.

Ground disturbance, including holes and depressions, caused by the installation and removal of the temporary concrete washout facility shall be backfilled and repaired in conformance with the provisions found elsewhere in these Special Technical Specifications, and the Standard Specifications.

Details for an alternative temporary concrete washout facility shall be submitted to the Engineer for acceptance at least seven (7) days prior to installation.

Materials

A. Plastic Liner

Plastic liner shall be single ply, new polyethylene sheeting, a minimum of ½ inch thick, and shall be free of holes, punctures, tears, or other defects that compromise the impermeability of the material. Plastic liner shall not have seams or overlapping joints.

B. Permeable Material

Permeable material shall be as specified in Section 200.03.05, “Class D Backfill” of the Standard Specifications.

C. Sediment Log

Sediment Log shall be as specified in Section 180.07 of these Special Technical Specifications.

D. Gravel Bags

Gravel bags shall as specified in Section 180.08 of these Special Technical Specifications.

E. Stakes

Stakes shall be wood or metal. Wood stakes shall be untreated fir, redwood, cedar, or pine; shall be cut from sound timber; and shall be straight and free from loose or unsound knots and other defects which would render them unfit for the purpose intended. Wood stakes shall be minimum one (1) inch x two (2) inches in size. Metal stakes may be used as an alternative and shall be a minimum 1/2 inch in diameter. Stakes shall be a minimum four (4) feet in length. The tops of the metal stakes shall be bent at a 90-degree angle or capped with an orange or red plastic safety cap that fits snugly to the metal stake. The Contractor shall submit a sample of the metal stake and plastic cap, if used, for the Engineer's acceptance prior to installation.

Installation

The temporary concrete washout facility shall be installed as shown n the Plans and as follows:

- A. The temporary concrete washout facility shall be installed prior to beginning placement of concrete and located a minimum of 50 (fifty) feet away from storm drain inlets, open drainage facilities, and water courses unless determined infeasible by the Engineer. The facility shall be located away from construction traffic or direct access to the staging and storage area.
- B. The temporary concrete washout facility shall be constructed in sufficient size to contain liquid and concrete waste generated by washout operations for concrete wastes. The facility shall be constructed to contain liquid and concrete waste without seepage, spillage, or overflow.
- C. The depressed area or pit shall be covered with a plastic liner in order to protect the underlying soils from contamination.
- D. The plastic liner may be held in place using sediment logs, gravel bags, or berms constructed from compacted native materials.

Maintenance

The temporary concrete washout facility shall be maintained to provide adequate holding capacity with a minimum freeboard of twelve (12) inches. Maintaining the temporary concrete washout facility shall include removing and disposing of hardened concrete and returning the facilities to a functional condition. Hardened concrete materials shall be removed and disposed of in conformance with the provisions found elsewhere in these Special Technical Specifications, and the Standard Specifications. Holes, rips, and voids in the plastic liner shall be patched and repaired by taping, or the plastic liner shall be replaced. Plastic liner shall be replaced when patches or repairs compromise the impermeability of the material as determined by the Engineer.

The temporary concrete washout facility shall be repaired or replaced on the same day when the damage occurs. Damage to the temporary concrete washout facility resulting from the Contractor's vehicles, equipment, or operations shall be repaired at the Contractor's expense.

180.11 Watering/Dust Control

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary to provide construction water for the control of dust generated by the Contractor's activities as required by the Project Plans, Contract Documents, Standard Specifications, these Special Technical Specifications, Project Permit(s), Project SWPPP and TRPA Best Management Practices.

The Contractor shall be responsible for dust control throughout all phases of construction. All federal, state, regional and local ordinances regarding dust control shall be complied with, including the Washoe County Health Department Permit. The responsibility of obtaining the regulations and requirements and full compliance with such ordinances is solely that of the Contractor.

No chemical additives shall be permitted for any watering/dust controls operations.

If the Contractor desires to use water from fire hydrant(s) during construction, permission for the use of hydrant(s) shall be obtained from the proper agency (Incline Village General Improvement District, IVGID). The Contractor shall use said hydrant(s) in accordance with any rules, regulations, and procedures as established by the agency.

180.12 Sweeping

Work under this item shall consist of furnishing all labor, tools, materials, and equipment necessary to sweep all paved areas within the project site, and streets adjacent to the project site, and dispose of the swept materials in accordance with the Project Plans, Contract Documents, Standard Specifications, these Special Technical Specifications, Project Permit(s), Project SWPPP and TRPA Best Management Practices. Tracking of sediment onto public streets shall be minimized by a combination of road sweeping and use of gravel construction entrance/exit areas designated on the Plans during soil hauling operations, during equipment transporting from one work area to another, and as necessary to keep the streets and other paved areas clear of soil and debris. Tracking control applies to streets within the project area as well streets adjacent to the project area that have the potential to be impacted by tracking from the Contractor's operations.

The Contractor shall provide sweeping equipment that conforms to the following minimum requirements: **The sweeper, provided by the Contractor, shall be a chassis-mounted vehicle capable of vacuuming the roadways such that the swept material is placed into a hopper, from which the swept material can be removed and disposed of. Broom sweepers that are attachments to other equipment are not acceptable sweepers.**

Affected streets shall be swept a minimum of three times daily (e.g. mid-morning, mid-afternoon, and at the end of the day) during soil hauling operations, during equipment transporting from one work area to another, and as necessary to keep the streets clear of soil and debris. The swept material shall be disposed of in accordance with the standard specifications, project permits and these Special Technical Specifications.

Sweeping is considered a temporary erosion control measure or BMP. A fine of \$100 per day will be levied against the Contractor for each day the Contractor delays in responding to the Engineer's request to install new temporary erosion control devices and/or maintain existing temporary erosion control devices, in addition to any other fines levied by any other regulatory agency with no additional compensation allowed for.

180.13 Maintenance

The Contractor shall maintain all temporary erosion control measures, devices, and/or BMPs placed in the work, for the duration of the project. Maintenance includes all Manufacture's recommendations, and includes but is not limited to the following:

- Damage to any temporary erosion control devices and/or BMPs during the course of the project shall be repaired by the Contractor immediately upon discovery and at his expense.
- Temporary erosion control devices and/or BMPs shall be inspected routinely and immediately after each rainfall event and at least daily during prolonged rainfall events. Any required repairs shall be made immediately.
- Construction limit and tree protection fencing shall be inspected daily and repaired, secured, and/or replaced as necessary to maintain and preserve its intended purpose.
- All signage as required for the project shall be routinely inspected and repaired or replaced upon discovery of damage, vandalism, and/or missing parts.
- Should the filter fence fabric decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, the fabric shall be replaced promptly.
- Should a sediment log decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, the sediment log shall be replaced promptly.
- Any single or group of gravel bag(s) shall be replaced when the bag material is ruptured or when the yarn has failed, allowing the bag contents to spill out.
- Any stakes and/or rope used to secure a sediment log in place shall be routinely inspected and repaired as necessary if found to be loose or ineffective.
- Damage to any temporary gravel bag berm (or other measures which require gravel bags per the Project Plans, Project Permits, these Special Provisions and the SWPPP) shall be repaired or replaced on the same day when the damage occurs or is discovered.
- Sediment deposits and other debris shall be removed when they reach approximately one-half the height of the sediment barrier (or as recommended by the Manufacture) and disposed of in a manner acceptable to the Engineer, NDEP, TRPA, and in conformance with the SWPPP.
- Temporary gravel bag berm (or other measures which require gravel bags per the Project Plans, Project Permits, these Special Provisions and the SWPPP) shall be maintained to provide a sediment holding capacity of approximately one-third the height of the gravel bag berm above the ground. When sediment exceeds this height or when directed by the Engineer, sediment shall be removed and disposed of in a manner acceptable to the Engineer, NDEP, TRPA, and in conformance with the SWPPP.
- Any sediment deposits remaining in place after the temporary erosion control measure and/or BMPs is no longer required shall be removed and disposed of in a manner acceptable to the Engineer, NDEP, TRPA, and in conformance with the SWPPP.

180.14 Measurement and Payment.

“GRAVEL CONSTRUCTION ENTRANCE/EXIT, PHASE 1”, “GRAVEL CONSTRUCTION ENTRANCE/EXIT, PHASE 3”, “REVEGETATION WARNING SIGN, PHASE 1”, and “REVEGETATION WARNING SIGN, PHASE 3” shall be measured on a unit basis for each item constructed or installed and accepted by the Engineer as conforming to all the requirements in the complete work. Additionally, the relocation and/or reorientation of signs called for relocation and/or reorientation during phase three on the Project Plans (Sheets EC-1a through EC-2d3), which were installed in Phase 1 of the Project shall be measured on a unit basis for each item relocated and/or reoriented, as directed by the Engineer under the bid item “REVEGETATION WARNING SIGN, PHASE 3”.

“CONSTRUCTION ACCESS ROAD, PHASE 1” and “CONSTRUCTION ACCESS ROAD, PHASE 3” shall be measured on a square foot basis, installed and accepted by the Engineer as conforming to all the requirements in the complete work.

“CONSTRUCTION LIMIT & TREE PROTECTION FENCE, PHASE 1”, AS DIRECTED CONSTRUCTION LIMIT & TREE PROTECTION FENCE, PHASE 2 – YEAR 1”, AS DIRECTED CONSTRUCTION LIMIT & TREE PROTECTION FENCE, PHASE 2 – YEAR 2”, “CONSTRUCTION LIMIT & TREE PROTECTION FENCE, PHASE 3”, “FILTER FENCE, PHASE 1”, “AS DIRECTED FILTER FENCE, PHASE 2 – YEAR 1”, “AS DIRECTED FILTER FENCE, PHASE 2 – YEAR 2”, “FILTER FENCE, PHASE 3”, “AS DIRECTED SEDIMENT LOGS, PHASE 1”, “AS DIRECTED SEDIMENT LOGS, PHASE 2 – YEAR 1”, “AS DIRECTED SEDIMENT LOGS, PHASE 2 – YEAR 2”, and “AS DIRECTED SEDIMENT LOGS, PHASE 3” shall be measured on a linear foot basis, installed and accepted by the Engineer as conforming to all the requirements in the complete work.

Payment for “GRAVEL CONSTRUCTION ENTRANCE/EXIT, PHASE 1” and “GRAVEL CONSTRUCTION ENTRANCE/EXIT, PHASE 3”, shall be made at the contract unit price per each which shall be deemed full compensation for all labor, materials, tools, equipment, and incidentals necessary to complete and maintain the work as shown on the Plans, as specified in the Contract Documents, the Standard Specifications, these Special Technical Specifications, or as specified otherwise, and as directed by the Engineer, and making any required modifications due to field conditions, including the removal and disposal of all the resulting materials from the Tahoe Basin.

Payment for “REVEGETATION WARNING SIGN, PHASE 1” and “REVEGETATION WARNING SIGN, PHASE 3” shall be made at the contract unit price per each which shall be deemed full compensation for all labor, materials, tools, equipment, and incidentals necessary to complete and maintain the work as shown on the Plans, as specified in the Contract Documents, the Standard Specifications, these Special Technical Specifications, or as specified otherwise, and as directed by the Engineer, and making any required modifications due to field conditions, including the removal and disposal of all the resulting materials from the Tahoe Basin.

Payment for “CONSTRUCTION LIMIT & TREE PROTECTION FENCE, PHASE 1”, AS DIRECTED CONSTRUCTION LIMIT & TREE PROTECTION FENCE, PHASE 2 – YEAR 1”, AS DIRECTED CONSTRUCTION LIMIT & TREE PROTECTION FENCE, PHASE 2 – YEAR 2”, and “CONSTRUCTION LIMIT & TREE PROTECTION FENCE, PHASE 3” shall be made at the contract linear foot bid price which shall be deemed full compensation for all labor, materials, tools, equipment and incidentals necessary to complete and maintain the work as shown on the Plans, as specified in the Contract Documents, the Standard Specifications, these Special Technical Specifications, or as specified otherwise, and as directed by the Engineer, and making any required modifications due to field conditions, including the removal and disposal of all the resulting materials from the Tahoe Basin.

Payment for “CONSTRUCTION ACCESS ROAD, PHASE 1” and “CONSTRUCTION ACCESS ROAD, PHASE 3” shall be made at the contract square foot bid price which shall be deemed full compensation for all labor, materials, tools, equipment and incidentals necessary to complete and maintain the work as shown on the Plans, as specified in the Contract Documents, the Standard Specifications, these Special Technical Specifications, or as specified otherwise, and as directed by the Engineer, and making any required modifications due to field conditions, including the removal and disposal of all the resulting materials from the Tahoe Basin. All other work associated with use of floodplain access roads will be considered incidental to project construction and will be included in the unit bid prices of various contract bid items, and no additional compensation will be allowed therefore.

Payment for “FILTER FENCE, PHASE 1”, “AS DIRECTED FILTER FENCE, PHASE 2 – YEAR 1”, “AS DIRECTED FILTER FENCE, PHASE 2 – YEAR 2”, and “FILTER FENCE, PHASE 3” shall be made at the contract linear foot bid price which shall be deemed full compensation for all labor, materials, tools, equipment and incidentals necessary to complete and maintain the work as shown on the Plans, as specified in the Contract Documents, the Standard Specifications, these Special Technical Specifications, or as specified otherwise, and as directed by the Engineer, and making any required modifications due to field conditions, including the removal and disposal of all the resulting materials from the Tahoe Basin.

Payment for “AS DIRECTED SEDIMENT LOGS, PHASE 1”, “AS DIRECTED SEDIMENT LOGS, PHASE 2 – YEAR 1”, “AS DIRECTED SEDIMENT LOGS, PHASE 2 – YEAR 1”, and “AS DIRECTED SEDIMENT LOGS, PHASE 3” shall be made at the contract linear foot bid price which shall be deemed full compensation for all labor, materials, tools, equipment and incidentals necessary to complete and maintain the work as shown on the Plans, as specified in the Contract Documents, the Standard Specifications, these Special Technical Specifications, or as specified otherwise, and as directed by the Engineer, and making any required modifications due to field conditions, including the removal and disposal of all the resulting materials from the Tahoe Basin.

Full compensation for conforming to the provisions of this Section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

190 WATER FILLED BARRIER

190.01 Description

Work under this item shall consist of furnishing all labor, tools, equipment, and materials as necessary to provide, prepare the site, install, maintain, make repairs, and remove a water filled barrier or water inflated temporary dam (WFB) in accordance with the Project Plans, Project Permits, SWPPP, these Special Provisions, as recommended by the manufacture, and as directed by the Engineer.

If the Contractor so desires to use substitute materials/method other than the WFB as specified herein, the Contractor may request authority from the Engineer to do so. The request shall be in writing and include a full description of the materials, method and equipment to be used and an explanation of the reasons for desiring to make the change. If authorization is granted, it will be on the condition that the Contractor will be fully responsible for producing work in conformity with the Contract requirements. In addition any alternate device/method shall be suitable for the intended purpose and able to withstand the expected erosive forces from a high flow overbank event. The location, length, width, height and size of any substitute device shall be similar to that as designated on the Plans and/or as specified herein. A substitute device may only be allowed where reviewed and accepted by the Engineer in writing. If, after trial use of the substituted materials/method, the Engineer determines that the work produced does not meet Contract requirements, the Contractor shall discontinue the use of the substitute materials/method and shall complete the remaining construction with the specified materials/method. The Contractor shall remove the deficient work and replace it with work as specified herein, or take such other corrective action as the Engineer may direct. No change will be made in basis of payment for the construction items involved nor in contract time (working days) as a result of authorizing a change in materials/method under these provisions.

Based on the conditions at the time of construction the Contractor shall provide a WFB of adequate size (inflated height and length) to isolate all work areas as shown on the Project Plans, and also be installed in a manner that minimizes or eliminates potential water quality impact. The length, width, height and size of the WFB shall be determined by the Contractor based on the stated requirements in this section, as shown on the Project Plans, and be capable of sustaining a berm height (no less than as specified on the

Project Plans) for the full length of the target area for the duration of the project work. The Contractor shall remove all sharp objects and other debris and provide a smooth, well compacted, and stable sub-grade area for placement of the WFB, including any necessary clearing and grubbing, excavation, backfill, and/or grading. Placement of backfill materials and minor grading is required within the vicinity of the secondary channel (as shown on the Plans).

The intent of the WFB (or accepted substitute device) is to isolate and/or separate the existing channel (as shown on the Plans) from the proposed channel and floodplain construction area; and effectively reduce the risk and/or prevent any creek flows from leaving the existing channel and entering the proposed channel, thereby creating erosion issues and causing damage to the work area.

It is the Contractor's responsibility to coordinate with the manufacture to ensure that any installation site criteria or other relevant factors as may be required by the WFB manufacture are fully meet. Dynamic water height conditions shall not exceed the manufacture's stated criteria of requirements during hydrodynamic installation procedures. At no time shall the static water height conditions exceed 75% of the properly filled height of the barrier. **The Contractor shall submit all relevant information in regards to the installation/selection criteria and product specifications as provided by the WFB manufacture, for review and acceptance by the Engineer.** The WFB as provided shall consist of and/or generally meet the following requirements:

- 1) The WFB will consist of a self contained, single tube with an inner restraint baffle(s)/diaphragm(s) or other stabilization system. The WFB must have the ability to stand alone, without any additional external mechanical or gravitational stabilization devices, as a positive water barrier and water management system.
- 2) The WFB shall be produced from heavy gauge polyvinyl chloride (PVC) or other polymer material with an available reinforcement/protective membrane. The polymer fabric used to create the WFB will be infield repairable utilizing a vinyl adhesive and patch material.
- 3) The WFB must maintain mechanical stability in addition to providing anti-rolling when exposed to uneven hydrostatic pressure from either side (such as an internal baffle system or other).
- 4) The WFB must be self-contained and shall have fill ports and drain ports for rapid inflation and draining. The WFB will be equipped with lifting loops or other devices used to control the dam with equipment during the installation and removal process.
- 5) A method for connecting multiple units together shall create a watertight connection.
- 6) Application and use in area where freezing temperatures are expected.

The Contractor is responsible to maintain the WFB (or accepted substitute device) for the duration of phases 1, 2 and portions of phase 3 of the project. The barrier shall be inspected daily and after potentially damaging events for leaks and other damage that may lead to a leak. As a precaution the Contractor shall have extra materials on-site at all times to repair and/or replace the WFB as necessary. Any repairs shall be made as directed by the manufacturer. The Contractor is responsible for any damage (including impacts to adjacent public and private properties) and necessary repairs to the WFB, as a result of vandalism or wildlife impacts, including full replacement of the WFB where necessary.

The Contractor is responsible to coordinate with the manufacture and make all provisions as necessary to ensure that the serviceable life of the WFB will be adequate for the complete duration of the project (regardless of number of year(s) added to project for establishment of the vegetation, prior to initiation of Phase 3 work). These provisions may include but are not limited to: application and use in area where freezing temperatures are expected; placement of protective covers to protect against environmental conditions, sunlight exposure and/or provide additional UV resistance; or removal and complete replacement of the WFB per recommendation of the manufacture and/or at the direction of the Engineer. No additional compensation will be allowed for in meeting these requirements as stated above.

All source water is the responsibility of the Contractor; the said water shall be clean and suitable for its intended purpose and have no negative impacts to the WFB to cause a chemical reaction, deterioration, or other harm to the WFB bladder. No water shall be taken from the Creek to fill the WFB. When the WFB is adjusted/relocated or no longer needed as part of the work, draining and discharge of any water from the WFB shall conform to the non-stormwater management provisions as found in the SWPPP, Project Permits, Standard Specifications, and these Special Technical Specifications. Direct discharge of any effluent water to Rosewood Creek is prohibited.

The WFB (or accepted substitute device) is considered a temporary erosion control measure or BMP. A fine of \$100 per day will be levied against the Contractor for each day the Contractor delays in responding to the Engineer's request to install new temporary erosion control devices and/or maintain existing temporary erosion control devices, in addition to any other fines levied by any other regulatory agency with no additional compensation allowed for.

190.02 Measurement and Payment

“WATER FILLED BARRIER, PHASE 1” shall be measured on a linear foot basis along the center line of the facility, installed and accepted by the Engineer as conforming to all the requirements in the complete work. WFB standard section lengths that are in excess of that which would normally be required for the work shall not be considered for payment (i.e. excessive amount of any standard length barrier section {per manufacture} that is not utilized nor required in the work, coordination with the Engineer is required). Any additional materials needed to repair and/or replace any portions of a properly installed barrier that is damaged, vandalized, or becomes non-functional due to any other mishap, will not be considered as additional footage in the measurement for payment.

The Contract unit price per linear foot paid for the item “WATER FILLED BARRIER, PHASE 1” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals as necessary to design, provide, prepare the site, install, maintain, make repairs, and remove a water filled barrier or water inflated temporary dam (WFB) to facilitate construction of the associated project improvements and to be used as a BMP, as specified herein, and no additional compensation will be allowed.

Due to the nature of the Contract (multi-year) and extended maintenance requirements for temporary erosion control measures and BMPs, payments for “WATER FILLED BARRIER, PHASE 1” will be made on a partial payment basis as follows: sixty percent (60%) of the subject contract bid item will be paid following installation of the WFB, complete and in place as accepted by the Engineer as conforming to all the requirements in the complete work. When no longer required and upon removal of the WFB from the work, as accepted and directed by the Engineer, NTCD, TRPA, and NDEP, the remaining forty percent (40%) of the subject contract bid item will be paid as part of next scheduled progress payment (i.e. payment in full). The Engineer and the Owner reserves the right to adjust the partial payment amount of said bid item based on progress and completion of the project work.

200 DEWATERING AND/OR DIVERSION

200.01 General

Work under this item shall consist of furnishing all labor, tools, equipment, and materials as necessary to dewater, divert and/or bypass any groundwater or surface waters and to maintain a reasonably dry excavation or general work area for the proper installation, construction, curing, grow-in, maintenance, and completion of any improvements and utility relocations, including revegetation/restoration activities, for a complete job in place as shown on the Project Plans, described in the Special Technical Specifications, the Project SWPPP and Standard Specifications, or as directed by the Engineer.

Dewatering and/or Diversion operations as stated herein, or as directed by the Engineer, are required to be performed at any time and on a continual basis, for the duration of the project and any ensuing maintenance period, as necessary to install, construct, complete and maintain all project improvements.

Based on information as noted in the geotechnical exploration report (see appendices) boring logs, depth to groundwater elevations at select locations within the project area are estimated to range from approximately one and half foot (1.5') up to three and half foot (3.5') below ground surface. Actual groundwater elevations encountered at the time of project construction may vary and it is the responsibility of the Contractor to make all provisions as necessary to provide for any dewatering operations as stated herein. In general, the Contractor should expect/anticipate that groundwater may be encountered at any time the existing ground is disturbed within the project area, as a majority of the project site is located within a TRPA delineated SEZ (land capability SEZ 1b) shown on the Project Plans.

The Contractors attention is directed to the "Dewatering, Diversion, and Water Introduction Plan" (made part of SWPPP) for additional details and requirements. All dewatering and/or diversion operations and activities shall be in complete compliance with the Project Plans, Project Permits, SWPPP, the Standard Specifications, these Special Technical Specifications, and other applicable regulatory agency requirements.

The Contractor shall be responsible for the final design, installation, operation, maintenance and removal of any dewatering and/or diversion systems as required for completion of the contract work. The Project Plan sheets and Dewatering, Diversion, and Water Introduction Plan (made part of SWPPP) as provided as part of the Contract Documents provide a basis for, show, and describe dewatering scenarios and minimum requirements. **The Contractor shall submit their own detailed Dewatering and Diversion Plan (including all necessary diagrams/exhibits) to the Engineer for review and acceptance (by the Engineer, NTC, TRPA, and NDEP) prior to commencement of any construction activities that may require dewatering and/or diversion operations.** The proposed Dewatering, Diversion, and Water Introduction Plan shall be prepared by a licensed Engineer in the state of Nevada, or qualified licensed Contractor (at discretion of the Engineer) that specializes in dewatering, filtration, pumping, and liquid handling operations. Information required to be submitted shall included but is not limited to the following:

- Any Sub-Contractor information and proof of experience
- Qualified operator of the system and equipment
- Access routes, pads, spill containment devices, and locations for equipment
- Sources for power supply and pump operation
- Dewatering/diversion system design performance measures for volume and pumping rates
- Pump equipment description, performance measures and manufacture's data sheets
- Intake and discharge locations, methods, and materials
- Disposal methods and any proposed treatment practices
- Provisions to provide back-up equipment and/or stage on-site
- Emergency plan to accommodate high flow flood events
- Other requirements as stated in the SWPPP

Throughout the course of the project and prior to initiating any dewatering and/or diversion work, discussions between the Contractor and the Engineer shall take place to make a determination if the dewatering and/or diversion operations are necessary at a given location for each phase of the work; however the Contractor shall assume as a basis for bid purposes, that dewatering and/or diversion operations (as described herein) will be required for all work associated with the project. If it is

determined that dewatering and/or diversion operations are unnecessary during any phase of the work, no payment for that bid item will be made. The elimination of one or all of these item(s) shall not constitute the basis for a claim of extra payment or damage by the Contractor and Section 100.53, "Increased or Decreased Quantities" of the Standard Specifications shall not apply. Dewatering and/or diversion operations will only be paid for based on the direction and determination (as defined herein) that dewatering and/or diversion operations were required to construct the improvement(s). If the Contractor plans to conduct any dewatering and/or diversion operations, he/she shall contact the Engineer for authorization, prior to starting the work at a given location. In the event the Contractor initiates dewatering and/or diversion operations without prior authorization of the Engineer, no payment for that work will be made.

200.02 Dewatering and/or Diversion for Culvert Construction

Dewatering and/or diversion operations as necessary for, including but not limited to, the construction of the proposed RCB culvert structure and any associated utility relocates (described elsewhere in these Special Technical Specifications), shall be as shown on the accepted Contractor's Dewatering, Diversion, and Water Introduction Plan, and in conformance with the Project Plans, SWPPP and these Special Technical Specifications, and in accordance with the required contract phasing timelines. Discharge of all captured and/or diverted waters shall be in conformance with the SWPPP and all project permit regulations.

The excavation and general work area shall be sufficiently dry to allow for the proper construction and inspection of the RCB culvert structure sections, wingwalls, headwalls, and internal components for a complete in place RCB culvert structure, as shown on the Project Plans and described in these Special Technical Specifications. The location and depth of sumps and/or well points for pumping of ground water or surface water is at the discretion of the Contractor, but shall be reviewed and accepted by the Engineer prior to initiating the work involved. The dewatering operations shall also be sufficient to produce a stable sub-grade within the excavation or general work area as necessary for access of equipment and personnel to complete the work.

In the event there is a storm event which increases the flow of the creek above its banks, the Contractor shall make provisions for and have equipment (i.e. pumps, piping, gravel bags, plastic sheeting, temporary dams, etc.) on standby; to provide adequate protection of the work area, avoid flooding and inundation of the excavation, prevent erosion and discharge of sediment or other pollutants, and divert the increase in flows to stabilized downstream areas, away from any active work site(s).

200.03 Dewatering and/or Diversion for Creek Channel Construction

Dewatering and/or diversion operations as necessary for, including but not limited to, the construction of the proposed creek channel, grade control structures, buried protection structures, floodplain improvements and grading operations, as well as the removal and/or abandonment of the existing pipe culvert structures (described elsewhere in these Special Technical Specifications), shall be as shown on the accepted Contractor's Dewatering, Diversion, and Water Introduction Plan, and in conformance with the Project Plans, SWPPP and these Special Technical Specifications, and in accordance with the required contract phasing timelines. Discharge of all captured and/or diverted waters shall be in conformance with the SWPPP and all project permit regulations.

The creek channel excavation(s), floodplain, and general work area shall be sufficiently dry to allow for the proper construction and inspection of the proposed creek channel, grade control structures, buried protection structures, floodplain improvements and grading operations, as well as the removal/abandonment of the existing pipe culvert structures, for a complete job in place as shown on the Project Plans and described in these Special Technical Specifications. The location and depth of sumps and/or well points for pumping of ground water or surface water is at the discretion of the Contractor, but

shall be reviewed and accepted by the Engineer prior to initiating the work involved. The dewatering operations shall also be sufficient to produce a stable sub-grade within the excavation(s) or general work area as necessary for access of equipment and personnel to complete the work.

Dewatering and/or diversion operations shall include the complete “bypass” of section(s) of Rosewood Creek as necessary to properly construct and complete the proposed channel tie-ins and existing channel crossing, as well as other improvements upstream of Northwood Blvd for a complete job in place as shown on the Project Plans and described in these Special Technical Specifications. The active work area(s), including floodplain access roads and other points of access, shall be “dry” and no creek flow shall be allowed to enter the work area(s). The “bypass” operations shall adequately protect the work area(s) from creek flows, prevent erosion and discharge of sediment or pollutants, and divert “bypass” creek flows to designated stable discharge points downstream. Fish screens shall be installed as indicated on the Project Plans and described in the Dewatering, Diversion, and Water Introduction Plan.

In the event there is a storm event which increases the flow of the creek beyond what can be handled by the Contractor’s established creek diversion “by-pass” operations, the Contractor shall make provisions for and have equipment (i.e. pumps, piping, gravel bags, plastic sheeting, temporary dams, etc.) on standby to either provide additional pumping capacity to handle the additional flow, or provide for a complete gravity flow by-pass system. In addition the Contractor shall make all provisions to provide adequate protection of the active work area(s), avoid flooding and inundation of excavation(s), divert runoff to stabilized downstream areas away from any active work site(s), and reduce and/or prevent erosion and discharge of sediment or other pollutants.

Culvert Cleaning

Prior to the installation of any associated equipment and materials, and start up of pumps and/or diversion of any waters as shown on the Project Plan sheet “DIV-1” the Contractor shall make all provisions as necessary to effectively clean the existing pipe culvert (HWY 28 crossing) of any sediment, debris, or other deleterious materials. Any existing damage, etc. as observed by the Contractor shall be reported to the Engineer.

A vactor truck (or other acceptable methods) shall be used for cleaning the pipe culvert. All sediment and debris shall be removed from inside the existing pipe culvert and culvert entrances and outlets. All sediment and debris generated from the culvert cleaning work shall be properly disposed of as specified elsewhere in these Special Technical Specifications.

All work associated with the culvert cleaning shall be in accordance with all NDOT standards, requirements and regulations. The Contractor will be responsible for coordinating with, and obtaining the necessary approvals from NDOT to perform this work, prior to any work commencing on the cleaning of the culvert or any other aspects of the project requiring the diversion of the creek associated with that shown on sheet DIV-1 of the Project Plans.

The pipe culvert cleaning as described herein shall be considered as included in the contract prices paid for the associated dewatering and/or diversion operations and no additional compensation will be allowed.

200.04 Dewatering and/or Diversion for Revegetation/Restoration

Dewatering and/or diversion operations as necessary for, including but not limited to, the construction, installation, planting, inspection, grow-in, and maintenance of the required revegetation/restoration requirements (described elsewhere in these Special Technical Specifications), shall be as shown on the accepted Contractor’s Dewatering, Diversion, and Water Introduction Plan, and in conformance with the Project Plans, SWPPP and these Special Technical Specifications, and in accordance with the required

contract phasing timelines. Discharge of all captured and/or diverted waters shall be in conformance with the SWPPP and all project permit regulations.

All areas designated to receive any revegetation/restoration or landscape treatments shall be free of any standing waters, sufficiently dry, and consist of unsaturated soils (i.e. where excessively wet to inhibit the establishment, livelihood or growth of the subject vegetation, excluding a prevailing seasonal or environmental condition such as snow cover) to allow for the proper installation, construction and inspection of the proposed revegetation/restoration or landscape treatments for a complete job in place as shown on the Project Plans and described in these Special Technical Specifications. The location and depth of sumps and/or well points for pumping of surface water or ground water is at the discretion of the Contractor, but shall be reviewed and accepted by the Engineer prior to initiating the work involved. The dewatering operations shall also be sufficient to produce a stable sub-grade within the designated work area(s) as necessary for access of equipment and personnel to complete the work.

Dewatering and/or Diversion operations as necessary, or as directed by the Engineer and Revegetation Specialist (defined elsewhere in these Special Technical Specifications), are required to be performed at any time and on a continual basis, following installation of the revegetation/restoration or landscape treatments, for the duration of the project and any ensuing maintenance period, to allow for the proper establishment, grow-in, and maintenance of the proposed revegetation/restoration or landscape treatments. All designated areas that have received any revegetation/restoration or landscape treatments shall be free of any standing waters, sufficiently dry, and consist of unsaturated soils (i.e. where excessively wet to inhibit the establishment, livelihood or growth of the subject vegetation, excluding a prevailing seasonal or environmental condition such as snow cover).

200.05 Measurement and Payment

The “DEWATERING/DIVERSION, PHASE 1”, “DEWATERING/DIVERSION, PHASE 2 – YEAR 1”, “DEWATERING/DIVERSION, PHASE 2 – YEAR 2”, and “DEWATERING/DIVERSION, PHASE 3”, bid item(s) for each phase of the work shall be measured on a lump sum basis, completed and accepted by the Engineer as conforming to all the requirements in the complete work.

Payment for the “DEWATERING/DIVERSION, PHASE 1”, “DEWATERING/DIVERSION, PHASE 2 – YEAR 1”, “DEWATERING/DIVERSION, PHASE 2 – YEAR 2”, and “DEWATERING/DIVERSION, PHASE 3”, bid item(s) as directed in this section shall be made at the lump sum price bid, with no additional compensation therefore. Each of the “DEWATERING/DIVERSION, PHASE 1”, “DEWATERING/DIVERSION, PHASE 2 – YEAR 1”, “DEWATERING/DIVERSION, PHASE 2 – YEAR 2”, and “DEWATERING/DIVERSION, PHASE 3”, bid item(s) shall be paid in full if any dewatering operations are required and performed as part of the project work for that subject phase, as directed and accepted by the Engineer. No additional compensation will be allowed for if excess ground water or higher than expected creek flows are encountered and dewatering operations beyond what was anticipated by the Contractor is required for proper construction of the project improvements. All dewatering necessary for the proper installation, construction, and maintenance of the project improvements, including revegetation/restoration activities shall be included in this bid item(s). Any dewatering and diversion operations performed during the revegetation “maintenance period” (i.e. after completion and acceptance of all project improvements) shall be considered as included in the “DEWATERING/DIVERSION, PHASE 3”, bid item.

The schedule for payment for the “DEWATERING/DIVERSION, PHASE 1”, “DEWATERING/DIVERSION, PHASE 2 – YEAR 1”, “DEWATERING/DIVERSION, PHASE 2 – YEAR 2”, and “DEWATERING/DIVERSION, PHASE 3”, bid item(s) shall be in direct proportion to the percentage of work completed for that phase of the work, i.e.: if 20% of the subject project work for that phase is completed, the Contractor may request payment for 20% of the lump sum total of the applicable

dewatering/diversion bid item(s) (this applies only if dewatering/diversion operations have been required on the project prior to invoice for work performed). Measurement of the percentage of work completed shall be based on the percentage of work billed by the Contractor based on the total dollar amount of the contract bid price. Note that increases in the total contract price for any reason do not justify an increase in the lump sum price paid for dewatering/diversion bid item(s). The Engineer and the Owner reserves the right to adjust the partial payment amounts of these said bid items based on any adjustments made to other pay items on the payment request by the Engineer or the Owner.

Full compensation for conforming to the provisions of this Section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

210 CLEARING AND GRUBBING, WEED TREATMENTS, & TREE REMOVAL

210.01 Description

This section covers the construction methods involved in all clearing and grubbing, weed treatment, and tree removal operations as shown on the Project Plans, described in the Standard Specifications, these Special Technical Specifications, SWPPP and/or as directed by the Engineer. Work under this item shall consist of furnishing all labor, tools, equipment, and materials as necessary to perform operations, including but not limited to, clearing and grubbing, topsoil salvage, weed treatments, tree removal, stump removal, and disposal of waste and other miscellaneous debris in accordance with the Project Plans, Project Permits, SWPPP, Standard Specifications, these Special Technical Specifications, and as directed by the Engineer.

210.02 Clearing and Grubbing

Clearing and grubbing shall consist of removing all objectionable and unacceptable natural or artificial materials from within the construction area project limits, and disposal of said material off the job site, in order to construct the project in a proper manner, in accordance with the Project Plans, Project Permits, SWPPP, Standard Specifications, these Special Technical Specifications, as directed by the Engineer, and other applicable Local, Regional, State, and Federal requirements. This work includes but is not limited to any earthen material, organic growth, willow and alder clumps, trees and stumps (less than 6-inches diameter at breast height – DBH will be measured at 4.5-ft above the existing ground surface on uphill side of tree), man-made deposits, industrial waste, sludge or landfill, and other materials as designated by the Engineer. Existing structures, to be preserved, shall be lowered and protected and restored upon completion of the work.

Clearing and grubbing shall extend to the outer limits of excavation and fill slope lines, except where slopes are to be rounded in which case the areas shall extend to the outside limits of slope rounding. Within the limits of clearing, all stumps and roots 1-1/2 inches in diameter or larger, buried logs, and all other objectionable material shall be removed up to three (3) feet below the existing ground surface or subgrade, whichever is deeper.

All existing vegetation, outside the areas to be cleared and grubbed, shall be protected from injury or damage resulting from the Contractor's operations. For typical protection of trees and other vegetation, see the Project Plans and SWPPP.

No live trees or downed logs or wood (equal to or greater than 6-inches diameter) shall be removed from the project site that are not identified and marked by the Engineer. In the event the Contractor removes any live trees or downed logs or wood (equal to or greater than 6-inches diameter) not marked by the Engineer, the Contractor shall be solely responsible for any and all fines and/or penalties levied to the Contractor, Engineer, NTCD, NDSL, or applicable property owners in association with the removal.

For the purposes of this Project, willow and alder clump vegetation shall not be considered singular trees as part of the tree removal bid item work. Any willow/alder material that is not identified and/or marked for root wad salvage and relocation shall be removed and disposed of within the project limits/areas of disturbance (clearing and grubbing limits as shown on the Project Plans), unless specifically directed to be protected in place of as part of the work. Any removal and disposal of existing willow/alder vegetation shall be considered as part of the clearing and grubbing efforts, and no additional compensation shall be allowed for.

Existing signs, fences and other facilities within the construction limits shall be removed, salvaged and reinstalled as shown on the Project Plans and as directed by the Engineer. If existing traffic control signs are removed (i.e. stop, yield signs) the Contractor shall install temporary signs of the same designation as close as possible to the original position, immediately upon completion of the clearing and grubbing work. Upon completion of the project these temporary signs shall be replaced with permanent signs of the same type and condition as prior to the Contractor's operations on the project site.

Existing aggregate and asphalt roadway materials may be reused for embankments after being reduced in size to particles of three inches (3") maximum diameter. Pulverizing and replacement of this material is part of this work. All embankment and fill, and areas over excavated shall be compacted to a relative density of ninety five percent (95%) within the roadway and shoulder prism, and ninety (90%) in ditch and slope areas. This work shall be performed in advance of grading and trenching operations and in accordance with the requirements herein specified, subject to all erosion control requirements.

Topsoil and Organic Materials

During clearing and grubbing, the Contractor shall salvage and stockpile topsoil for reuse in the project area in accordance with Section 600, "Revegetation," of these Special Technical Specifications. Topsoil shall not be stockpiled for a period greater than two (2) weeks or greater than three (3) feet in height unless accepted by the Revegetation Specialist (RS) and Engineer. Topsoil shall be re-applied within the project area in accordance with Section 600, "Revegetation," of these Special Technical Specifications.

All suitable organic materials removed during the clearing and grubbing operation including, but not limited to, pine needles, leaves, duff, trees smaller than six (6) inches DBH, stumps, and suitable roots shall be stockpiled and used for revegetation/restoration treatments. The Contractor shall make allowances for chipping larger organic materials such as trees, suitable roots, branches, and stumps so that these materials can be used for project revegetation/restoration efforts.

The Contractor shall not stockpile any vegetation or other debris generated as a result of the clearing and grubbing or tree removal operations that is not suitable for use in revegetation efforts. All unsuitable vegetation or other debris shall be removed from the job site by the end of each working day.

210.03 Noxious Weed Treatment

Before project implementation (where applicable to start up of each phase of the work), weed infestations identified on the Project Plans as "Noxious Weed Treatment Location" and any other areas located and identified within or immediately adjacent to the project area or along travel routes near the project area will be flagged and avoided and treated where applicable, depending on the species present and project constraints. The precise identification and flagging will be the responsibility of the Contractor, and is required to be performed by a qualified vegetation specialist, to be accepted by the TRPA. The entire perimeter of the infestation area will be flagged by the vegetation specialist and then the Contractor shall install construction limit fencing around the area (outside of the flagging by 10 feet) and be avoided by anyone on the construction site. If ground disturbance is necessary within the infested area and excess material is generated from an infested area, this soil will be labeled as contaminated and shipped to a

licensed landfill outside the Tahoe Basin. The material will not under any circumstances be used at any other site within the project area because of the extremely invasive and persistent nature of noxious weeds.

Prior to implementation of any construction activities (where applicable to start up of each phase of the work), including staging area preparations, the Contractor shall be responsible for treating the noxious weed infestation areas identified on the Plans as “Noxious Weed Treatment Location” and other identified areas that consist of the following: Bull Thistle, Teasle, and Tall Whitetop. The Contractor shall erect orange construction fencing prior to initiation of treatment of noxious weeds. Noxious weed treatment shall be conducted by a licensed pest control applicator (License shall be current as issued by the Nevada Department of Agriculture). Once herbicide treatment has begun, only the licensed pest control applicator will be permitted entrance to the treatment area. The Contractor shall be responsible for maintaining the treatment area fence and any necessary reapplication of herbicides and noxious weed removal through the duration of the construction contract (where applicable to each Phase of the work).

Noxious weed treatment shall include topping of plants to the crown, allow for regrowth to late bud – early bloom stage (May – June) and successive application of aquatic safe herbicide (Weedar 64, Amine 4, (both 2, 4-D labeled for use next to water); Rodeo (Glyphosate labeled for use next to water)) shall be applied by a licensed pest control applicator until eradicated, or until directed by Revegetation Specialist to cease eradication measures (end of construction contract). Aquatic herbicide shall be applied in accordance with manufacturer’s label for recommended application rates, application periods and all precautions. The Contractor shall be responsible for repeat treatments by a licensed pest control applicator for the duration of the construction contract.

All construction limit fencing and flagging (regardless of multiple installations in accordance with provisions found elsewhere in these Special Technical Specifications) used as part of this work shall be considered as part of the noxious weed treatment bid item(s) and no additional compensation will be allowed for.

210.04 Tree Removal

Work under these bid items shall consist of furnishing all labor, tools, equipment and materials necessary for the removal of trees equal to or larger than 6-inches in diameter, measured at an elevation of 4.5-feet above the prevailing existing ground surface on uphill side of tree (a.k.a diameter at breast height - DBH). Trees equal to or larger than 6-inches DBH to be removed are schematically shown on the Project Plans and will be conspicuously marked in the field by the Engineer and TRPA forester (**no tree shall be removed unless marked in the field**). Tree removal shall include the removal of associated stumps and roots necessary for a complete removal of the tree and its appurtenances, and backfilling the remaining hole with native material, as directed by the Engineer.

The quantity (contract value) of trees to be removed, as shown on the Project Plans, may be more or less than the contract amount, as determined by the Engineer. Final quantities may fluctuate based on field conditions and actual construction staking, layout, and grading limits at the time of construction. All trees necessary for removal, as determined by the Engineer and TRPA staff forester, will be identified and conspicuously marked in the field for removal.

Prior to timber removal operations all associated temporary erosion control measures and BMPs, and traffic control must be in place, in accordance with the SWPPP, Project Permit(s), Standard Specifications and these Special Technical Specifications.

Trees shall be felled to minimize disturbance to surrounding facilities, structures, vegetation and traffic flow on roadways. The Contractor shall make all efforts to minimize any damage to trees and/or root

systems that are to remain in place. The Contractor shall be liable for damage to utility service lines, fences or other structures.

All felled trees must be removed from the site within 48 hours to reduce the spread of insects. Contractor is responsible for complete site cleanup, including slash disposal. No slash may be stored or burned on site. All wood products must be removed from the site prior to resale.

The Engineer may direct the Contractor to set aside specific materials (trees, stumps, slash, etc.) onsite for use and placement in the work and/or revegetation treatments. All such materials, and quantities, will be clearly identified and marked by the Engineer and Revegetation Specialist prior to the start of clearing and grubbing, and tree removal operations. Any applicable trees marked for this application will be included for payment as part of the tree removal bid item(s).

No trees (equal to or greater than 6-inches diameter) shall be removed from the project site that are not identified and marked by the Engineer. In the event the Contractor removes any trees (equal to or greater than 6-inches diameter) not marked by the Engineer, the Contractor shall be solely responsible for any and all fines and/or penalties levied to the Contractor, Engineer, NTCD, NDSL, or applicable property owners in association with the removal.

210.05 Stump Removal

Work under this item shall be considered part of the clearing and grubbing work and shall consist of furnishing all labor, tools, equipment and materials necessary for the removal and disposal of stumps depicted on the project plans, or as directed by the Engineer. Stump removal as described herein will only consist of stumps to be removed that are not directly associated with the removal of a tree (as defined herein - tree removal bid items and prices include the cost of removing the associated stump).

Trees and stumps designated for removal shall be removed to at least three (3) feet below finished grade. Ground trees and stumps intended for use as wood chip mulch shall conform to the requirements of these Special Technical Specifications. Trees and stumps not suited as wood chip mulch or for use in project improvements shall be removed and appropriately disposed of outside the project limits. The Engineer and Revegetation Specialist will determine which trees and stumps are suited for use as wood chip mulch and for use in project improvements. The Contractor shall schedule an inspection of stumps and trees with the Engineer, at least 10 days prior to the Contractor scheduling wood chipping operations, for a determination of what can be used as mulch.

Compensation for the removal of trees and stumps less than six (6) inch diameter and stumps greater than six (6) inch diameter, as necessary for construction of the various items of work as staked by the Engineer, shall be included in the clearing and grubbing bid item and no additional compensation shall be made therefore.

210.06 Work Outside of Stated Limits

The Contractor shall not, and no payment will be made to the Contractor, for clearing and grubbing outside the stated limits as shown on the Project Plans, or as described in these Special Technical Specifications, unless such work is authorized by the Engineer.

210.07 Existing Signs

Existing signs, snow markers and the like within the construction limits, which interfere with the work, shall be removed, salvaged and reinstalled as directed by the Engineer. If existing traffic control regulatory signs are removed (i.e. stop, yield signs, etc.) the Contractor shall install temporary signs of the same designation as close as possible to the original position immediately. Existing mailboxes within the construction limits, which interfere with the work, shall be removed, salvaged and reinstalled as close to

the original position as possible after construction in the area is completed. Mail service shall not be interrupted at any time due to construction activities. Any materials that are damaged or lost shall be replaced in like kind of equal or better quality.

210.08 Protection of Plants

Trees and plants that are not to be removed shall be fully protected from injury by the Contractor at his/her expense. Trees shall be removed in such a manner as not to injure standing trees, plants, and improvements which are to be preserved. Tree branches which hang within 13 1/2 feet above finished roadway grade or within 9 feet above finished sidewalk or parkway grade shall be cut off close to the boles in a workmanlike manner. The Contractor shall remove tree branches under the direction of the Engineer and Revegetation Specialist, in such a manner that the tree will present a balanced appearance. Scars resulting from the removal of branches shall be treated with a heavy coat of a tree sealant accepted by the Engineer and Revegetation Specialist. Construction limit fence shall be installed around all trees to be protected near excavation limits at the dripline of the tree as shown on the Project Plans. If large roots of protected trees are encountered during excavation activities, work shall cease in this area and the Engineer, Revegetation Specialist and TRPA shall be notified. Work shall commence as directed by the Engineer, Revegetation Specialist and TRPA.

210.09 Removal and Disposal of Materials

All materials scheduled or specified for removal and disposal shall be removed and hauled from the site at the Contractor's expense, unless otherwise specified, and disposed of outside of the Lake Tahoe Basin in accordance with TRPA ordinances and NAC 444.8565. The construction area shall be left with a neat and finished appearance.

210.10 Protection of Utilities and Underground Facilities

The Contractor shall inform him or herself of the exact location of all conduits, ducts, cables, pipe systems, or other above ground and/or underground facilities and shall protect all utilities encountered in the process of construction. The Contractor shall contact Underground Service Alert (USA) at least 48 hours prior to any construction activity. Any damages to above or underground facilities shall be immediately repaired by the Contractor at his own expense, except for damage to utilities, in which case the Contractor shall immediately notify the proper Utility Company. Unless cleared by the Utility Company, the Contractor shall be responsible for reimbursing said Utility Company for any and all work required to repair or replace damaged utility facilities with no additional compensation allowed for.

The Contractor shall not begin work within twenty (20) feet of any overhead line prior to contacting NV Energy, AT&T, and Charter Communications at least 20 working days in advance.

The Contractor shall not begin excavation work within the immediate vicinity of any know sanitary sewer force main or potable water main prior to contacting IVGID at least 20 working days in advance.

210.11 Potholing of existing utilities

The Contractor shall be responsible for verifying the location of all existing underground facilities within the project area, which may have potential to conflict with the location of proposed improvements, as shown on the Project Plans and as indicated by USA markings. Actual field conditions and locations can vary considerably from those shown on the Project Plans; therefore the Engineer and/or Owner cannot, and does not, assume responsibility for the existence or location of any underground structures such as, but not limited to, pipelines, laterals, conduits, valves, meters, vaults, manholes, junction boxes, and other components of a typical utility, drainage, or irrigation system. The Contractor shall be responsible for contacting all utilities, agencies and/or public and private owners to verify such information prior to and during construction of any of the proposed improvements.

The Contractor shall notify the Engineer in advance of all potholing activities. Any delays that may result from failure of the Contractor to locate and/or pothole a potential utility conflict shall be at the Contractor's expense. Any costs incurred due to relocations, shutoff, startup, or any other costs related to utility relocations due to the construction of the project, not otherwise provided for in a specific Contract item, shall be the responsibility of the Contractor.

As part of the Contract work the Contractor will be installing improvements in the vicinity of existing utility systems and other various public improvements. Where conflicts are known to and appear to exist with underground utilities (locations indicated on Project Plans) the Contractor is hereby advised that he/she will be required to pothole each location prior to any work in the vicinity of the subject utility, in order to properly identify and locate its position. The Contractor is responsible to schedule the Contractor's surveyor to be onsite during potholing of conflicts for utility elevation verification (surveying of the horizontal and vertical location of the top of the pipe is required). Upon verification such utilities will require relocation by the Contractor or utility agency or its agents in accordance with these Special Technical Specifications, Project Plans, Standard Specifications, and associated utility standards. **Any potholing shall be completed where conflicts are known to and appear to exist with underground utilities a minimum of ten (10) working days before beginning construction on the proposed improvements which appear to cause conflict.**

Only pothole locations identified on the Project Plans, or directed, in writing by the Engineer shall be paid for under the pothole existing utilities bid item. All other utility locations including any additional potholing as necessary to properly construct the project, not covered under the stipulations identified in the paragraph above, shall be performed by the Contractor and considered as included in prices paid for the various Contract items of work involved and no additional compensation will be allowed for.

If any existing utilities that are not shown by USA or on the Plans as indicated to be relocated by others are found to be in conflict with the proposed location of the improvements shown on the Plans, the Contractor shall contact the Engineer. The Engineer will either provide the Contractor with new grades/elevations to eliminate such conflicts or shall contact the utility agency to arrange for relocation of the conflicting utility. The Contractor shall coordinate all necessary activities with the utility agency in order to complete or facilitate the subject relocation(s). Such work shall be considered change order work.

210.12 Measurement and Payment

The unit price paid for "POTHOLING EXISTING UTILITIES, PHASE 1" shall be measured on a unit basis per each, pothole complete in place and accepted by the Engineer as conforming to all the requirements in the complete work.

The unit price paid for each "POTHOLING EXISTING UTILITIES, PHASE 1", shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved potholing existing utilities as shown on the Project Plans, and specified in the Contract Documents, Project Permits, SWPPP, Standard Specifications, these Special Technical Specifications, and as directed by the Engineer, and no additional compensation will be allowed.

"CLEARING AND GRUBBING, PHASE 1" and "CLEARING AND GRUBBING, PHASE 3" (including trees under 6-inch DBH) shall be measured on a lump sum basis, completed and accepted by the Engineer as conforming to all the requirements in the complete work.

The lump sum price for "CLEARING AND GRUBBING, PHASE 1" and "CLEARING AND GRUBBING, PHASE 3" (including trees under 6-inch DBH) shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in the clearing and grubbing of the

project site as shown on the plans and as specified in the Project Plans, Contract Documents, Project Permits, SWPPP, Standard Specifications, these Special Technical Specifications, and as directed by the Engineer including the removal and disposal of all the resulting materials from the Tahoe Basin.

“TREE REMOVAL (6” - 12” DBH), PHASE 1” and “TREE REMOVAL (6” - 12” DBH), PHASE 3” shall be measured per each on the number of trees, with stumps, removed as directed and accepted by the Engineer and TRPA.

The unit bid price for “TREE REMOVAL (6” - 12” DBH), PHASE 1” and “TREE REMOVAL (6” - 12” DBH), PHASE 3” shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in the removal of trees as shown on the Plans and as specified in the Project Plans, Contract Documents, Project Permits, SWPPP, Standard Specifications, these Special Technical Specifications, and as directed by the Engineer, including the removal and disposal of all the resulting materials from the Tahoe Basin.

“TREE REMOVAL (13” - 24” DBH), PHASE 1” and “TREE REMOVAL (13” - 24” DBH), PHASE 3” shall be measured per each on the number of trees, with stumps, removed as directed and accepted by the Engineer and TRPA

The unit bid price for “TREE REMOVAL (13” - 24” DBH), PHASE 1” and “TREE REMOVAL (13” - 24” DBH), PHASE 3” shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in the removal of trees as shown on the Plans and as specified in the Project Plans, Contract Documents, Project Permits, SWPPP, Standard Specifications, these Special Technical Specifications, and as directed by the Engineer, including the removal and disposal of all the resulting materials from the Tahoe Basin.

“TREE REMOVAL (25” - 36” DBH), PHASE 1” and “TREE REMOVAL (25” - 36” DBH), PHASE 3” shall be measured per each on the number of trees, with stumps, removed as directed and accepted by the Engineer and TRPA

The unit bid price for “TREE REMOVAL (25” - 36” DBH), PHASE 1” and “TREE REMOVAL (25” - 36” DBH), PHASE 3” shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in the removal of trees as shown on the Plans and as specified in the Project Plans, Contract Documents, Project Permits, SWPPP, Standard Specifications, these Special Technical Specifications, and as directed by the Engineer, including the removal and disposal of all the resulting materials from the Tahoe Basin.

“NOXIOUS WEED TREATMENT, PHASE 1” shall be measured on a lump sum basis, as directed and accepted by the Engineer, completed and accepted by the Engineer as conforming to all the requirements in the complete work.

The lump sum price paid for “NOXIOUS WEED TREATMENT, PHASE 1” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in the treatment of noxious weeds as shown on the Plans and as specified in the Project Plans, Contract Documents, Project Permits, SWPPP, Standard Specifications, these Special Technical Specifications, and as directed by the Engineer, including the removal and disposal of all the resulting materials from the Tahoe Basin.

Full compensation for conforming to the provisions of this Section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

220 REMOVAL OF EXISTING IMPROVEMENTS

220.01 General

Work under this section shall conform to the project permits, Plans, Contract Documents, Standard Specifications, these Special Technical Specifications, SWPPP and TRPA Best Management Practices.

The Contractor's attention is directed to Section 301, "Removal of Existing Improvements", of the Standard Specifications.

Work under this section shall consist of the removal and disposal of existing improvements and facilities, which interfere with construction or as required to properly construct the project, as shown on the Project Plans, described in the Standard Specifications, these Special Provisions, and as directed by the Engineer. Any materials removed, including excavated earthen material, in conformance with this section shall become the property of the Contractor and shall be removed and disposed of by the Contractor in accordance with all federal, state, and local ordinances and permit conditions. All materials scheduled or specified for removal shall be removed from the project area and disposed of outside of the Lake Tahoe basin in accordance with TRPA ordinances and NAC 444.8565.

Where any pipes, fittings, valves, drainage inlets, frames and covers, or other devices are removed from any manhole, structure, junction box, joint, valve, fitting, valve, etc. and the remaining facility is to be protected in place; all repairs, seals, plugs, caps, and other modifications as necessary to make the structure or device sound and complete shall be constructed by the Contractor as shown on the Project Plans, and in conformance with the Standard Specifications and these Special Provisions, or as directed by the Engineer. All repairs, plugs, caps and other modifications as noted above shall be considered as included in the prices paid for each associated bid item of work, not otherwise provided for, and no additional compensation shall be allowed for.

220.02 Remove Asphalt/Concrete Pavements

Work under this section shall include removal of asphalt concrete pavement and other concrete surface improvements as required to properly construct the project, as shown on the Project Plans, described in the Standard Specifications, these Special Technical Specifications, and/or as directed by the Engineer. This includes removal and disposal of any and all asphalt/concrete structural section associated with the removal of any existing facility or installation of all proposed improvements shown on the Project Plans.

Where no joint exists in the pavement on the line at which pavement is to be removed, a straight, neat cut with a power driven saw shall be made along the line to a minimum depth of 6-inches before removing pavement. If saw cut pavement is damaged prior to paving, it shall be the Contractor's responsibility to re-cut any damaged, broken, or uneven portion prior to paving at his own expense. Under no circumstance shall the Contractor be allowed to "jack-hammer" the existing pavement instead of cutting with a power driven saw.

Any materials removed in conformance with this provision shall become the property of the Contractor and shall be removed and disposed of by the Contractor in conformance with the Standard Specifications and these Special Technical Specifications. AC pavement removed from the work area may NOT be ground up and re-used as base material for roadway reconstruction.

Sawcutting of all roadways required for the proper construction of the Project in accordance with the Project Plans, these Special Technical Specifications, the Project SWPPP, the Project permits and as directed by the engineer shall be included in costs of various other items of work and no additional compensation shall be allowed for.

220.03 Remove Storm Drainage Structures

Work under this section shall include the complete removal and disposal of storm drainage culvert, pipes, headwalls, concrete structures, inlets, outfalls, and any associated asphalt concrete pavement, the backfill and compaction, and restoration of the disturbed area as shown on the Project Plans, described in the Standard Specifications, these Special Technical Specifications, and/or as directed by the Engineer. Any areas where storm drainage structures are removed shall be backfilled, graded, and restored to match the surrounding area, unless otherwise noted on the plans, or directed by the Engineer. The resulting waste materials and debris shall become the property of the Contractor and disposed of by the Contractor in conformance with the Standard Specifications and these Special Technical Specifications. Under no circumstances shall any storm drainage pipe, culvert or other structure designated for removal be abandoned in place, unless otherwise noted on the plans and/or acceptance of the Engineer.

Existing Culverts for Rosewood Creek at Northwood Blvd

The designated portions of the outer ends of the existing pipe culverts (Northwood Blvd) shall be cut by mechanical means to provide a clean, neat, and even finish and removed where indicated on the Project Plans, applicable details, and as directed by the Engineer. Following removal of the designated end sections, concrete cut-off walls (as specified elsewhere in these Special Technical Specifications) shall be constructed on either end of the remnant portion of the existing pipe culverts (located within the roadway), and the remnant culvert section abandoned in place by completely filling with slurry backfill. The remnant pipe culvert sections shall be free of any standing water (by trash pumps or other means) prior to placement of the slurry backfill. The slurry backfill shall be Type A (excavatable) in conformance with Section 337.08, "Slurry Backfill" of the Standard Specifications. **The Contractor shall submit a slurry backfill mix design to the Engineer for review and acceptance at least ten (10) working days prior to placement in the work.**

The Engineer will only accept the work where the designated portion of the existing pipe culverts (Northwood Blvd) have been properly abandoned in place; the Contractor is required to completely fill the remnant culvert sections with slurry backfill and make all necessary provisions to prevent any air pockets or other void spaces. For placement of the slurry backfill it shall be the sole responsibility of the Contractor, including any required engineering design, to furnish all materials and equipment as necessary to fully close off or plug the ends of the existing pipe culverts and/or where necessary provide any temporary structures or other temporary structural support mechanism for the proposed concrete cut-off walls in order to abandon the remnant portion of the existing pipe culverts in place.

Under no circumstance shall any portion of the existing pipe culverts (Northwood Blvd) including inlet and outlet structures and associated creek channel areas, be disturbed or removed from service until their use is no longer required (tentatively scheduled for the later stages of Phase 3) and authorization is granted by the Engineer. In general the existing pipe culverts will no longer be required upon completion of the proposed channel, channel tie-ins, and establishment of the full flow of Rosewood Creek in the proposed channel reaches as shown on the Project Plans. The Contractor shall notify the Engineer in advance of the intended pipe culvert removal/abandonment (10 working day minimum notification required).

220.04 Backfill and Compaction

All disturbed areas where pipe, structures, surface pavements, and other miscellaneous improvements are removed, shall be restored in like kind to match the pre-existing lines and grades and surrounding adjacent area, unless otherwise noted on the Plans, or as directed by the Engineer. The Contractor is required to backfill and compact excavated trenches to sub-grade using accepted native material and/or local borrow or imported borrow as determined by the Engineer if import is required; replace the structural section, pavement, and other surface improvements as applicable; and/or replace the topsoil and

pre-existing landscape features or revegetate the disturbed area. **Any native, local borrow, or imported borrow soils used for backfill shall be accepted by the Engineer prior to placement.** The Contractor is hereby advised that high ground water is likely to be present at the project site, and excavated soils have the potential to be too wet to be properly compacted and circumstances will likely prevent suitable in-place drying prior to incorporation into the work.

Trenches, holes, depressions and pits caused by the removal of existing improvements shall be backfilled with materials equal to or better in quality and to the same thicknesses as the surrounding materials, and in conformance with Section 304, "Unclassified Fill", of the Standard Specifications. **No broken concrete, asphalt concrete, or other debris shall be left in excavated trenches or be included as part of the backfill.** All backfill materials at a minimum shall not exceed optimum moisture content, and be free of stones or lumps exceeding 3 inches in greatest dimension, organic matter, or other unsatisfactory material that may restrict compaction requirements. In surfaced areas (i.e. pavement, concrete) that are otherwise to remain undisturbed, the structural section shall be replaced with materials equal to or better in quality and to the same thicknesses as the surrounding materials.

Fill to be placed beneath structures, junction boxes, asphalt pavements, concrete slabs, buildings, and all other components subject to structural loading shall conform to the requirements of Section 200.01.09 "Structural Fill", of the Standard Specifications. If a new structure is specified to replace the old structure, unsuitable materials shall be removed as directed by the Engineer. Unless otherwise specified remaining material and fill material shall be compacted to ninety-five percent (95%) relative dry density, within the roadway and shoulder prism, and ninety percent (90%) in ditch and slope areas, and brought up to the bottom grade of aggregate structural section of the new structure, unless otherwise specified on the Project Plans (compaction requirements on the Project Plans shall govern).

Restoration of an area and/or replacement of all pavements and other surface improvements in conformance with this section shall be considered as included in the prices paid for each associated bid item removed, except components of the work for which payment is made under separate contract items, and no additional compensation shall be allowed for.

220.05 Measurement and Payment

Full compensation for saw cutting, removal, and disposal of existing asphalt/concrete and associated backfills in conformance with this section and other sections of the Standard Specifications, and these Special Technical Specifications is included in the prices paid for various Contract items of work involved, and no additional compensation will be allowed.

"REMOVE EXISTING PIPE CULVERTS, PHASE 3" shall be measured on a lump sum basis, completed and accepted by the Engineer as conforming to all the requirements in the complete work.

The lump sum price for "REMOVE EXISTING PIPE CULVERTS, PHASE 3" shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in the removal and disposal of the existing storm drain pipe culvert structure, including associated surface improvements (asphalt concrete, aggregate base), as shown on the project Plans and as specified in the Standard Specifications, these Special Technical Specifications, and as directed by the Engineer, and no additional compensation shall be allowed for. This work also includes the removal and disposal of all the resulting materials from the Tahoe Basin; and any backfill and compaction of the remnant trench, including aggregate base, for a complete restoration of the area as shown on the Plans, described elsewhere in these Special Technical Specifications, and/or as directed by the Engineer.

Full compensation for conforming to the provisions of this Section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

230 UTILITY RELOCATION – NATURAL GAS

230.01 Description

Any and all gas line relocations, as required to facilitate construction of the proposed project improvements, shall be coordinated with Southwest Gas at least four (4) weeks prior to commencement of work in that area. Any costs incurred due to relocation, shutoff, or any other costs due to the construction of the project shall be the responsibility of the Contractor, not otherwise provided for in a specified bid item of work.

Any saw-cutting and removal of existing pavements shall be in conformance with Section 220 “Removal of Existing Improvements” of these Special Technical Specifications.

Should the Contractor's operations be delayed, for whatever reason, as a result of the relocation of gas lines, no additional contract time, or compensation will be allowed for.

Following completion of the RCB culvert structure, any associated utility relocations, and any inspections, the resultant disturbed area within the roadway shall receive a temporary hot mix asphalt roadway patch as shown on the Plans, and as directed by the Engineer, NTCD and Washoe County. This temporary roadway patch shall be in place prior to opening the full width of the roadway to public traffic. All backfill within the roadway prism and roadway structural section, including aggregate base, shall be as depicted on the Project Plans and conform to these Special Technical Specifications and Standard Specifications. Attention is directed to Section 510 “Asphalt Concrete Paving” of these Special Technical Specifications.

230.02 Measurement and Payment

“UTILITY RELOCATION – NATURAL GAS 4”, PHASE 1” shall be measured on a lump sum basis, completed and accepted by the Engineer as conforming to all the requirements in the complete work.

The contract unit price paid for “UTILITY RELOCATION – NATURAL GAS 4”, PHASE 1” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved in providing for and/or constructing a temporary natural gas bypass or relocation of existing natural gas pipe mains, complete in place, including any coordination with the utility purveyor, excavation, bedding, structural backfill, temporary roadway patch, off-haul and disposal of excess materials and waste debris, and performance of conformance testing as shown on the Project Plans, as specified in the Standard Specifications, these Special Technical Specifications, and as directed by the Engineer and utility purveyor; and no additional compensation will be allowed.

Full compensation for conforming to the provisions of this Section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

240 UTILITY RELOCATION – ELECTRICAL, PHONE and CABLE

240.01 Description

Any and all underground electrical, cable and phone line relocations, as required to facilitate construction of the proposed project improvements, shall be coordinated with NV Energy, Charter Communications and/or AT&T at least four (4) weeks prior to commencement of work in that area. Any costs incurred due

to relocation, shutoff, or any other costs due to the construction of the project shall be the responsibility of the Contractor, not otherwise provided for in a specified bid item of work.

Any saw-cutting and removal of existing pavements shall be in conformance with Section 220 “Removal of Existing Improvements” of these Special Technical Specifications.

Should the Contractors operations be delayed, for whatever reason, as a result of the relocation of gas lines, no additional contract time, or compensation will be allowed for.

240.02 Measurement and Payment

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with performing all the work involved in provisions of this section, complete in place as shown on the Project Plans, as specified in the Contract Documents, Project Permits(s), Standard Specifications, these Special Technical Specifications, the SWPPP, and as directed by the Engineer, shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for.

250 UTILITY RELOCATION – UTILITY POLES

250.01 Description

Utility pole bracing or relocations may be required within the project area. If bracing or relocations are required, activities are to be coordinated with NV Energy (and/or AT&T and Charter Communications) at least four (4) weeks prior to commencement of work in that area. All bracing or relocation work shall occur prior to the commencement of work in that area.

Any excavation within ten feet of an existing utility pole shall require that pole to be braced or temporarily removed. Should bracing/removal be required, coordination activities are to be initiated with NV Energy (and/or AT&T and Charter Communications) at least four (4) weeks prior to commencement of work in that area. The Contractor shall perform all bracing/removal work prior to the commencement of work in that area in accordance with NV Energy, AT&T and Charter Communication’s requirements.

Any saw-cutting and removal of existing pavements shall be in conformance with Section 220 “Removal of Existing Improvements” of these Special Technical Specifications.

Should the Contractors operations be delayed, for whatever reason, as a result of any aspect of this section, no additional contract time, or compensation will be allowed for.

250.02 Measurement and Payment

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with performing all the work involved in provisions of this section, complete in place as shown on the Project Plans, as specified in the Contract Documents, Project Permits(s), Standard Specifications, these Special Technical Specifications, the SWPPP, and as directed by the Engineer, shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for.

260 UTILITY RELOCATION – POTABLE WATER

260.01 Description

Any and all potable water line relocations, as required to facilitate construction of the proposed project improvements, shall be coordinated with IVGID at least four (4) weeks prior to commencement of work in that area. The Contractor will perform all work as described herein in coordination with IVGID and in

conformance with the Project Plans, SWPPP and these Special Technical Specifications, and in accordance with the required contract phasing timelines.

Any saw-cutting and removal of existing pavements shall be in conformance with Section 220 “Removal of Existing Improvements” of these Special Technical Specifications.

The Contractor shall be responsible for the final design, installation, construction, operation, maintenance and removal of any temporary water main bypass system or relocation as required for completion of the contract work. The applicable Project Plan sheets (delineating temporary water main relocation) provide a basis for, show, and describe a preliminary potable water main relocation plan and minimum requirements. **The Contractor shall submit their own detailed Temporary Potable Water Main Bypass or Relocation Plan (including all necessary diagrams/exhibits) to the Engineer for review and acceptance prior to commencement of any construction activities that may require bypass or relocation of an existing water main.** Should the Contractor's operations be delayed, for whatever reason, as a result of the relocation of potable water lines, no additional contract time, or compensation will be allowed for.

Work under this item shall include repair and/or replacement of any applicable components of the potable water system that are removed, relocated, or damaged as part of this work. The subject potable water system shall be returned to its pre-construction condition, for a sound, complete and fully operational water main and potable water system in conformance with all the requirements of IVGID. Any components of the existing water system that is removed from service may not be reused without prior acceptance from the Engineer and IVGID.

Based on preliminary information provided by IVGID (shall be verified by the Contractor) the existing twelve-inch (12”) water main is a major transmission line and shall not be shut down for any extended periods of time (not to exceed eight (8) continuous hours in any given period of time). In addition, existing isolation valves are located within the vicinity of the project on either side of the projected excavation (for proposed RCB culvert structure). In order to minimize impacts on existing service laterals (i.e. water service to residences and businesses) an additional gate valve shall be installed to the east side of the excavation area as shown on the Project Plans and directed by the Engineer and IVGID.

The following time constraints, requirements, and notifications shall be adhered to during all applicable portions of the work:

- Contractor to schedule the shut down with IVGID a minimum of one week in advance
- Contractor to provide IVGID with a 72 hour notice of any shut down
 - Shall include notification to North Lake Tahoe Fire Protection District for any impacts to fire hydrants or other fire protection apparatus.
- Contractor to post all affected residences and businesses with door hangers supplied by IVGID – posted 48 hours prior to shut down
- Maximum of 4 hours (shut down time) allowed for the installation of the proposed gate valve – where it has affect on service laterals
- Maximum of 8 hours (shut down time) allowed for the temporary water main bypass relocation – shall be completed in conjunction with the installation of the gate valve in order to limit impacts to water services and reduce shut downs to one working day.
- All conformance testing and disinfection requirements are applicable to both the temporary water main bypass work and permanent water main replacement work.

Following completion of the RCB culvert structure, any associated utility relocations, and any inspections, the resultant disturbed area within the roadway shall receive a temporary hot mix asphalt

roadway patch as shown on the Plans, and as directed by the Engineer and Washoe County. This temporary roadway patch shall be in place prior to opening the full width of the roadway to public traffic. All backfill within the roadway prism and roadway structural section, including aggregate base, shall be as depicted on the Project Plans and conform to these Special Technical Specifications and Standard Specifications. Attention is directed to Section 510 "Asphalt Concrete Paving" of these Special Technical Specifications.

260.02 Materials

All materials shall conform to the standard Specifications except as follows.

A. Pipe:

- (1) Ductile iron pipe in accordance with AWWA C151 in the sizes and classes as shown on the plans. Minimum pressure class rating of 350 psi "Tyton" push-on joints or TR-Flex.
 - (a) All ductile iron pipe with push-on joints to be installed with "Field-Lok 350" gaskets.
- (2) Polyvinylchloride (PVC) in accordance with AWWA C900 in the sizes and classes shown on the plans.
- (3) Service lines two inches (2") in diameter and smaller shall be Type K copper conforming to ASTM B-88 or 200 PSI PE 3408 tubing SDR-9 ASTM D-2737 copper size, (when using PE pipe a tracing wire must be installed with the pipe).
- (4) Lubricant shall be FDA approved for human consumption, non-toxic, ecologically safe, water soluble, etc., and shall be designed to be used for installation of potable water line systems.
- (5) C900 will be restrained thirty feet (30') from fitting on pipe main, and bends with restraining couplers.

B. Fittings:

- (1) Main fittings shall be ductile iron, Class 250, suitable for 250 psi service; fittings shall be coated with fusion-bonded epoxy coatings to the requirements of ANSI/AWWA C153/A21.53.
 - (a) Thrust blocks will be poured at fittings, bends and tees as required, line to be restrained within 30 feet from the bend, tee or fitting.
 - (b) All fittings will be wrapped in plastic prior to pouring concrete.
- (2) Service line fittings shall be flared or mechanical compression type.
- (3) Miscellaneous fittings, necessary for service connections, including reducers and adapters, shall be brass construction, Mueller Company, Ford Manufacturing Company, or equal.
- (4) Flange fittings and blind flanges shall be drilled and faced to AWWA Standards. Dimensions of specials shall conform to those stated in the AWWA Standards. Prior to fabrication of specials, the CONTRACTOR shall furnish the ENGINEER shop drawings showing the details of such specials for acceptance.
- (5) Flexible couplings and flange coupling adapters shall be as manufactured by Romac, Rockwell, or accepted equal. All mechanical couplings shall have the longest standard sleeve length.
- (6) Reducers will be ductile iron. Romac (slip-on type) reducers will not be allowed.
- (7) Tapping sleeve shall be stainless steel with flange face, and meet required Class rating of connecting pipe.
- (8) All bolts shall be 316 stainless steel.

C. Valves:

- (1) Gate valves larger than two inches (2") shall be modified wedge disc, resilient seat, NRS valves with O-ring seals, similar and equal to Mueller A-2360, and shall open when the stem is rotated counter-clockwise. Unless otherwise shown, valves shall have a two-inch (2") square operating nut. Valves shall conform to AWWA C-509. All valves shall be of the same manufacturer. All valves shall be restrained.
 - (a) Valve bodies shall be cast iron ASTM A-126, Class B.
 - (b) Joint materials for flanged joints shall consist of full-face one-piece gaskets conforming to AWWA C-207. Bolts and nuts shall conform to AWWA C-207.
 - (c) All shaft bearings shall be of the self-lubricating, corrosion resistant, sleeve type.
 - (d) All valves shall be hydrostatic and leak tested according to AWWA C-504.
 - (e) Operator components shall withstand an input torque of three hundred foot-pounds (300 ft/lbs.) at extreme operator positions without damage, per AWWA C-505.
 - (f) Valves two inches (2") and smaller shall be wedge disc, non-rising stem, screwed, all bronze, similar and equal to Crane No. 438.
 - (g) Valve boxes shall be provided for all gate valves placed underground, and shall be similar and equal to Christy G5, with an eight-inch (8") PVC (SDR 35) pipe extension sleeve. Cover shall be marked "WATER."
 - (h) Concrete pillow under valves for support.
 - (i) All bolts shall be 316 stainless steel.
- (2) Corporation Stops:
 - (a) Corporation stops for copper service lines shall have "pipe" thread inlets and compression connection outlets, and shall be Mueller 110 or equivalent.
 - (b) Corporation stops shall be used on all services and connections two inches (2") and smaller. All services and connections larger than two inches (2") shall utilize gate valves as specified in this section.
- (3) Curb Stops:
 - (a) Curb stops for copper service lines shall have AWWA compression connection inlet and outlet, and shall be Ford ball valve or Mueller 300 ball valves or equivalent.
 - (b) Valve boxes shall be provided for all curb stops, and shall be similar and equal to Christy G-5.
 - (c) Valve boxes shall be provided for all curb stops placed underground, and shall be similar and equal to Christy G5, with an eight-inch (8") PVC (SDR 35) pipe extension sleeve. Cover shall be marked "WATER."
- (4) Hose Bibs:
 - (a) Hose bibs shall be equipped with an approved vacuum breaker.
- (5) Air Relief Valve:
 - (a) Air Relief Valve shall be single-housing style, cast-iron body, stainless steel trim, two-inch (1") inlet and outlet connections and/or 5/64" diameter orifice for a working maximum pressure of 300 psi, equal to Val-Matic Model 201C.
 - (b) Valve boxes for Air Valve shall be concrete and bolt-down steel checker plate lid, H20 rated, Christy B17" x 30" or equivalent. Cover shall be marked "WATER."
 - (c) Service line shall be two-inch (1") type K copper.
 - (d) The valve shall be wrapped with an insulation blanket around the sides of the valve body.

D. Service Clamps:

- (1) Service clamps for two-inch (2") and smaller service connections shall be nylon-coated ductile iron body, with double stainless steel straps to suit pipe outside diameter, and shall be similar and equal to Rockwell 317 Double Strap.

E. Meters:

- (1) Meter yokes/resetters shall be sized as noted on Plans for meter. Material will be brass and copper. Yoke or resetter shall be 18" high with meter size inlet and outlet on bottom with no bypass. Top shall be solid tee head meter stop with lock-out wing. ¾" and 1" yokes/resetters will have MIP X MIP base connections, and 1-½" and 2" yoke/resetters will have FLG X FLG connections.
- (2) Meters shall be furnished by the Incline Village General Improvement District.
- (3) Meter boxes for ¾-inch and 1-inch services shall be similar and equal to Christy N-16, and include extensions and lids. Lid shall be concrete with "meter read" access door.
- (4) Meter boxes for 1-½ inch and 2-inch services shall be similar and equal to B-36 manufactured by Christy Concrete Products, and include extensions and lids. Lid shall be steel checker-plate, marked "WATER," with a meter read access door.
- (5) Magnesium Anode to be five pound (5#) "High Potential" packaged in chemical backfill to be installed with meter set ONLY if service line is copper.

F. Miscellaneous Appurtenances:

- (1) Location wire shall be Number 10 solid, insulated, AWG copper, soft drawn with connectors wrapped in insulation tape, or copperhead steel core copper wire #10 with snake bite direct bury connectors.
- (2) Warning tape shall be blue color, three inches (3") in width, 5 mil thickness, permanently printed "CAUTION: BURIED WATER LINE BELOW."
- (3) Valve stem extensions shall be provided where necessary so that the operating nut for any valve is not more than thirty-six inches (36") below the valve box cover.
- (4) Magnesium Anode to be five pound (5#) "High Potential" packaged in chemical backfill with ten feet (10') of number twelve (#12) leadwire. Connecting clamp to be CalPico GC or equivalent.
- (5) Full circle repair clamp: Single-band stainless steel single lug ductile iron gasket, Grade 60; bolts are low alloy.

G. Fire Protection System:

- (1) Fire hydrants shall conform to AWWA Standard No. C-502, latest revision, for Dry-Barrel Fire Hydrants. Hydrants shall be traffic model with a five-and-one-quarter inch (5-1/4") main valve opening, and shall be equipped with two two-and-one-half inch (2-1/2") hose outlets and one four-and-one-half inch (4-1/2") pumper outlet (National Standard Thread). A "Higbee Cut" shall be required on the first thread of all outlets. Shoe connection shall be six-inch (6") stab connection. Final paint coat shall be fire hydrant red. All hydrants shall be of the same manufacturer, latest production model, equal in all respects to Mueller Super Centurion 250 or Waterous Pacer WB67-250 Traffic.
- (2) Fire Hydrants will have a Sortz adapter on the front of the 4-1/2" pumper outlet.
- (3) Provide anchorage for tees, plugs, caps, bends, and hydrants in accordance with NFPA 24.
- (4) Fire hydrant will be fully restrained to water main using field-lock gaskets and ductile iron pipe.

- (5) Base block shall be solid pre-cast concrete blocks having the nominal dimensions shown on the plans.
- (6) Gravel for drainage shall be washed three-quarters inch (3/4") crushed rock or graded river gravel free of organic matter, sand, loam, clay, and other small particles that restrict water flow through the gravel.

260.03 General Specifications for Trenching, Backfilling, and Compacting

Referenced Standards

- American Society for Testing and Materials (ASTM):
 - D1557, The Moisture-Density Relation of Soils Using a 10 LB Rammer and an 18 IN Drop. D1557 is "Modified Proctor."
- "Standard Specifications for Public Works Construction" (Orange Book) adopted by Washoe County, latest edition.
- "Standard Specifications for Road and Bridge Construction," (NDOT) published by Nevada Department of Transportation, latest edition.
- "Incline Village General Improvement District Requirements to Construct Sewer and Water Service Lines," latest edition.
- This project is under the jurisdiction of the Tahoe Regional Planning Agency (TRPA), which may limit times of certain construction activities.

Submittals

The Contractor shall submit the following to the Engineer prior to initiation of construction.

- A. Submit respective pipe or conduit manufacturer's data regarding methods of installation and general recommendations.
- B. Submit sieve analysis reports on all granular materials proposed for use by Contractor, whether imported or on-site material.

Project Conditions

- A. Avoid overloading or surcharge a sufficient distance back from edge of excavation to prevent slides or caving. Maintain and trim excavated materials in such manner to be as little inconvenience as possible to public and adjoining property owners.
- B. Provide full access to public and private premises and fire hydrants, at street crossings, sidewalks and other points as designated by Owner to prevent serious interruption of travel. Major road crossings shall be excavated and backfilled in half-widths of the travelled way to allow access for controlled traffic at all times.
- C. Protect and maintain bench marks, monuments or other established points and reference points and if disturbed or destroyed, replace items to full satisfaction of Owner and controlling agency.
- D. Verify location of existing underground utilities.

Materials

All materials shall conform to the Standard Specifications except as follows.

- A. Backfill Material:
 - (1) 2-sack concrete sand slurry with a non-chloride liquid accelerator.
 - (2) Class E Backfill per Section 200.03 of Orange Book (County ROW and private property).
- B. Embedment Materials:
 - (1) Class A Backfill per Section 200.03 of Orange Book (County ROW and private property).
 - (2) Granular Backfill per Section 207 of NDOT (Highway ROW).
- C. Drain fill Materials:

- (1) Number 4 Coarse Aggregate per Section 200.05 of Orange Book.

Excavation

Remove and dispose of unsuitable materials at Contractor's expense.

A. Unclassified Excavation:

- (1) Remove rock excavation, clay, silt, gravel, hard pan, loose shale, and loose stone as directed by Engineer.
- (2) Previous IVGID experience with pipeline installation in the Incline Village area has revealed the existence of rock, boulders and large cobble. If rock excavation is required for pipeline installation, including but not limited to overexcavation, jack hammering, drilling and blasting, such rock excavation will be included in the unit price for the pipeline installation and no additional compensation will be considered for this work.

B. Excavation for Appurtenances:

- (1) Twelve inches (12") (minimum clear distance between outer surface and embankment) or as necessary to provide proper working room.

C. Trench Excavation:

- (1) Trench through asphalt areas will be opened by means of grinding/zippering asphalt layer or sawcut. Prior to paving, the final six (6) inches on each side of trench will be sawcut to make clean, smooth edge for paving.
- (2) Areas in pavement that have been disturbed during excavation, for example: Rocks intruding into trench, outside typical trench section, will be sawcut as marked by ENGINEER or Washoe County. These areas will be removed, excavated to depth required to fill voids, compacted to required density, then place six (6) inches of aggregate base material compacted to 95% and the required depth of asphalt pavement, placed in two-inch lifts. CONTRACTOR to replace existing thickness of asphalt; minimum depth of asphalt replacement is four inches (4").
- (3) Excavate trenches by open cut method to depth shown on Drawings and necessary to accommodate work.
 - (a) Tunnel work for crossing under crosswalks, driveways or existing utility lines with permission.
 - (i) Limit tunnels to 10 ft in length.
- (4) Open trench outside buildings, units, and structures:
 - (a) No more than the distance between two manholes, structures, units, or 500 LF, whichever is less.
 - (b) Field adjust limitations as weather conditions dictate.
- (5) Any trench or portion of trench, which is open at the end of the work day, may be required to be immediately backfilled, without completion of work, at no additional cost to Owner. Said trench may not be reopened until Owner is satisfied that work associated with trench will be prosecuted with dispatch.
 - (a) All trenches in Highway and County ROWs to be backfilled and compacted at the end of each day.
 - (b) All trenches to be "cold mixed" at the end of each day.
- (6) Observe following trenching criteria:
 - (a) Trench size:
 - (i) Excavate width to accommodate free working space and/or as recommended by the pipe manufacturer.

- (ii) Maximum trench width at top of pipe or conduit may not exceed outside diameter of utility service by more than the 24-inches.
- (7) Contractor shall obtain street-cut permits from Washoe County for all utility work in street right-of-way.
 - (a) OWNER to pay Washoe County directly for any penalties levied by County for "decreased life" due to pavement repair.
- (8) CONTRACTOR to abide by Nevada Department of Transportation permit requirements when working in NDOT right of ways.

Preparation of Foundation for Pipe Laying

A. Over-Excavation:

- (1) Backfill and compact to 95 percent of maximum dry density per ASTM D1557 with embedment material.

B. Rock Excavation:

- (1) Excavate minimum of 6 inches below bottom exterior surface of the pipe or conduit.
- (2) Backfill to grade with embedment material and compact to ninety-five percent (95%) of maximum dry density per ASTM D1557.
- (3) Form bell holes in trench bottom.

C. Subgrade Stabilization:

- (1) Stabilize the subgrade when directed by the Owner.
- (2) Observe the following requirements when unstable trench bottom materials are encountered.
 - (a) Notify Owner when unstable materials are encountered.
 - (b) Remove unstable trench bottom caused by Contractor failure to dewater, rainfall, or Contractor operations.
 - (i) Replace with compacted embedment material with no additional compensation.

Backfilling Methods

- A. Do not backfill until tests to be performed on system show system is in full compliance to specified requirements.

B. Pipe Zone Backfill:

- (1) Comply with the following:
 - (a) Place embedment material in lifts not exceeding eight inches (8") (loose thickness) from six inches (6") below to twelve inches (12") above top of pipe or conduit.
 - (b) Hand place, shovel slice, and pneumatically tamp all embedment material.
 - (c) Observe specific manufacturer's recommendations regarding backfilling and compaction.
 - (d) Compact each lift to specified requirements.
 - (e) Tamp material around sides of pipe when material is halfway up side of pipe.

C. Trench Backfill:

- (1) Perform in accordance with the following:
 - Paved Areas:
 - (a) Place 2-sack concrete sand slurry with non-chloride liquid accelerator from top of pipe zone to bottom of existing asphalt thickness or to a minimum of four inches (4"), whichever is greater, OR Class E backfill material at 95% compaction from top of bedding to bottom of existing asphalt thickness plus 6" for aggregate base.

- (b) Observe specific manufacturer's recommendations regarding backfilling and compaction.
- (c) Avoid displacing joints and appurtenances or causing any horizontal or vertical misalignment, separation, or distortion.

Non-Paved Areas:

- (a) Place backfill in lift thicknesses capable of being compacted to densities specified.
- (b) Observe specific manufacturer's recommendations regarding backfilling and compaction.
- (c) Avoid displacing joints and appurtenances or causing any horizontal or vertical misalignment, separation, or distortion.

D. Water flushing for consolidation is not permitted.

Compaction

A. General:

- (1) Place and assure backfill and fill materials to achieve an equal or "higher" degree of compaction than undisturbed materials adjacent to the work.
- (2) In no case shall degree of compaction below "Minimum Compaction" specified be accepted.

B. Compaction Requirements: Unless noted otherwise on Drawings or more stringently by other sections of these Specifications, comply with following trench compaction criteria:

Location	Material	Density (% of Max. dry density)
Under roadway surfaces, within street right-of-ways, under structures	Embedment Material	95 Percent
	Backfill Material	95 Percent
	2-sack concrete sand slurry with non-chloride liquid accelerator	N/A
	Aggregate base 95% compaction	
Under turfing, sodded, plant seeded, non-traffic areas.	Embedment Material	95 Percent
	Backfill Material	90 Percent
	Top 8 Inches of Backfill Material	85 Percent
All other areas next to walls, piers, columns and other exterior structural members. Driveways outside of ROW.	Embedment Material	95 Percent
	Backfill Material	90 Percent

Field Quality Control

A. Testing:

- (1) Costs of initial "Passing" tests paid by Owner.
- (2) Perform additional tests as directed until compaction meets or exceeds requirements.
- (3) Cost associated with "Failing" tests and "Retests" shall be paid by Contractor.
- (4) Reference to Engineer in this section will imply Soils Engineer when employed by Owner and directed by Engineer to undertake necessary inspections as approvals as necessary.
- (5) Assure Owner has immediate access for testing of all soils related work.
 - (a) Notify Owner at least twenty-four (24) hours prior to testing.

- (6) Ensure excavations are safe for testing personnel.

Cleanup

- A. Blade all shoulder areas disturbed by construction to present a neat and uniform appearance.
- B. All culverts obstructed during construction, both under the roadway and under side roads and driveways shall be cleared of debris.
- C. All ditches obstructed during construction shall be opened up, graded, and dressed to ensure free and complete drainage.
- D. Clean up and dispose of all trash, debris, and excess materials *as work proceeds*. Perform a final clean up after removal of equipment and project is complete.
- E. Immediately following sawcut of roadway and driveway(s), the pavement shall be cleaned of all sawcut slurry and debris.
- F. Disturbed areas will be restored to pre-existing or better condition.

260.04 Execution

Summary

- A. All materials shall be handled and stored in a manner that will not damage or depreciate the integrity and quality of the material or its coating. Before installation, each article shall be inspected and any damaged material shall be removed from the site. Any damaged coating shall be repaired. The interior and ends of the pipe and appurtenances shall be clean. When it is necessary to cut pipe, such cuts shall be neatly made. All valves and appurtenances shall be thoroughly cleaned before installation and shall be installed in strict accordance with the manufacturer's recommendations.
- B. CONTRACTOR shall submit As-Built plans to OWNER upon completion of work.

Water Mains

- A. The depth of pipe shall be a minimum of 40 inches, unless indicated otherwise on the plans, from finished surface grade to top of pipe.
- B. Where the pipelines are to be laid on a curve, the deflection shall not exceed seventy-five percent (75%) of the deflection recommended by the pipe manufacturer. The CONTRACTOR will supply and install bends (fittings) in line to achieve the required curve if deflection is not obtainable at no additional cost to the OWNER.
- C. All bends, tees, fire hydrants, and gate valves will be restrained and wrapped in plastic prior to pouring thrust blocks.
- D. Existing mains shown to be abandoned or replaced shall be "blind flanged" at locations shown on plans, and plugged with 12" of concrete if blind flange is not noted.
- E. A magnesium anode shall be installed every five hundred feet (500') along the locating wire.

Valves and Appurtenances

- A. Valves and hydrants shall be set plumb and inspected in opened and closed positions to ensure that all parts are in working condition.
- B. Flanged valves and appurtenances shall be set with no stresses on the flanges. Bolts shall be tightened uniformly around the joints.
- C. All underground valves shall be provided with valve boxes.
 - (1) Valve boxes shall be centered and set plumb over the operating nut of the valves so that they do not transmit shock or stress to the valves. Valve box covers shall be set three-eighths to five-eighths inch (3/8" to 5/8") below the surface of the finished pavement as shown on the plans, or as instructed by the ENGINEER. Riser pipe shall be cut to the proper length so that the valve box does not ride on the riser pipe when set at grade, and the top of the riser pipe is at least six inches (6") below the top of the box.

- D. Existing valves shown on the plans or described in the specifications to be abandoned shall be turned off tightly and "blind flanged" if the valve will be subject to water pressure, or on if directed by the ENGINEER, and shall remain in place. Valve boxes and extension stems shall be removed and backfilled in accordance with Section 02221, "Trenching, Backfilling, and Compacting for Utilities."
- E. Valves will be connected to fittings where shown on Plans at an intersection or as a fire hydrant valve. No intermediate pipe section will be allowed.
- F. All valves and fittings will be wrapped in plastic prior to pouring concrete.

Connections

A. Mainline Connections:

- (1) Existing mainlines are shown on the plans where they are known or suspected.
- (2) Connection of existing mains to the new main shall be at the location shown on the plan or as directed by the ENGINEER. The connection method shall utilize the fittings listed on the plan at that location. Typical mainline connections consist of vertical and/or horizontal offsets which will require bend fittings not listed on Plans. The list is not necessarily complete, and the CONTRACTOR shall be responsible for providing all additional adapters, reducers, bends, specials, or any other fittings necessary to complete the connection to the satisfaction of the ENGINEER.

B. Service Connection to Mainline:

- (1) All live services that are encountered shall be connected to the new main pipelines. The method and schedule for connecting water services to the new main pipelines shall be accepted by the ENGINEER before beginning any connections. All service connections shall be made using the same diameter pipe as the existing service, except that if an existing service less than two inch (2") is found, a new two-inch (2") service pipe shall be installed from the main and reduced to the size of the existing service at the point of connection.
- (2) The exterior of the main shall be free of dirt or other foreign matter that may impair the quality of the completed service connection. Clamps shall not be located within three feet (3') of pipe joints or other clamps, and shall be attached by tightening alternate nuts progressively.

C. Flexible Couplings:

- (1) Flexible couplings shall be installed in accordance with the recommendations of the manufacturer. The finished joint shall be watertight under the test pressure of the pipeline.

Fire Protection Appurtenances

- A. Fire hydrants shall be located as shown on the plans or as directed by the ENGINEER. Their location shall provide complete accessibility, minimize the possibility of damage from vehicles, and minimize injury to pedestrians. Improperly located hydrants will be disconnected and relocated at the CONTRACTOR's expense.
- B. Hydrant installation shall meet the requirements of the North Lake Tahoe Fire Protection District.
- C. During hydrant reconnection, no more than fifty percent (50%) of the hydrants on a given schedule shall be out of service. The Fire Department shall be notified daily of the status of all hydrants.

Testing

A. Scope:

- (1) The CONTRACTOR shall provide all labor, tools, and equipment necessary to perform the required pipeline tests.
- (2) The hydrostatic test shall be completed prior to the chlorination test and then a final flushing of the line shall be done.

B. Hydrostatic Tests:

- (1) All appurtenances of the entire main line, including service saddles and corporation stops, shall be installed prior to testing. The pipeline shall be tested at a pressure equal to the class of pipe or 50 psi over working pressure, whichever is greater. The tests shall be made in the presence of the ENGINEER or his representative.
- (2) Before the test, the pipeline shall be completely anchored and backfilled. During the filling of the line with water, precautions shall be taken to prevent air pockets at high points. Water may be allowed to stand in the line for several hours prior to the test. During the test, which shall be conducted for at least sixty (60) minutes, the allowable leakage shall be as computed by the following formula:

$$\frac{L = SD P^{1/2}}{148,000}$$

L = allowable leakage in gallons per hour
S = length of pipe being tested
D = nominal diameter of the pipe in inches
P = test pressure in pounds per square inch gage

If any valved section of pipe shows greater leakage than specified, the CONTRACTOR shall locate and repair the leaks and shall retest that section of line at no additional cost to the OWNER.

C. Disinfection of Completed Mains:

- (1) Before being placed in service, the entire main line shall be chlorinated by the CONTRACTOR. Chlorine shall be applied by the following methods: Liquid chlorine or calcium hypochlorite water mixture, unless the District Engineer approves another method. The chlorinating agent shall be applied at the beginning of each section adjacent to the feeder connection and shall be injected through a corporation stop, hydrant, or other connection ensuring treatment of the entire line. One test point shall be installed per 300 feet of line being tested with no less than two (2) test points for sections of less than 300 feet. Water shall be fed slowly into the line with chlorine applied in amounts to produce a dosage of 50 parts per million. Portions of the existing mains, which have been connected to a new line or otherwise contaminated by construction, shall be included in the system being sterilized. The solution shall remain in the line for a minimum of 24 hours. A residual of not less than 10 parts per million shall be produced in all parts of the line after the 24-hour period. During the chlorination process, all valves shall be operated. Tablets will NOT be installed in pipe sections during installation.
- (2) OWNER will supply injection unit and chlorine.

D. Final Flushing:

- (1) After chlorination, the CONTRACTOR shall flush all the water from the lines at the extremities until the replacement water tests are equal, chemically, in turbidity and bacteriologically to those of the permanent water supply. The treated water shall be

discharged into a sanitary sewer manhole. Before the line is put in service, a Bacteriological Test in accordance with Section 7 of AWWA 651 will be done at the OWNER's Waste Water Treatment Plant Laboratory.

260.05 Measurement and Payment

“UTILITY RELOCATION – POTABLE WATER 12”, PHASE 1” shall be measured on a lump sum basis, completed and accepted by the Engineer as conforming to all the requirements in the complete work.

The contract unit price paid for “UTILITY RELOCATION – POTABLE WATER 12”, PHASE 1” shall include full compensation for furnishing all labor, materials (i.e. pipe, couplings, fittings, valves, concrete, slurry, aggregate base, backfill, etc.), tools, equipment, and incidentals, and for performing all the work involved in providing for and/or constructing a temporary potable water main bypass or relocation and replacement of existing water main pipes, complete in place, including any excavation, diversion and re-routing of the water main lines during construction, bedding, structural backfill, temporary roadway patch, off-haul and disposal of excess materials and waste debris, and performance of conformance testing as shown on the Project Plans, as specified in the Standard Specifications, these Special Technical Specifications, and as directed by the Engineer and utility purveyor: and no additional compensation will be allowed.

“REMOVE AND DISPOSE OF EXISTING 6" DIAMETER WATER LINE, PHASE 1” shall be measured on a lump sum basis, completed and accepted by the Engineer as conforming to all the requirements in the complete work in accordance with this section and Section 220, “Removal of Existing Improvements” of these Special Technical Specifications.

The contract unit price paid for “REMOVE AND DISPOSE OF EXISTING 6" DIAMETER WATER LINE, PHASE 1” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved in removing and disposing the existing water main, complete in place, including any excavation, bedding, structural backfill, temporary roadway patch, off-haul and disposal of excess materials and waste debris, as shown on the Project Plans, as specified in the Standard Specifications, these Special Technical Specifications, and as directed by the Engineer and utility purveyor: and no additional compensation will be allowed.

Full compensation for conforming to the provisions of this Section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

270 UTILITY RELOCATION – SANITARY SEWER

270.01 Description

Any and all sanitary sewer line temporary bypass and/or relocations, as required to facilitate construction of the proposed project improvements, shall be coordinated with IVGID at least four (4) weeks prior to commencement of work in that area. The Contractor will perform all work as described herein in coordination with IVGID and in conformance with the Project Plans, SWPPP and these Special Technical Specifications, and in accordance with the required contract phasing timelines.

Any saw-cutting and removal of existing pavements shall be in conformance with Section 220 “Removal of Existing Improvements” of these Special Technical Specifications.

The Contractor shall be responsible for the final design, installation, construction, operation, maintenance and removal of any temporary sanitary sewer bypass system and relocation as required for completion of

the contract work. The applicable Project Plan sheets (delineating temporary sewer relocation) provide a basis for, show, and describe a preliminary sanitary sewer relocation plan and minimum requirements. **The Contractor shall submit their own detailed Temporary Sanitary Sewer Bypass or Relocation Plan (including all necessary diagrams/exhibits, and pump equipment data sheets if applicable) to the Engineer for review and acceptance prior to commencement of any construction activities that may require bypass or relocation of an existing sanitary sewer main.** Should the Contractor's operations be delayed, for whatever reason, as a result of the relocation of sanitary sewer lines, no additional contract time, or compensation will be allowed for.

Work under this item shall include repair and/or replacement of any applicable components of the sanitary sewer system that are removed, relocated, or damaged as part of this work. The subject sanitary sewer system shall be returned to the proposed condition shown on the Project Plans, for a sound, complete and fully operational sewer main and sanitary sewer system in conformance with all the requirements of IVGID. Any components of the existing sewer system that is removed from service may not be reused without prior acceptance from the Engineer and IVGID.

Included as part of the work to fully restore the affected portion of the sewer system, following completion and use of the temporary sewer bypass, the Contractor shall remove and replace the designated portions of the existing sewer main (pipe size as shown on Plans or match existing) that is located between the two designated manholes as shown on the Project Plans. In addition, the designated sewer manhole as identified on the Plans shall be fully excavated, removed, and disposed of. All construction methods and materials shall conform to the applicable provisions of the IVGID standards and the specifications as noted in this section. Backfill of the excavation resulting from the removal of the specified sewer manhole shall conform to Section 300 "Unclassified Fill" of these Special Technical Specifications. All fill within the roadway prism shall be structural backfill and/or aggregate base as necessary to conform to the roadway structural section as shown on the Plans and specified in these Special Technical Specifications.

The Contractor shall be prepared and make all provisions as necessary to provide for a vacuum truck or other acceptable equipment, to drain portions of and/or collect any residual sewage waste from the sanitary sewer system, and to prevent any spills and maintain a clean and safe working area.

IVGID has made the flowing information available for informational purposes only. It shall be the Contractor's responsibility to verify all information and sewer main flow data prior to implementation of any temporary sanitary sewer bypass or relocation work. Any errors in this data shall not be a cause for a claim for damages by the Contractor. The gravity sewer main as shown on the Project Plans located within Northwood Blvd at the crossing of Rosewood Creek includes connections from approximately twenty (20) condominium units, with an estimated total peak flow of 14,000 gallons per day. Actual sewer flows will vary throughout the day and may not be representative of this theoretical number.

Following completion of the RCB culvert structure, any associated utility relocations, and any inspections, the resultant disturbed area within the roadway shall receive a temporary hot mix asphalt roadway patch as shown on the Plans, and as directed by the Engineer and Washoe County. This temporary roadway patch shall be in place prior to opening the full width of the roadway to public traffic. All backfill within the roadway prism and roadway structural section, including aggregate base, shall be as depicted on the Project Plans and conform to these Special Technical Specifications and Standard Specifications. Attention is directed to Section 510 "Asphalt Concrete Paving" of these Special Technical Specifications.

270.02 Materials

All materials shall conform to the standard Specifications except as follows.

Gravity PVC Pipe and Fittings: Gasket-joint gravity sewer pipe and fittings meeting requirements of ASTM D3034 (latest edition)

Force Main PVC Pipe and Fittings: Gasket-joint pressure sewer pipe and fittings meeting requirements of ASTM D2241 (latest edition). Solvent welded joints are not allowed.

270.03 General Specifications for Trenching, Backfilling, and Compacting

Referenced Standards

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 - D1557, The Moisture-Density Relation of Soils Using a 10 LB Rammer and an 18 IN Drop. D1557 is "Modified Proctor."
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- This project is under the jurisdiction of the Tahoe Regional Planning Agency (TRPA), which may limit times of certain construction activities.

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The Contractor shall submit the following to the Engineer prior to initiation of construction.

- C. Submit respective pipe or conduit manufacturer's data regarding methods of installation and general recommendations.
- D. Submit sieve analysis reports on all granular materials proposed for use by Contractor, whether imported or on-site material.

Project Conditions

- E. Avoid overloading or surcharge a sufficient distance back from edge of excavation to prevent slides or caving. Maintain and trim excavated materials in such manner to be as little inconvenience as possible to public and adjoining property owners.
- F. Provide full access to public and private premises and fire hydrants, at street crossings, sidewalks and other points as designated by Owner to prevent serious interruption of travel. Major road crossings shall be excavated and backfilled in half-widths of the travelled way to allow access for controlled traffic at all times.
- G. Protect and maintain bench marks, monuments or other established points and reference points and if disturbed or destroyed, replace items to full satisfaction of Owner and controlling agency.
- H. Verify location of existing underground utilities.

Materials

All materials shall conform to the Standard Specifications except as follows.

- D. Backfill Material:
 - (1) 2-sack concrete sand slurry with a non-chloride liquid accelerator.
 - (2) Class E Backfill per Section 200.03 of Orange Book (County ROW and private property).
- E. Embedment Materials:
 - (1) Class A Backfill per Section 200.03 of Orange Book (County ROW and private property).
 - (2) Granular Backfill per Section 207 of NDOT (Highway ROW).
- F. Drainfill Materials:

- (1) Number 4 Coarse Aggregate per Section 200.05 of Orange Book.

Excavation

Remove and dispose of unsuitable materials at Contractor's expense.

D. Unclassified Excavation:

- (3) Remove rock excavation, clay, silt, gravel, hard pan, loose shale, and loose stone as directed by Engineer.
- (4) Previous IVGID experience with pipeline installation in the Incline Village area has revealed the existence of rock, boulders and large cobble. If rock excavation is required for pipeline installation, including but not limited to overexcavation, jack hammering, drilling and blasting, such rock excavation will be included in the unit price for the pipeline installation and no additional compensation will be considered for this work.

E. Excavation for Appurtenances:

- (2) Twelve inches (12") (minimum clear distance between outer surface and embankment) or as necessary to provide proper working room.

F. Trench Excavation:

- (9) Trench through asphalt areas will be opened by means of grinding/zipping asphalt layer or sawcut. Prior to paving, the final six (6) inches on each side of trench will be sawcut to make clean, smooth edge for paving.
- (10) Areas in pavement that have been disturbed during excavation, for example: Rocks intruding into trench, outside typical trench section, will be sawcut as marked by ENGINEER or Washoe County. These areas will be removed, excavated to depth required to fill voids, compacted to required density, then place six (6) inches of aggregate base material compacted to 95% and the required depth of asphalt pavement, placed in two-inch lifts. CONTRACTOR to replace existing thickness of asphalt; minimum depth of asphalt replacement is four inches (4").
- (11) Excavate trenches by open cut method to depth shown on Drawings and necessary to accommodate work.
 - (b) Tunnel work for crossing under crosswalks, driveways or existing utility lines with permission.
 - (ii) Limit tunnels to 10 ft in length.
- (12) Open trench outside buildings, units, and structures:
 - (c) No more than the distance between two manholes, structures, units, or 500 LF, whichever is less.
 - (d) Field adjust limitations as weather conditions dictate.
- (13) Any trench or portion of trench, which is open at the end of the work day, may be required to be immediately backfilled, without completion of work, at no additional cost to Owner. Said trench may not be reopened until Owner is satisfied that work associated with trench will be prosecuted with dispatch.
 - (c) All trenches in Highway and County ROWs to be backfilled and compacted at the end of each day.
 - (d) All trenches to be "cold mixed" at the end of each day.
- (14) Observe following trenching criteria:
 - (b) Trench size:
 - (iii) Excavate width to accommodate free working space and/or as recommended by the pipe manufacturer.

- (iv) Maximum trench width at top of pipe or conduit may not exceed outside diameter of utility service by more than the 24-inches.
- (15) Contractor shall obtain street-cut permits from Washoe County for all utility work in street right-of-way.
 - (b) OWNER to pay Washoe County directly for any penalties levied by County for "decreased life" due to pavement repair.
- (16) CONTRACTOR to abide by Nevada Department of Transportation permit requirements when working in NDOT right of ways.

Preparation of Foundation for Pipe Laying

D. Over-Excavation:

- (2) Backfill and compact to 95 percent of maximum dry density per ASTM D1557 with embedment material.

E. Rock Excavation:

- (4) Excavate minimum of 6 inches below bottom exterior surface of the pipe or conduit.
- (5) Backfill to grade with embedment material and compact to ninety-five percent (95%) of maximum dry density per ASTM D1557.
- (6) Form bell holes in trench bottom.

F. Subgrade Stabilization:

- (3) Stabilize the subgrade when directed by the Owner.
- (4) Observe the following requirements when unstable trench bottom materials are encountered.
 - (c) Notify Owner when unstable materials are encountered.
 - (d) Remove unstable trench bottom caused by Contractor failure to dewater, rainfall, or Contractor operations.
 - (ii) Replace with compacted embedment material with no additional compensation.

Backfilling Methods

- E. Do not backfill until tests to be performed on system show system is in full compliance to specified requirements.

F. Pipe Zone Backfill:

- (2) Comply with the following:
 - (f) Place embedment material in lifts not exceeding eight inches (8") (loose thickness) from six inches (6") below to twelve inches (12") above top of pipe or conduit.
 - (g) Hand place, shovel slice, and pneumatically tamp all embedment material.
 - (h) Observe specific manufacturer's recommendations regarding backfilling and compaction.
 - (i) Compact each lift to specified requirements.
 - (j) Tamp material around sides of pipe when material is halfway up side of pipe.

G. Trench Backfill:

- (2) Perform in accordance with the following:
 - Paved Areas:
 - (d) Place 2-sack concrete sand slurry with non-chloride liquid accelerator from top of pipe zone to bottom of existing asphalt thickness or to a minimum of four inches (4"), whichever is greater, OR Class E backfill material at 95% compaction from top of bedding to bottom of existing asphalt thickness plus 6" for aggregate base.

- (e) Observe specific manufacturer's recommendations regarding backfilling and compaction.
- (f) Avoid displacing joints and appurtenances or causing any horizontal or vertical misalignment, separation, or distortion.

Non-Paved Areas:

- (d) Place backfill in lift thicknesses capable of being compacted to densities specified.
- (e) Observe specific manufacturer's recommendations regarding backfilling and compaction.
- (f) Avoid displacing joints and appurtenances or causing any horizontal or vertical misalignment, separation, or distortion.

H. Water flushing for consolidation is not permitted.

Compaction

B. General:

- (3) Place and assure backfill and fill materials to achieve an equal or "higher" degree of compaction than undisturbed materials adjacent to the work.
- (4) In no case shall degree of compaction below "Minimum Compaction" specified be accepted.

C. Compaction Requirements: Unless noted otherwise on Drawings or more stringently by other sections of these Specifications, comply with following trench compaction criteria:

Location	Material	Density (% of Max. dry density)
Under roadway surfaces, within street right-of-ways, under structures	Embedment Material	95 Percent
	Backfill Material	95 Percent
	2-sack concrete sand slurry with non-chloride liquid accelerator	N/A
	Aggregate base 95% compaction	
Under turfing, sodded, plant seeded, non-traffic areas.	Embedment Material	95 Percent
	Backfill Material	90 Percent
	Top 8 Inches of Backfill Material	85 Percent
All other areas next to walls, piers, columns and other exterior structural members. Driveways outside of ROW.	Embedment Material	95 Percent
	Backfill Material	90 Percent

Field Quality Control

B. Testing:

- (7) Costs of initial "Passing" tests paid by Owner.
- (8) Perform additional tests as directed until compaction meets or exceeds requirements.
- (9) Cost associated with "Failing" tests and "Retests" shall be paid by Contractor.
- (10) Reference to Engineer in this section will imply Soils Engineer when employed by Owner and directed by Engineer to undertake necessary inspections as approvals as necessary.
- (11) Assure Owner has immediate access for testing of all soils related work.
 - (b) Notify Owner at least twenty-four (24) hours prior to testing.

- (12) Ensure excavations are safe for testing personnel.

Cleanup

- G. Blade all shoulder areas disturbed by construction to present a neat and uniform appearance.
- H. All culverts obstructed during construction, both under the roadway and under side roads and driveways shall be cleared of debris.
- I. All ditches obstructed during construction shall be opened up, graded, and dressed to ensure free and complete drainage.
- J. Clean up and dispose of all trash, debris, and excess materials *as work proceeds*. Perform a final clean up after removal of equipment and project is complete.
- K. Immediately following sawcut of roadway and driveway(s), the pavement shall be cleaned of all sawcut slurry and debris.
- L. Disturbed areas will be restored to pre-existing or better condition.

270.04 Execution

Preparation

Excavation and backfill shall be in accordance with the Standard Specifications, these Special Technical Specifications, and as specified in the section above including the following additional requirements:

- 1) Runs shall be as close as possible to those shown on Drawings.
- 2) Excavate to required depth.
- 3) Grade to obtain fall required.
- 4) Bottom of trenches shall be hard. Tamp as required.
- 5) Remove debris from trench prior to laying of pipe.

Installation

Installation of PVC Pipe and Fittings shall be in conformance with the Standard Specifications, these Special Technical Specifications and as follows:

- (1) Install in accordance with the manufacturer's recommendations and ASTM D 2321-83a, "Recommended Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe."
- (2) Stabilize unstable trench bottoms.
- (3) Bed pipe true to line and grade with continuous support from a firm base.
 - (a) Bedding depth - 4 to 6 inches.
 - (b) Material and compaction to meet ASTM standard noted above.
- (4) Excavate bell holes into bedding material so pipe is uniformly supported along its entire length. Blocking to grade pipe is forbidden.
- (5) Trench width at top of pipe:
 - (a) Minimum - 18 inches or diameter of pipe plus one foot, whichever is greater.
 - (b) Maximum - Outside diameter of pipe plus two feet.
- (6) Piping and joints shall be clean and installed according to Manufacturer's recommendations.
- (7) Do not use backhoe or power equipment to assemble pipe.
- (8) Initial backfill shall be 12 inches above top of pipe with material specified in Section 02221.
- (9) Minimum cover over top of pipe:

- (a) 36 inches before wheel loading.
- (b) 48 inches before compaction.

(10) In accordance with Section 306 of the Standard Specifications.

(11) In accordance with IVGID Requirements.

Acceptance Testing

A. General:

- (1) The Contractor shall perform watertight testing in the presence of the Engineer. The Contractor shall furnish all labor, materials, tools, and equipment required to make the tests. Testing shall be done immediately after cleaning of the pipe.
- (2) All sections of pipe shall be tested. The sewer shall be complete with laterals prior to testing.
- (3) Where leakage is in excess of the specified rate, the sewer shall be uncovered immediately and the amount of leakage reduced by the Contractor to a quantity within the specified rate before the sewer is accepted.
- (4) All testing will be done by air exfiltration, unless determined otherwise by District Engineer.
- (5) Any individually detectable leaks in pipes, joints, laterals, stubs, connections, and rod holes shall be repaired regardless of test results with no cost to the Owner.

B. Air Exfiltration Test

- (1) Each section of sewer shall be tested by plugging and bracing all openings in the main sewer line and the upper ends of all connection sewers. Prior to any air pressure testing, all pipe plugs shall be checked with a soap solution to detect any air leakage. If any leaks are found, the air pressure shall be released, the leaks eliminated, and the test procedure started over again.
- (2) The final leakage test of the sewer main line and branching house connection sewers, shall be conducted in the following manner:
 - (a) Air shall be introduced into the pipeline until 4.0 psi gage pressure has been reached, at which time the flow of air shall be reduced and the internal air pressure shall be maintained between 3.5 and 4.0 psi (gage) for at least two (2) minutes to allow the air temperature to come to equilibrium with the temperature of the pipe walls. Pressure in the pipeline shall be constantly monitored by a gage and hose arrangement separate from hose used to introduce air into the line. Pressure in the pipeline shall not be allowed to exceed 5 psi (gage).
 - (b) After the temperature has stabilized and no air leaks at the plugs have been found, the air pressure shall be permitted to drop and, when the internal pressure has reached 3.5 psi (gage), a stop watch or sweep second-hand watch shall be used to determine the time lapse required for the air pressure to drop to 2.5 psi (gage).
- (3) The pipe and joints shall be within acceptance limits for leakage defined within Section 336 of the Standard Specifications.

C. Mandrel Test of PVC Sewer Pipe

- (1) Following completion of backfill and prior to the placing of permanent pavement, the pipe shall be cleaned and then mandrelled to measure for obstructions (deflections and joint offsets). A standard, commercially manufactured rigid, odd-numbered leg (nine legs minimum) mandrel, having a diameter corresponding to the diameter of pipe being tested in accordance with ASTM D-3034 shall be pulled through the pipe by hand. The minimum

length of the circular portion of the mandrel shall be equal to the nominal diameter of the pipe.

- (2) A proof ring for verification of the mandrel diameter shall be available at all times during mandrel tests. Rings shall be a standard product of the mandrel manufacturer.

270.05 Measurement and Payment

“UTILITY RELOCATION - SANITARY SEWER, PHASE 1” shall be measured on a lump sum basis, completed and accepted by the Engineer as conforming to all the requirements in the complete work.

The contract unit price paid for “UTILITY RELOCATION - SANITARY SEWER, PHASE 1” shall include full compensation for furnishing all labor, materials (i.e. pipe, couplings, fittings, concrete, slurry, aggregate base, backfill, etc.), tools, equipment, and incidentals, and for performing all the work involved in providing for and/or constructing a temporary sewer bypass or relocation and replacement of existing sanitary sewer pipes, complete in place, including any pumping, excavation, diversion and re-routing of the sewer lines during construction, bedding, structural backfill, temporary roadway patch, off-haul and disposal of excess materials and waste debris, and performance of conformance testing as shown on the Project Plans, as specified in the Standard Specifications, these Special Technical Specifications, and as directed by the Engineer and utility purveyor; and no additional compensation will be allowed.

Full compensation for conforming to the provisions of this Section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

280 TRENCH EXCAVATION AND BACKFILL

280.01 General

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary for all excavation, trenching, bedding, and backfilling for all the contract work items involved or delineated as trench work as shown on the Project Plans, and as described in the Standard Specifications and these Special Technical Specifications. All excavations shall be made true to the lines and grades as shown on the Project Plans, staked by the Contractor, and verified by the Engineer, and shall be so constructed as to avoid removing or loosening any material outside the required slopes and grading limits. Attention is directed to Section 305, “Trench Excavation and Backfill”, of the Standard Specifications.

All excavation, bedding, fill, structural backfill, materials, and compaction associated with the work shall be in accordance with the Project Plans, Contract Documents, Project Permit(s), Standard Specifications, these Special Technical Specifications, SWPPP, and as directed by the Engineer.

Trench excavations shall include the removal and disposal of all water and unsuitable materials of any nature which interfere with completion of the construction work. Removal of ground water to a level below the pipe or structure subgrade shall be accomplished as necessary. Attention is directed to Section 200, “Dewatering and/or Diversion” of these Special Technical Specifications.

The Contractor shall follow the applicable rules, orders and regulations of the United States Department of Labor Occupational Safety and Health Administration (OSHA - 29 CFR, Part 1926, Subpart P, Excavations) for sloping the sides of excavations, using shoring and bracing, and for using other safety features. When sides of excavations are sloped for safety considerations the Contractor shall provide, for informational purposes, one copy of the design that demonstrates conformity with OSHA regulations to the Engineer. Where support systems, shield systems, or other protective systems are to be used, the Contractor shall submit to the Engineer, design calculations along with detailed drawings that

demonstrate conformity with OSHA regulations. Such drawings shall be stamped with a seal and signed by an Engineer who is registered as a Civil Engineer in the State of Nevada.

The Contractor is advised of the possibility of encountering large boulders, rock, and other similar materials while excavating. There shall be no additional compensation or payment made to the Contractor for encountering or excavating such materials.

280.02 Measurement and Payment

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with performing all the work involved in provisions of this section, complete in place as shown on the Project Plans, as specified in the Contract Documents, Project Permits(s), Standard Specifications, these Special Technical Specifications, the SWPPP, and as directed by the Engineer, shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for. There shall be no additional compensation for protective systems required by the OSHA regulations.

290 UNCLASSIFIED EXCAVATION

290.01 General

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary for all excavations (unless separately designated elsewhere), sub-grade scarification and preparation, rough grading, compaction, finish grading, and disposal/salvage of unsuitable or surplus materials, for all the contract work items involved or delineated as excavation, earthwork or grading as shown on the Project Plans, and as described in the Standard Specifications and these Special Technical Specifications. All excavations, earthwork, and associated grading shall be made true to the lines and grades as shown on the Project Plans, staked by the Contractor, and verified by the Engineer, and shall be so constructed as to avoid removing or loosening any material outside the required slopes and grading limits. Attention is directed to Section 303, "Unclassified Excavation", of the Standard Specifications.

All temporary erosion control measures and BMPs shall be installed prior to any excavation, backfill, and grading earthwork operations. Attention is directed to Section 180, "Temporary Erosion Control Measures and BMPs" of these Special Technical Specifications.

Because of the nature of the project, careful excavation, backfill, and grading are mandatory. The proposed contours, representative cross sections, and applicable typical cross section as shown on the Project Plans represent the intended shape of the land but the Contractor shall take into account that the proposed channel, grade control structures, floodplain grading areas, existing channel backfill, slopes, grade breaks, etc., shall be constructed and graded to natural shapes that transition smoothly to adjacent features and grades. As part of the scope of this item of work, the Contractor shall work under the direction of the Engineer to create a natural-looking finished grade surface. The Contractor may be directed in the field to make minor modifications to the depth of cuts, heights of fills, angle of slopes, and other contour grading to achieve a natural appearance, and the desired functioning of the system and proposed improvements. Additionally, the Contractor may be field directed, by the Engineer, to slightly modify the alignment or elevation of the proposed improvements to account for variations in substrate or topography, and true field conditions present at the time of construction. Compensation for these potential directives and minor field modifications, as noted above, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

All finished areas with cut and/or fill slopes shall be graded as indicated on the Project Plans, staked in the field, and directed by the Engineer. The Contractor shall employ excavation and/or placement

methods that does not disturb or damage other work. Areas that are shown to not have any excavation or grading shall be protected and remain undisturbed to protect the existing soil profile and vegetation cover.

The surface - top four to six inches (4"-6") of on-site soils (topsoil) - shall be segregated from the underlying soils and salvaged, stockpiled, disposed of, or reused as designated elsewhere in these Special Technical Specifications as directed by the Revegetation Specialist. These organic rich surface soils shall not be used in, or blended to incorporate with, the native fill, engineered fill, structural fill or other designated fill material. The Contractor's attention is directed to Sections 210.02, "Clearing and Grubbing" and 600, "Soil Revegetation Treatment," of these Special Technical Specifications.

Cobbles and boulders will likely be encountered during grading. These oversize particles should be set aside and not incorporated within the floodplain grading or other fill areas; however, these materials could be reused for other applications on the project site as accepted and allowed per direction of the Engineer.

During the course of the project (all phases) any damage to previously installed and accepted work including but not limited to any creek channel, grade control structures, and floodplain areas shall be repaired/replaced at the Contractor's expense. Furthermore, the Contractor shall protect all previously installed revegetation treatments and irrigation equipment; and repair/replace all areas that are damaged as a result of the Contractor's operations. The Contractor shall reshape, grade, and re-compact (where applicable) any areas subjected to displacement from vehicular traffic. The Contractor is responsible to locate, identify, and protect all existing utilities from damage.

290.02 Miscellaneous and Temporary Grading and Excavation

Work under this item shall consist of providing all labor, tools, materials, and equipment necessary to perform minor excavation, temporary excavation and finish grading as directed by the Engineer. Miscellaneous and temporary excavation and grading includes excavation, grading, fill, compaction, and disposal of excess materials as necessary to construct the project improvements (including the installation of the RCB structure), maintain prevailing grades, and create minor drainage swales to ensure correct flow paths and positive drainage is maintained within the finished project site. In addition, miscellaneous grading and excavation shall include finish/contour grading within the project area to create natural shapes that transition smoothly to adjacent features, grades and slopes and generally provide for a natural appearance, in accordance with the Project Plans, Standard Specifications, these Special Technical Specifications, and as directed by the Engineer. All such miscellaneous excavation and grading, including detailed finish grading as directed by the Engineer in the field to produce a natural finish, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

290.03 Floodplain Grading

Clearing and grubbing, excavation, sub-grade scarification and preparation, rough grading, fill, compaction, finish grading, and disposal/salvage of unsuitable or surplus materials within the designated areas of the floodplain shall produce a finished surface to the lines and grades as shown on the Project Plans, and all work shall be in conformance with the applicable sections of these Special Technical Specifications.

The Contractor is only permitted to use "low impact equipment" within the floodplain/SEZ areas for completion of this work. The Contractor's attention is directed to Section 120, "Project Permits", and Section 180.05, "Wetland Temporary Construction Access Road" of these Special Technical Specifications.

Any fill materials used in the work shall be in conformance with the Standard Specifications, these Special Technical Specifications, and at a minimum shall not exceed optimum moisture content, and be

free of stones or lumps exceeding 3 inches in greatest dimension, organic matter, or other unsatisfactory material that may restrict compaction requirements. Where designated on the Plans and applicable details for placement of native fill, engineered fill, salvaged topsoil, imported topsoil, and other fill materials the construction and materials shall conform to the provisions in Section 300 "Unclassified Fill" of these Special Technical Specifications.

Following completion of the excavation and rough grading work within the floodplain grading areas, and prior to placement of any topsoil, the Engineer and Revegetation Specialist will inspect the work site sub-grade (using a soil probe or penetrometer) for any areas of excessive compaction. Upon discovery the Engineer will mark the limits of all areas, and the Contractor shall loosen/decompact the areas in accordance with the applicable provisions of Section 600, "Soil Revegetation Treatment" of these Special Technical Specifications.

The necessary grading for the construction of the Drainage Swale, as shown on the Project Plans required for the proper construction of the Project in accordance with the Project Plans, these Special Technical Specifications, the Project SWPPP, the Project permits and as directed by the engineer shall be included in costs of various other items of work and no additional compensation shall be allowed for.

Placement of topsoil and revegetation treatments shall be as specified elsewhere in these Special Technical Specifications, or as directed by the Engineer.

290.04 Temporary Grading for Culvert Installation, Phase 1

Clearing and grubbing, excavation, sub-grade scarification and preparation, rough grading, fill, compaction, finish grading, and disposal/salvage of unsuitable or surplus materials within the designated areas of the temporary grading and excavation for the proper installation of the RCB Culvert, headwalls, wingwalls and other appurtenances shall produce a finished surface to the lines and grades as shown on the Project Plans, and all work shall be in conformance with the applicable sections of these Special Technical Specifications.

Any fill materials used in the work shall be in conformance with the Standard Specifications, these Special Technical Specifications, and at a minimum shall not exceed optimum moisture content, and be free of stones or lumps exceeding 3 inches in greatest dimension, organic matter, or other unsatisfactory material that may restrict compaction requirements. Where designated on the Plans and applicable details for placement of native fill, engineered fill, salvaged topsoil, imported topsoil, and other fill materials the construction and materials shall conform to the provisions in Section 300 "Unclassified Fill" of these Special Technical Specifications.

All temporary excavation and grading will be performed within the Washoe County right-of-way and all work shall be performed in accordance with roadway requirements for Washoe County right-of-way. The backfill and compaction shall be in accordance with the backfill and compaction sections of these Special Technical Specifications, and only Structure Fill shall be used as Backfill. The finished ground surface, and completion of all backfill and compaction operations, shall not exceed a slope of 3 (horizontal) to 1 (vertical) unless accepted otherwise by the Engineer.

Following completion of the excavation and rough grading work within the temporary excavation and grading areas, and prior to placement of any topsoil or revegetation treatments, the Engineer and Revegetation Specialist will inspect the work site sub-grade (using a soil probe or penetrometer) for any areas of excessive compaction. Upon discovery the Engineer will mark the limits of all areas, and the Contractor shall loosen/decompact the areas in accordance with the applicable provisions of Section 600, "Soil Revegetation Treatment" of these Special Technical Specifications.

Placement of topsoil and revegetation treatments shall be as specified elsewhere in these Special Technical Specifications, or as directed by the Engineer.

290.05 Unsuitable Soils, Surplus Earthen Material, and Stockpiles

Unsuitable soils, surplus soils and other earthen materials shall be removed and disposed of in accordance with all local, state, and federal regulations from the project site as a part of this item of work. No unsuitable or surplus material may be disposed of within the rights-of-way or project limits. The Contractor shall make all arrangements for disposal of the materials at off-site locations (including disposal outside of Tahoe basin).

Stockpiling and storage of surplus soil, salvaged topsoil, and other materials will be prohibited within the project site, rights-of-way, and any designated staging and storage areas over the course of the project (regardless of phase) during the “winter down time” (typical Oct 15 to May 1 of any year). All surplus materials generated from the project site during construction operations, including but not limited to, clearing and grubbing, topsoil salvage, organic matter salvage, the RCB culvert structure, proposed creek channel, floodplain grading, and other Phase 1 operations, shall be off-hauled and salvaged/disposed of outside the project limits and Tahoe basin (unless a specific off-site area is authorized for use by the Engineer and applicable regulatory agencies; the Contractor is solely responsible to secure such area, obtain any necessary permits and pay all associated fees, etc). As described elsewhere in these Special Technical Specifications, backfill of the existing channel and associated revegetation treatments (part of Phase 3 work) will require import of select soil, topsoil, fill and other earthen materials to the project site.

It is the responsibility of the Contractor to satisfy him/herself that there is sufficient material available for the completion of the work as shown on the Project Plans and described in these Special Technical Specifications, before disposing of any surplus soil, salvaged topsoil, and other materials generated from the project site, regardless of the on-site stockpile restrictions as noted herein. Any shortage of material caused by premature disposal of the surplus or salvaged materials, by the Contractor, shall be replaced by him/her and no additional compensation will be allowed for such replacement.

As part of the construction operations for the proposed RCB culvert structure (Northwood Blvd), a temporary staging and storage area to the south of Northwood Blvd within the floodplain area (approx station PR 18+00 to PR 19+00 as shown on Plans) is designated for the Contractors use to stockpile and process the native soil materials as generated from the excavation pit. Note that use of any native soils for backfill shall be accepted by the Engineer prior to placement in the work and conform to the requirements for structural fill (see Section 300.02). Additional requirements for the use of this temporary staging and storage area is stated in Section 140.03, “Construction Staging and Storage Areas”, of these Special Technical Specifications.

290.06 Potholing of existing utilities

The Contractor shall be responsible for verifying the location of all existing underground facilities within the project area, which may have potential to conflict with the location of proposed improvements, as shown on the Project Plans and as indicated by USA markings. Actual field conditions and locations can vary considerably from those shown on the Project Plans; therefore the Engineer and/or Owner cannot, and does not, assume responsibility for the existence or location of any underground structures such as, but not limited to, pipelines, laterals, conduits, valves, meters, vaults, manholes, junction boxes, and other components of a typical utility, drainage, or irrigation system. The Contractor shall be responsible for contacting all utilities, agencies and/or public and private owners to verify such information prior to and during construction of any of the proposed improvements.

The Contractor shall notify the Engineer in advance of all potholing activities. Any delays that may result from failure of the Contractor to locate and/or pothole a potential utility conflict shall be at the

Contractor's expense. Any costs incurred due to relocations, shutoff, startup, or any other costs related to utility relocations due to the construction of the project, not otherwise provided for in a specific Contract item, shall be the responsibility of the Contractor.

As part of the Contract work the Contractor will be installing improvements in the vicinity of existing utility systems and other various public improvements. Where conflicts are known to and appear to exist with underground utilities (locations indicated on Project Plans) the Contractor is hereby advised that he/she will be required to pothole each location prior to any work in the vicinity of the subject utility, in order to properly identify and locate its position. The Contractor is responsible to schedule the Contractor's surveyor to be onsite during potholing of conflicts for utility elevation verification (surveying of the horizontal and vertical location of the top of the pipe is required). Upon verification such utilities will require relocation by the Contractor or utility agency or its agents in accordance with these Special Technical Specifications, Project Plans, Standard Specifications, and associated utility standards. **Any potholing shall be completed where conflicts are known to and appear to exist with underground utilities a minimum of ten (10) working days before beginning construction on the proposed improvements which appear to cause conflict.**

Only pothole locations identified on the Project Plans, or directed, in writing by the Engineer shall be paid for under the pothole existing utilities bid item. All other utility locations including any additional potholing as necessary to properly construct the project, not covered under the stipulations identified in the paragraph above, shall be performed by the Contractor and considered as included in prices paid for the various Contract items of work involved and no additional compensation will be allowed for.

If any existing utilities that are not shown by USA or on the Plans as indicated to be relocated by others are found to be in conflict with the proposed location of the improvements shown on the Plans, the Contractor shall contact the Engineer. The Engineer will either provide the Contractor with new grades/elevations to eliminate such conflicts or shall contact the utility agency to arrange for relocation of the conflicting utility. The Contractor shall coordinate all necessary activities with the utility agency in order to complete or facilitate the subject relocation(s). Such work shall be considered change order work.

290.07 Measurement and Payment

"FLOODPLAIN GRADING, PHASE 1" and "FLOODPLAIN GRADING, PHASE 3" shall be measured on per cubic yard basis (all cut within the designated floodplain area, excluding roadway) as quantified per the earthwork determination (pre-construction and post construction surveys) accepted by the Engineer as conforming to all the requirements in the complete work. Any associated contour grading and other general earthwork movement as required to complete the work shall be considered as included in the unit price paid per cubic yard as quantified herein.

The unit price paid for "FLOODPLAIN GRADING, PHASE 1" and "FLOODPLAIN GRADING, PHASE 3" shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the earthwork involved, including but not limited to, excavation, loading, transport, onsite hauling, local borrow, import, screening, conditioning, backfill, rough grading, scarifying, compacting, finish grading, disposal of unsuitable or surplus materials, and otherwise manipulating the existing ground surface and soils, and placing additional local borrow or import soils as required for the grading and construction of the designated floodplain areas, for a complete job in place to the lines and grades as shown on the Project Plans, and specified in the Contract Documents, Project Permits, SWPPP, Standard Specifications, these Special Technical Specifications, and as directed by the Engineer, and no additional compensation will be allowed.

“TEMPORARY GRADING FOR CULVERT INSTALLATION, PHASE 1” shall be measured on a lump sum basis, completed and accepted by the Engineer as conforming to all the requirements in the complete work.

The contract price paid for “TEMPORARY GRADING FOR CULVERT INSTALLATION, PHASE 1” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals required for performance and completion of the work for the contract lump sum price bid, as shown on the Plans, in accordance with the Contract Documents, Standard Specifications, these Special Technical Specifications, SWPPP, project permit(s), and to the satisfaction of the Engineer. No partial payments will be allowed for “TEMPORARY GRADING FOR CULVERT INSTALLATION, PHASE 1”.

Full compensation for conforming to the provisions of this Section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

300 UNCLASSIFIED FILL

300.01 General

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary for all fill (unless separately designated elsewhere), including but not limited to, local borrow native soils, import, structural fill, engineered fill, low permeability channel fill, salvage topsoil, imported topsoil, amended fill, clearing and grubbing, excavation, existing sub-grade scarification and preparation, loading, transport, onsite hauling, off-site hauling, temporary stockpile, off-site stockpile, processing/conditioning, screening, placement, rough grading, compacting, finish grading, and disposal/salvage of unsuitable or surplus materials, for all the contract work items involved or delineated as earthwork or fill as shown on the Project Plans, and as described in the Standard Specifications and these Special Technical Specifications. All fill, earthwork, and associated grading shall be made true to the lines and grades as shown on the Project Plans, staked by the Contractor, and verified by the Engineer, and shall be so constructed as to avoid removing or loosening any material outside the required slopes and grading limits. Attention is directed to Section 304, “Unclassified Fill”, of the Standard Specifications.

All temporary erosion control measures and BMPs shall be installed prior to any excavation, backfill, and grading earthwork operations. Attention is directed to Section 180, “Temporary Erosion Control Measures and BMPs” of these Special Technical Specifications.

Because of the nature of the project, careful excavation, backfill, and grading are mandatory. The proposed contours, representative cross sections, and applicable typical cross section as shown on the Project Plans represent the intended shape of the land but the Contractor shall take into account that the proposed channel, grade control structures, floodplain grading areas, existing channel backfill, slopes, grade breaks, etc., shall be constructed and graded to natural shapes that transition smoothly to adjacent features and grades. As part of the scope of this item of work, the Contractor shall work under the direction of the Engineer to create a natural-looking finished grade surface. The Contractor may be directed in the field to make minor modifications to the depth of cuts, heights of fills, angle of slopes, and other contour grading to achieve a natural appearance, and the desired functioning of the system and proposed improvements. Additionally, the Contractor may be field directed, by the Engineer, to slightly modify the alignment or elevation of the proposed improvements to account for variations in substrate or topography, and true field conditions present at the time of construction. Compensation for these potential directives and minor field modifications, as noted above, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

All finished areas with cut and/or fill slopes shall be graded as indicated on the Project Plans, staked in the field, and directed by the Engineer. The Contractor shall employ excavation and/or placement methods that does not disturb or damage other work. Areas that are shown to not have any excavation or grading shall be protected and remain undisturbed to protect the existing soil profile and vegetation cover.

The surface - top four to six inches (4"-6") of on-site soils (topsoil) - shall be segregated from the underlying soils and salvaged, stockpiled, disposed of, or reused as designated elsewhere in these Special Technical Specifications. These organic rich surface soils shall not be used in, or blended to incorporate with, the native fill, engineered fill, structural fill or other designated fill material. The Contractors attention is directed to Sections 210.02, "Clearing and Grubbing" and 600, "Soil Revegetation Treatment," of these Special Technical Specifications.

Cobbles and boulders will likely be encountered during grading. These oversize particles should be set aside and not incorporated within the floodplain grading or other fill areas; however, these materials could be reused for other applications on the project site as accepted and allowed per direction of the Engineer.

Where applicable the sub-grade at all backfill locations shall be scarified to a depth of at least six inches (6") to break up any hard pan areas or excessive compaction prior to placement of any materials, and otherwise prepared in accordance with the Standard Specifications. Upon acceptance of the natural sub-grade by the Engineer, the Contractor shall place and compact fill (non-topsoil) to the percent relative maximum density, as shown on the Project Plans or as designated elsewhere in these Special Technical Specifications or Standard Specifications, in equal continuous layers not exceeding eight inches (8") compacted depth. The Contractor shall maintain optimum moisture content of backfill materials to attain the required compaction density. Backfill shall continue in this manner until designated grade elevations have been met, (as shown on the Plans minus topsoil depth, revegetation treatments, or pavement structural sections). The Contractor shall not backfill over porous, wet, frozen or spongy sub-grade surfaces, except as directed by the Engineer. Attention is directed to Section 302, "Subgrade Preparation", and Section 304, "Unclassified Fill", of the Standard Specifications.

During the course of the project (all phases) any damage to previously installed and accepted work including but not limited to any creek channel, grade control structures, floodplain areas, and reconstructed wetland, shall be repaired/replaced at the Contractor's expense. Furthermore, the Contractor shall protect all previously installed revegetation treatments and irrigation equipment; and repair/replace all areas that are damaged as a result of the Contractors operations. The Contractor shall reshape, grade, and re-compact (where applicable) any areas subjected to displacement from vehicular traffic. The Contractor is responsible to locate, identify, and protect all existing utilities from damage.

300.02 Structural Fill

Fill to be placed beneath structures, junction boxes, asphalt pavements, concrete slabs, buildings, and all other components subject to structural loading shall conform to the requirements of Section 200.01.09 "Structural Fill", of the Standard Specifications, as shown on the Project Plans, as described in other applicable sections of these Special Technical Specifications, and as directed by the Engineer. Placement and construction methods for structure backfill shall conform to Section 304.07 "Structure Backfill" of the Standard Specifications.

The Contractor shall perform and/or submit all material testing reports and other data as necessary to provide the Engineer with established laboratory values for optimum moisture and maximum dry density, for any structural fill material requiring density testing.

300.03 Local Borrow (Native Fill)

Selected material and other local borrow native earthen material encountered and/or generated on-site in excavation within the project limits may be used as backfill where shown on the Plans for construction of the proposed creek channel and tie-in sections, as specified for backfill of existing channel, and/or placed in designated fill areas within the floodplain where shown on the Project Plans, as specified in the Special Technical Specifications, the Standard Specifications, or as directed by the Engineer. The Contractors attention is directed to Section 290.03, “Unsuitable and Surplus Material, and Stockpiles”, of these Special Technical Specifications.

All fill materials used in the work shall be in conformance with the Standard Specifications, these Special Technical Specifications, and at a minimum shall not exceed optimum moisture content, and be free of stones or lumps exceeding 3 inches in greatest dimension, organic matter, or other unsatisfactory material that may restrict compaction requirements. **Any native, local borrow, or imported borrow soils used for backfill shall be accepted by the Engineer prior to placement.** Any screening operations and processing of soils as required for conformance with this section shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

Local borrow (topsoil, and underlying native earthen soils) generated on-site in excavation within the project limits may be placed in the fill only in locations as specified on the Project Plans and described in these Special Technical Specifications.

Topsoil excavated and properly salvaged within the grading limits may be considered as a select material or local borrow only for the purpose of placement in areas to be planted or revegetated as specified elsewhere in these Special Technical Specifications, or as directed by the Engineer.

The Contractor shall perform and/or submit all material testing reports and other data as necessary to provide the Engineer with established laboratory values for optimum moisture and maximum dry density, for any local borrow native fill requiring density testing.

300.04 Import

Importing of earthwork fill material, if necessary or required to meet the grades and elevations shown on the plans, shall be considered included in the Contractor's bid for the various items of work involved and no additional compensation will be made therefore. Should such imported material be required, the Contractor shall notify the Engineer of the borrow site location at least 72 hours in advance, and provide an adequate sample size so the Engineer can verify the suitability of the material. All imported materials shall be proposed by the Contractor in writing in accordance with the submittal requirements of these Special Provisions and the Standard Specifications.

The Contractor shall perform and/or submit all material testing reports and other data as necessary to provide the Engineer with established laboratory values for optimum moisture and maximum dry density, for any imported material requiring density testing.

300.05 Backfill of Existing Channel

Backfill, grading, and compaction of the existing creek channel shall produce a finished grade surface to the lines and grades as shown on the Project Plans, and all work shall be in conformance with the applicable sections of these Special Technical Specifications, and as directed by the Engineer. Placement of topsoil and associated finish grading, and revegetation treatments shall be as specified elsewhere in these Special Technical Specifications, or as directed by the Engineer.

The Contractor is only permitted to use “low impact equipment” within the floodplain/SEZ areas for completion of this work. The Contractor’s attention is directed to Section 120, “Project Permits”, and

Section 180.05, Wetland Temporary Construction Access Road, of these Special Technical Specifications.

Earthen materials used for native fill, import, engineered fill, or low permeable channel fill shall be in conformance with the requirements stated herein. Placement, layering, compaction, and locations of the fill materials to create a distinct soil profile to produce a finished grade surface shall be as shown on the Project Plans, described herein, and as directed by the Engineer.

Execution of Work

Prior to the placement of fill materials the exposed channel sub-grade should be cleared of excessively loose or disturbed soil and stone materials, large woody debris, vegetation, organic matter, and other waste materials (i.e. clearing and grubbing). No fill should be placed on frozen ground; and placement of fill on or in standing water will not be allowed. If soft, wet, or pumping subgrade soils are present, the required minimum level of compaction for the initial fill lift shall be eighty-five percent (85%) of the soil's maximum dry density as determined in accordance with ASTM D 1557. The intent of the reduction is to limit the amount of construction traffic that could lead to further deterioration and destabilization of the exposed subgrade and to build a more stable pad upon which to place subsequent fill lifts.

Fills shall be placed in loose lifts not to exceed eight (8) inches and shall be compacted to not less than ninety percent (90%) of the soil's maximum dry density as determined in accordance with ASTM D 1557. Pumping or deflection within fill lifts is acceptable as long as the required level of compaction is being met and does not preclude achieving adequate density in subsequent lifts. No frozen fill should be placed. Placement and compaction of the channel fills should be accomplished under full-time observation and testing.

Fill shall be benched into existing channel sidewalls where sidewall slopes exceed 4:1 (V:H). Benches shall be two feet (2') wide, minimum, cut into the channel sidewall parallel to the alignment.

Native Fill

Soils used as Native Fill should consist of native materials generated during construction operations for the new channel area or floodplain grading, following associated clearing and grubbing and topsoil salvage. Native fill generated on site should be relatively free (i.e. less than 5 percent) of organics. Import fill, if required or desired for use, shall be free of organics and other perishable material and meet the requirements as noted below. For placement in the work, all native fill or import shall be free of construction debris and shall meet the following requirements:

<u>Sieve Size</u>	<u>Percent Passing (by dry weight)</u>
6"	100
4"	90 - 100
¾"	70-100
No. 40	10-85
No. 200	8-45
Liquid Limit	60 max.
Plasticity Index	30 max.

The Contractor shall perform and submit material testing reports and other data as necessary to validate the source and makeup of the native fill or import fill selected for placement in the work, and to provide the Engineer with established laboratory values for optimum moisture and maximum dry density, for any fill material requiring density testing. Any proposed native fill or import fill that deviates from the criteria

stated herein, shall have written acceptance from the Engineer and geotechnical engineer prior to import or placement in the work.

The Contractor is hereby advised that some of the on-site soils may be saturated and will require drying prior to placement in order to achieve the specified degree of compaction.

Engineered Fill

Soils used as Engineered Fill should consist of import. Engineered fill shall be free of organics, perishable material, and construction debris. In addition, engineered fill shall meet the following requirements:

<u>Sieve Size</u>	<u>Percent Passing (by dry weight)</u>
4"	90 - 100
¾"	70 - 100
No. 40	15 - 70
No. 200	5 - 30
Liquid Limit	35 max.
Plasticity Index	15 max.

The Contractor shall perform and submit material testing reports and other data as necessary to validate the source and makeup of the engineered fill selected for placement in the work, and to provide the Engineer with established laboratory values for optimum moisture and maximum dry density, for any fill material requiring density testing. Any proposed engineered fill that deviates from the criteria stated herein, shall have written acceptance from the Engineer and geotechnical engineer prior to import or placement in the work.

Low Permeable Channel Fill

Soils used as Low Permeable Channel Fill within the Permanent and Temporary Buried Protection can consist of import or native materials generated during construction operations for the new channel area or floodplain grading, following associated clearing and grubbing and topsoil salvage. It should be cautioned that although select material exists on site that meets the specification herein; selective location, grading and excavation techniques to isolate those materials may be difficult. Any low permeable channel fill generated on site should be relatively free (i.e. less than 5 percent) of organics. Import low permeable channel fill shall be free of organics and other perishable material. All low permeable channel fill shall be free of construction debris and shall meet the following requirements:

<u>Sieve Size</u>	<u>Percent Passing (by dry weight)</u>
¾"	70-100
No. 40	50-100
No. 200	> 40
Plasticity Index	15 min.

The Contractor shall perform and submit material testing reports and other data as necessary to validate the source and makeup of the low permeable channel fill selected for placement in the work, and to provide the Engineer with established laboratory values for optimum moisture and maximum dry density, for any fill material requiring density testing. Any proposed native or import low permeable channel fill

that deviates from the criteria stated herein, shall have written acceptance from the Engineer and geotechnical engineer prior to import or placement in the work.

The Contractor is hereby advised that some of the on-site soils may be saturated and will require drying prior to placement in order to achieve the specified degree of compaction.

300.06 Topsoil Placement

Placement of topsoil (salvage, import, or amended fill) to the required thickness, including any associated finish grading and compaction, shall produce a finished surface to the lines and grades as shown on the Project Plans, and all work shall be in conformance with the applicable sections of these Special Technical Specifications. The topsoil (salvage, import, or amended fill) shall be placed to blend with the adjacent project improvements and floodplain areas to create a generally smooth, natural appearance (including minor variations) as directed by the Engineer; and to create a stable area to receive all proposed revegetation treatments as specified elsewhere in these Special Technical Specifications.

Prior to any topsoil placement the underlying subgrade shall be graded to comply with the Soil Roughness requirement as noted elsewhere in these Special Technical Specifications (Section 600, "Soil Revegetation Treatment"). Topsoil shall be placed to uniform depths and under no circumstances shall be utilized solely to meet the said Soil Roughness requirement.

Following completion of excavations, fills, grading, compaction, placement of aggregates, and construction of all proposed improvements as shown on the Project Plans as required prior to placement of any topsoil (salvage, import, or amended fill), the Contractor shall schedule for a site inspection by the Engineer and Revegetation Specialist (minimum of 4 working days notice required) in order to inspect the subject work area for conformance with the contract documents, plans, and specifications. **Placement of topsoil shall not commence until the Engineer and Revegetation Specialist have inspected and accepted the subject work area.** In addition the base soils will be inspected (using a soil probe or penetrometer) for any areas of excessive compaction. Upon discovery the Engineer will mark all areas/items required for corrective measures, and mark the limits of areas where soils shall be loosened/decompacted in order to commence placement of topsoil (salvage, import, or amended fill) and subsequent installation of the revegetation treatments in accordance with the applicable provisions of Section 600, "Soil Revegetation Treatment" of these Special Technical Specifications.

Salvaged topsoil shall only be generated from the project site (within the limits of grading) as specified in Sections 210.02 "Clearing and Grubbing" and 600 "Soil Revegetation Treatment" of these Special Technical Specifications.

Earthen materials used for imported topsoil or amended fill shall be imported to the project site and/or produced on-site, and all construction and materials shall be in conformance with the Plans and applicable portions of these Special Technical Specifications and Standard Specifications. Attention is directed to Section 600 "Soil Revegetation Treatment" of these Special Technical Specifications for specific material requirements for the imported topsoil and amended fill.

The Contractor shall perform and submit material testing reports and other data as necessary to validate the source and makeup of the topsoil (salvage, import, or amended fill) selected for placement in the work, and to provide the Engineer with established laboratory values for optimum moisture and maximum dry density, for any topsoil material requiring density testing. Any proposed topsoil (salvage, import, or amended fill) that deviates from the criteria stated in the specifications (Section 600 "Soil Revegetation Treatment" of these Special Technical Specifications), shall have written acceptance from the Engineer, geotechnical engineer, and revegetation specialist prior to import or placement in the work.

300.07 Measurement and Payment

“BACKFILL OF EXISTING CHANNEL, PHASE 3” shall be measured on per cubic yard basis (all fill within the designated floodplain area, excluding roadway) as quantified per the earthwork determination (pre-construction and post construction surveys) accepted by the Engineer as conforming to all the requirements in the complete work. Any associated contour grading and other general earthwork movement as required to complete the work shall be considered as included in the unit price paid per cubic yard as quantified herein.

The unit price paid for “BACKFILL OF EXISTING CHANNEL, PHASE 3” shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the earthwork involved, including but not limited to, import, excavation, loading, transport, fills, backfill, grading, compacting, disposal of unsuitable or surplus materials, and otherwise manipulating the existing ground surface and soils, and placing additional local borrow or import soils as required for the grading, construction, and backfill of the designated existing creek channel areas, for a complete job in place to the lines and grades as shown on the Project Plans, and specified in the Contract Documents, Project Permits, SWPPP, Standard Specifications, these Special Technical Specifications, and as directed by the Engineer, and no additional compensation will be allowed.

Full compensation for conforming to the provisions of this Section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

310 PROPOSED CREEK CHANNEL

310.01 General

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary to construct the proposed creek channel types and sections to the limits shown and in accordance with the Project Plans, Contract Documents, Standard Specifications, these Special Technical Specifications, SWPPP, Project Permit(s), and as directed by the Engineer and Revegetation Specialist.

310.02 Proposed Creek Channel Type 1

The designated area shall be cleared and grubbed, and excavated/fill to the lines and grades as shown on the Project Plans. The sub-grade shall be graded and compacted as shown on the Project Plans. Upon acceptance of the sub-grade by the Engineer the Contractor shall prepare (mixed thoroughly and uniformly as described on the Project Plans) and compact, the subbed of the channel section as shown on the Plans, and all stone materials, sand, aggregate, and any chinking shall be placed to the lines, grades, and dimensions as shown on the Project Plans, and as directed by the Engineer (in accordance with Section 400, “Gravel, Cobble, Rock, Boulder & Other Aggregates”, of these Special Technical Specifications). The Contractor shall uniformly distribute stone materials to produce the required gradation of rock and to meet finished grades as shown on the Project Plans. As the work progresses the Contractor shall backfill and compact around the sides and edges of all stone materials to produce a stable channel subbed. Following the placement of the subbed, and acceptance by the Engineer, the contractor shall prepare (mixed thoroughly and uniformly as described on the Project Plans) and compact, the bed of the channel section as shown on the Plans, and all stone materials, sand, and aggregate shall be placed to the lines, grades, and dimensions as shown on the Project Plans, and as directed by the Engineer (in accordance with Section 400, “Gravel, Cobble, Rock, Boulder & Other Aggregates”, of these Special Technical Specifications). The Contractor shall uniformly distribute stone materials to produce the required gradation of rock and to meet finished grades as shown on the Project Plans. As the work progresses the Contractor shall backfill and compact around the sides and edges of all stone materials to produce a stable channel bed. During the placement of the channel bed the Contractor shall place the toe

rock on both sides of the channel, as shown on the Project Plans. The bed materials shall be filled and compacted around all edges of the toe rock not to be exposed to fill all the voids around the toe rock.

Following the placement of all stone materials, sand, aggregate, and chinking, for the subbed and bed, as accepted by the Engineer, the Contractor shall then properly place and compact all designated fill (as specified on the plans) to create the banks of the proposed creek channel and produce a firm and stable creek channel to the lines, grades, and dimensions as shown on the Project Plans and as directed by the Engineer. All fill including topsoil shall be placed to the required thickness, and finish graded to blend with the adjacent floodplain areas to create a smooth, natural appearance as directed by the Engineer; and to create a stable area to receive all proposed revegetation treatments as specified elsewhere in these Special Technical Specifications.

The alignment, elevations, grades, slopes, dimensions, etc. of the proposed creek channel is shown on the Project Plans to provide a basis for construction and bidding purposes. The Engineer is expected to make minor revisions and provide direction in the field to fit any varying field conditions. The Contractor shall include all costs for working under the direction of the Engineer in his/her bid for this work, as no additional compensation will be allow therefore. Removal and disposal of all excess materials and waste debris shall be as specified elsewhere in these Special Technical Specifications.

310.03 Proposed Creek Channel Type 2

The designated area shall be cleared and grubbed, and excavated/fill to the lines and grades as shown on the Project Plans. The sub-grade shall be graded and compacted as shown on the Project Plans. Upon acceptance of the sub-grade by the Engineer the Contractor shall prepare (mixed thoroughly and uniformly as described on the Project Plans) and compact, the subbed of the channel section as shown on the Plans, and all stone materials, sand, aggregate, and any chinking shall be placed to the lines, grades, and dimensions as shown on the Project Plans, and as directed by the Engineer (in accordance with Section 400, "Gravel, Cobble, Rock, Boulder & Other Aggregates", of these Special Technical Specifications). The Contractor shall uniformly distribute stone materials to produce the required gradation of rock and to meet finished grades as shown on the Project Plans. As the work progresses the Contractor shall backfill and compact around the sides and edges of all stone materials to produce a stable channel subbed. Following the placement of the subbed, and acceptance by the Engineer, the contractor shall prepare (mixed thoroughly and uniformly as described on the Project Plans) and compact, the bed of the channel section as shown on the Plans, and all stone materials, sand, and aggregate shall be placed to the lines, grades, and dimensions as shown on the Project Plans, and as directed by the Engineer (in accordance with Section 400, "Gravel, Cobble, Rock, Boulder & Other Aggregates", of these Special Technical Specifications). The Contractor shall uniformly distribute stone materials to produce the required gradation of rock and to meet finished grades as shown on the Project Plans. As the work progresses the Contractor shall backfill and compact around the sides and edges of all stone materials to produce a stable channel bed. During the placement of the channel bed the Contractor shall place the toe rock on both sides of the channel, as shown on the Project Plans. The bed materials shall be filled and compacted around all edges of the toe rock not to be exposed to fill all the voids around the toe rock.

Following the placement of all stone materials, sand, aggregate, and chinking, for the subbed and bed, as accepted by the Engineer, the Contractor shall then properly place and compact all designated fill (as specified on the plans) to create the banks of the proposed creek channel and produce a firm and stable creek channel to the lines, grades, and dimensions as shown on the Project Plans and as directed by the Engineer. All fill including topsoil shall be placed to the required thickness, and finish graded to blend with the adjacent floodplain areas to create a smooth, natural appearance as directed by the Engineer; and

to create a stable area to receive all proposed revegetation treatments as specified elsewhere in these Special Technical Specifications.

The alignment, elevations, grades, slopes, dimensions, etc. of the proposed creek channel is shown on the Project Plans to provide a basis for construction and bidding purposes. The Engineer is expected to make minor revisions and provide direction in the field to fit any varying field conditions. The Contractor shall include all costs for working under the direction of the Engineer in his/her bid for this work, as no additional compensation will be allow therefore. Removal and disposal of all excess materials and waste debris shall be as specified elsewhere in these Special Technical Specifications.

310.04 Proposed Creek Channel Type 3

The designated area shall be cleared and grubbed, and excavated/fill to the lines and grades as shown on the Project Plans. The sub-grade shall be graded and compacted as shown on the Project Plans. Upon acceptance of the sub-grade by the Engineer the Contractor shall prepare (mixed thoroughly and uniformly as described on the Project Plans) and compact, the subbed of the channel section as shown on the Plans, and all stone materials, sand, aggregate, and any chinking shall be placed to the lines, grades, and dimensions as shown on the Project Plans, and as directed by the Engineer (in accordance with Section 400, "Gravel, Cobble, Rock, Boulder & Other Aggregates", of these Special Technical Specifications). The Contractor shall uniformly distribute stone materials to produce the required gradation of rock and to meet finished grades as shown on the Project Plans. As the work progresses the Contractor shall backfill and compact around the sides and edges of all stone materials to produce a stable channel subbed. Following the placement of the subbed, and acceptance by the Engineer, the contractor shall prepare (mixed thoroughly and uniformly as described on the Project Plans) and compact, the bed of the channel section as shown on the Plans, and all stone materials, sand, and aggregate shall be placed to the lines, grades, and dimensions as shown on the Project Plans, and as directed by the Engineer (in accordance with Section 400, "Gravel, Cobble, Rock, Boulder & Other Aggregates", of these Special Technical Specifications). The Contractor shall uniformly distribute stone materials to produce the required gradation of rock and to meet finished grades as shown on the Project Plans. As the work progresses the Contractor shall backfill and compact around the sides and edges of all stone materials to produce a stable channel bed. During the placement of the channel bed the Contractor shall place the toe rock on both sides of the channel, as shown on the Project Plans. The bed materials shall be filled and compacted around all edges of the toe rock not to be exposed to fill all the voids around the toe rock.

Following the placement of all stone materials, sand, aggregate, and chinking, for the subbed and bed, as accepted by the Engineer, the Contractor shall then properly place and compact all designated fill (as specified on the plans) to create the banks of the proposed creek channel and produce a firm and stable creek channel to the lines, grades, and dimensions as shown on the Project Plans and as directed by the Engineer. All fill including topsoil shall be placed to the required thickness, and finish graded to blend with the adjacent floodplain areas to create a smooth, natural appearance as directed by the Engineer; and to create a stable area to receive all proposed revegetation treatments as specified elsewhere in these Special Technical Specifications.

The alignment, elevations, grades, slopes, dimensions, etc. of the proposed creek channel is shown on the Project Plans to provide a basis for construction and bidding purposes. The Engineer is expected to make minor revisions and provide direction in the field to fit any varying field conditions. The Contractor shall include all costs for working under the direction of the Engineer in his/her bid for this work, as no additional compensation will be allow therefore. Removal and disposal of all excess materials and waste debris shall be as specified elsewhere in these Special Technical Specifications.

310.05 Proposed Creek Channel Type 4

The designated area shall be cleared and grubbed, and excavated/fill to the lines and grades as shown on the Project Plans. The sub-grade shall be graded and compacted as shown on the Project Plans. Upon acceptance of the sub-grade by the Engineer the Contractor shall prepare (mixed thoroughly and uniformly as described on the Project Plans) and compact, the subbed of the channel section as shown on the Plans, and all stone materials, sand, aggregate, and any chinking shall be placed to the lines, grades, and dimensions as shown on the Project Plans, and as directed by the Engineer (in accordance with Section 400, "Gravel, Cobble, Rock, Boulder & Other Aggregates", of these Special Technical Specifications). The Contractor shall uniformly distribute stone materials to produce the required gradation of rock and to meet finished grades as shown on the Project Plans. As the work progresses the Contractor shall backfill and compact around the sides and edges of all stone materials to produce a stable channel subbed. Following the placement of the subbed, and acceptance by the Engineer, the contractor shall prepare (mixed thoroughly and uniformly as described on the Project Plans) and compact, the bed of the channel section as shown on the Plans, and all stone materials, sand, and aggregate shall be placed to the lines, grades, and dimensions as shown on the Project Plans, and as directed by the Engineer (in accordance with Section 400, "Gravel, Cobble, Rock, Boulder & Other Aggregates", of these Special Technical Specifications). The Contractor shall uniformly distribute stone materials to produce the required gradation of rock and to meet finished grades as shown on the Project Plans. As the work progresses the Contractor shall backfill and compact around the sides and edges of all stone materials to produce a stable channel bed. During the placement of the channel bed the Contractor shall place the toe rock on both sides of the channel, as shown on the Project Plans. The bed materials shall be filled and compacted around all edges of the toe rock not to be exposed to fill all the voids around the toe rock. Any willow/alder rootwads and/or willow stakes shall be incorporated with the work as necessary in order to meet the revegetation treatment requirements as shown on the Project Plans and as described in these Special Technical Specifications (see Section 600, "Soil Revegetation Treatment").

Following the placement of all stone materials, sand, aggregate, and chinking, for the subbed and bed, as accepted by the Engineer, the Contractor shall then properly place and compact all designated fill (as specified on the plans) to create the banks of the proposed creek channel and produce a firm and stable creek channel to the lines, grades, and dimensions as shown on the Project Plans and as directed by the Engineer. All fill including topsoil shall be placed to the required thickness, and finish graded to blend with the adjacent floodplain areas to create a smooth, natural appearance as directed by the Engineer; and to create a stable area to receive all proposed revegetation treatments as specified elsewhere in these Special Technical Specifications.

The alignment, elevations, grades, slopes, dimensions, etc. of the proposed creek channel is shown on the Project Plans to provide a basis for construction and bidding purposes. The Engineer is expected to make minor revisions and provide direction in the field to fit any varying field conditions. The Contractor shall include all costs for working under the direction of the Engineer in his/her bid for this work, as no additional compensation will be allow therefore. Removal and disposal of all excess materials and waste debris shall be as specified elsewhere in these Special Technical Specifications.

310.06 Proposed Creek Channel Type Transition Section

Proposed creek channel type transition areas, as shown on the project Plans ("PR" sheets of the Project Plans) shall be constructed by the Contractor to evenly and uniformly transition between the different channel types over the designated length of the Channel. The contractor shall NOT make any abrupt transitions and all transitions shall be accepted by the Engineer. Should the Engineer not accept a transition constructed by the Contractor, the Contractor shall remove the transition and replace the transition to the acceptance of the Engineer. Any modifications, revisions and replacement of the transition areas shall be performed by the Contractor with no additional compensation or working time allowed for.

The designated area shall be cleared and grubbed, and excavated/fill to the lines and grades as shown on the Project Plans. The sub-grade shall be graded and compacted as shown on the Project Plans. Upon acceptance of the sub-grade by the Engineer the Contractor shall prepare (mixed thoroughly and uniformly as described on the Project Plans) and compact, the subbed of the channel section as shown on the Plans, and all stone materials, sand, aggregate, and any chinking shall be placed to the lines, grades, and dimensions as shown on the Project Plans, and as directed by the Engineer (in accordance with Section 400, "Gravel, Cobble, Rock, Boulder & Other Aggregates", of these Special Technical Specifications). The Contractor shall uniformly distribute stone materials to produce the required gradation of rock and to meet finished grades as shown on the Project Plans. As the work progresses the Contractor shall backfill and compact around the sides and edges of all stone materials to produce a stable channel subbed. Following the placement of the subbed, and acceptance by the Engineer, the contractor shall prepare (mixed thoroughly and uniformly as described on the Project Plans) and compact, the bed of the channel section as shown on the Plans, and all stone materials, sand, and aggregate shall be placed to the lines, grades, and dimensions as shown on the Project Plans, and as directed by the Engineer (in accordance with Section 400, "Gravel, Cobble, Rock, Boulder & Other Aggregates", of these Special Technical Specifications). The Contractor shall uniformly distribute stone materials to produce the required gradation of rock and to meet finished grades as shown on the Project Plans. As the work progresses the Contractor shall backfill and compact around the sides and edges of all stone materials to produce a stable channel bed. During the placement of the channel bed the Contractor shall place the toe rock on both sides of the channel, as shown on the Project Plans. The bed materials shall be filled and compacted around all edges of the toe rock not to be exposed to fill all the voids around the toe rock. Any willow/alder rootwads and/or willow stakes shall be incorporated with the work as necessary in order to meet the revegetation treatment requirements as shown on the Project Plans and as described in these Special Technical Specifications (see Section 600, "Soil Revegetation Treatment").

Following the placement of all stone materials, sand, aggregate, and chinking, for the subbed and bed, as accepted by the Engineer, the Contractor shall then properly place and compact all designated fill (as specified on the plans) to create the banks of the proposed creek channel and produce a firm and stable creek channel to the lines, grades, and dimensions as shown on the Project Plans and as directed by the Engineer. All fill including topsoil shall be placed to the required thickness, and finish graded to blend with the adjacent floodplain areas to create a smooth, natural appearance as directed by the Engineer; and to create a stable area to receive all proposed revegetation treatments as specified elsewhere in these Special Technical Specifications.

The alignment, elevations, grades, slopes, dimensions, etc. of the proposed creek channel is shown on the Project Plans to provide a basis for construction and bidding purposes. The Engineer is expected to make minor revisions and provide direction in the field to fit any varying field conditions. The Contractor shall include all costs for working under the direction of the Engineer in his/her bid for this work, as no additional compensation will be allow therefore. Removal and disposal of all excess materials and waste debris shall be as specified elsewhere in these Special Technical Specifications.

310.07 Proposed Creek Channel, Culvert Outlet Treatment

The designated area shall be cleared and grubbed, and excavated/fill to the lines and grades as shown on the Project Plans. The sub-grade shall be graded and compacted as shown on the Project Plans. Upon acceptance of the sub-grade by the Engineer the Contractor shall prepare (mixed thoroughly and uniformly as described on the Project Plans) and compact, the subbed of the treatment area as shown on the Plans, and all stone materials, sand, aggregate, and any chinking shall be placed to the lines, grades, and dimensions as shown on the Project Plans, and as directed by the Engineer (in accordance with Section 400, "Gravel, Cobble, Rock, Boulder & Other Aggregates", of these Special Technical Specifications). The Contractor shall uniformly distribute stone materials to produce the required

gradation of rock and to meet finished grades as shown on the Project Plans. As the work progresses the Contractor shall backfill and compact around the sides and edges of all stone materials to produce a stable subbed. Following the placement of the subbed, and acceptance by the Engineer, the contractor shall prepare (mixed thoroughly and uniformly as described on the Project Plans) and compact, the bed of the treatment area as shown on the Plans, and all stone materials, sand, and aggregate shall be placed to the lines, grades, and dimensions as shown on the Project Plans, and as directed by the Engineer (in accordance with Section 400, "Gravel, Cobble, Rock, Boulder & Other Aggregates", of these Special Technical Specifications). The Contractor shall uniformly distribute stone materials to produce the required gradation of rock and to meet finished grades as shown on the Project Plans. As the work progresses the Contractor shall backfill and compact around the sides and edges of all stone materials to produce a stable bed.

Each step control rock structure and culvert outlet control structure shall be constructed as shown on the Plans, including chinking of all void spaces. The structures shall be constructed in the same fashion as the channel grade control structures (Section 320, "Channel Grade Control Structure"), with the size and type of material shown on the Project Plans.

All fill including topsoil shall be placed to the required thickness, and finish graded to blend with the adjacent floodplain areas to create a smooth, natural appearance as directed by the Engineer; and to create a stable area to receive all proposed revegetation treatments as specified elsewhere in these Special Technical Specifications.

The alignment, elevations, grades, slopes, dimensions, etc. of the proposed culvert outlet treatment is shown on the Project Plans to provide a basis for construction and bidding purposes. The Engineer is expected to make minor revisions and provide direction in the field to fit any varying field conditions. The Contractor shall include all costs for working under the direction of the Engineer in his/her bid for this work, as no additional compensation will be allow therefore. Removal and disposal of all excess materials and waste debris shall be as specified elsewhere in these Special Technical Specifications.

310.08 Proposed Creek Channel, Tie-In Section (Downstream)

The designated area shall be cleared and grubbed, and excavated/fill to the lines and grades as shown on the Project Plans. The sub-grade shall be graded and compacted as shown on the Project Plans. Upon acceptance of the sub-grade by the Engineer the Contractor shall install the Coir Fabric as shown on the Project Plans. Coir fabric shall be overlapped with the direction of flow, a minimum of twelve to eighteen (12-18) inches. Upon acceptance of the coir fabric installation by the Engineer the Contractor shall prepare (mixed thoroughly and uniformly as described on the Project Plans) and compact, the subbed of the channel section as shown on the Plans, and all stone materials, sand, aggregate, and any chinking shall be placed to the lines, grades, and dimensions as shown on the Project Plans, and as directed by the Engineer (in accordance with Section 400, "Gravel, Cobble, Rock, Boulder & Other Aggregates", of these Special Technical Specifications). The Contractor shall uniformly distribute stone materials to produce the required gradation of rock and to meet finished grades as shown on the Project Plans. As the work progresses the Contractor shall backfill and compact around the sides and edges of all stone materials to produce a stable channel subbed. Following the placement of the subbed, and acceptance by the Engineer, the contractor shall prepare (mixed thoroughly and uniformly as described on the Project Plans) and compact, the bed of the channel section as shown on the Plans, and all stone materials, sand, and aggregate shall be placed to the lines, grades, and dimensions as shown on the Project Plans, and as directed by the Engineer (in accordance with Section 400, "Gravel, Cobble, Rock, Boulder & Other Aggregates", of these Special Technical Specifications). The Contractor shall uniformly distribute stone materials to produce the required gradation of rock and to meet finished grades as shown on the Project Plans. As the work progresses the Contractor shall backfill and compact around the sides and edges of all stone materials to produce a stable channel bed. During the placement of the channel bed

the Contractor shall place the toe rock on both sides of the channel, as shown on the Project Plans. The bed materials shall be filled and compacted around all edges of the toe rock not to be exposed to fill all the voids around the toe rock.

Following the placement of all stone materials, sand, aggregate, and chinking, for the subbed and bed, as accepted by the Engineer, the Contractor shall then properly place and compact all designated fill (as specified on the plans) to create the banks of the proposed creek channel and produce a firm and stable creek channel to the lines, grades, and dimensions as shown on the Project Plans and as directed by the Engineer. All fill including topsoil shall be placed to the required thickness, and finish graded to blend with the adjacent floodplain areas to create a smooth, natural appearance as directed by the Engineer; and to create a stable area to receive all proposed revegetation treatments as shown on the Project Plans (Sheets TI-1 through TI-4 of the Project Plans) and as specified elsewhere in these Special Technical Specifications.

The alignment, elevations, grades, slopes, dimensions, etc. of the proposed creek channel is shown on the Project Plans to provide a basis for construction and bidding purposes. The Engineer is expected to make minor revisions and provide direction in the field to fit any varying field conditions. The Contractor shall include all costs for working under the direction of the Engineer in his/her bid for this work, as no additional compensation will be allowed therefore. Removal and disposal of all excess materials and waste debris shall be as specified elsewhere in these Special Technical Specifications.

310.09 Proposed Creek Channel, Tie-In Section (Crossing)

The designated area shall be cleared and grubbed, and excavated/fill to the lines and grades as shown on the Project Plans. The sub-grade shall be graded and compacted as shown on the Project Plans. Upon acceptance of the sub-grade by the Engineer the Contractor shall install the Coir Fabric as shown on the Project Plans. Coir fabric shall be overlapped with the direction of flow, a minimum of twelve to eighteen (12-18) inches. Upon acceptance of the coir fabric installation by the Engineer the Contractor shall prepare (mixed thoroughly and uniformly as described on the Project Plans) and compact, the subbed of the channel section as shown on the Plans, and all stone materials, sand, aggregate, and any chinking shall be placed to the lines, grades, and dimensions as shown on the Project Plans, and as directed by the Engineer (in accordance with Section 400, "Gravel, Cobble, Rock, Boulder & Other Aggregates", of these Special Technical Specifications). The Contractor shall uniformly distribute stone materials to produce the required gradation of rock and to meet finished grades as shown on the Project Plans. As the work progresses the Contractor shall backfill and compact around the sides and edges of all stone materials to produce a stable channel subbed. Following the placement of the subbed, and acceptance by the Engineer, the contractor shall prepare (mixed thoroughly and uniformly as described on the Project Plans) and compact, the bed of the channel section as shown on the Plans, and all stone materials, sand, and aggregate shall be placed to the lines, grades, and dimensions as shown on the Project Plans, and as directed by the Engineer (in accordance with Section 400, "Gravel, Cobble, Rock, Boulder & Other Aggregates", of these Special Technical Specifications). The Contractor shall uniformly distribute stone materials to produce the required gradation of rock and to meet finished grades as shown on the Project Plans. As the work progresses the Contractor shall backfill and compact around the sides and edges of all stone materials to produce a stable channel bed. During the placement of the channel bed the Contractor shall place the toe rock on both sides of the channel, as shown on the Project Plans. The bed materials shall be filled and compacted around all edges of the toe rock not to be exposed to fill all the voids around the toe rock.

Following the placement of all stone materials, sand, aggregate, and chinking, for the subbed and bed, as accepted by the Engineer, the Contractor shall then properly place and compact all designated fill (as specified on the plans) to create the banks of the proposed creek channel and produce a firm and stable creek channel to the lines, grades, and dimensions as shown on the Project Plans and as directed by the

Engineer. All fill including topsoil shall be placed to the required thickness, and finish graded to blend with the adjacent floodplain areas to create a smooth, natural appearance as directed by the Engineer; and to create a stable area to receive all proposed revegetation treatments as shown on the Project Plans (Sheets TI-5 through TI-13 of the Project Plans) and as specified elsewhere in these Special Technical Specifications.

The Backfill and compaction of the existing channel shown on the Project Plans (Sheets TI-5 through TI-13 of the Project Plans) shall not be done until the proposed channel is active and accepted by the Engineer. The backfill of the existing channel in these locations will be done at the time of the remainder of the existing channel backfill as shown on the Project Plans and as described in these Special Technical Specifications.

The alignment, elevations, grades, slopes, dimensions, etc. of the proposed creek channel is shown on the Project Plans to provide a basis for construction and bidding purposes. The Engineer is expected to make minor revisions and provide direction in the field to fit any varying field conditions. The Contractor shall include all costs for working under the direction of the Engineer in his/her bid for this work, as no additional compensation will be allowed therefore. Removal and disposal of all excess materials and waste debris shall be as specified elsewhere in these Special Technical Specifications.

310.10 Proposed Creek Channel, Tie-In Section (Upstream)

The designated area shall be cleared and grubbed, and excavated/fill to the lines and grades as shown on the Project Plans. The sub-grade shall be graded and compacted as shown on the Project Plans. Upon acceptance of the sub-grade by the Engineer the Contractor shall install the Coir Fabric as shown on the Project Plans. Coir fabric shall be overlapped with the direction of flow, a minimum of twelve to eighteen (12-18) inches. Upon acceptance of the coir fabric installation by the Engineer the Contractor shall prepare (mixed thoroughly and uniformly as described on the Project Plans) and compact, the subbed of the channel section as shown on the Plans, and all stone materials, sand, aggregate, and any chinking shall be placed to the lines, grades, and dimensions as shown on the Project Plans, and as directed by the Engineer (in accordance with Section 400, "Gravel, Cobble, Rock, Boulder & Other Aggregates", of these Special Technical Specifications). The Contractor shall uniformly distribute stone materials to produce the required gradation of rock and to meet finished grades as shown on the Project Plans. As the work progresses the Contractor shall backfill and compact around the sides and edges of all stone materials to produce a stable channel subbed. Following the placement of the subbed, and acceptance by the Engineer, the contractor shall prepare (mixed thoroughly and uniformly as described on the Project Plans) and compact, the bed of the channel section as shown on the Plans, and all stone materials, sand, and aggregate shall be placed to the lines, grades, and dimensions as shown on the Project Plans, and as directed by the Engineer (in accordance with Section 400, "Gravel, Cobble, Rock, Boulder & Other Aggregates", of these Special Technical Specifications). The Contractor shall uniformly distribute stone materials to produce the required gradation of rock and to meet finished grades as shown on the Project Plans. As the work progresses the Contractor shall backfill and compact around the sides and edges of all stone materials to produce a stable channel bed. During the placement of the channel bed the Contractor shall place the toe rock on both sides of the channel, as shown on the Project Plans. The bed materials shall be filled and compacted around all edges of the toe rock not to be exposed to fill all the voids around the toe rock.

Following the placement of all stone materials, sand, aggregate, and chinking, for the subbed and bed, as accepted by the Engineer, the Contractor shall then properly place and compact all designated fill (as specified on the plans) to create the banks of the proposed creek channel and produce a firm and stable creek channel to the lines, grades, and dimensions as shown on the Project Plans and as directed by the Engineer. All fill including topsoil shall be placed to the required thickness, and finish graded to blend with the adjacent floodplain areas to create a smooth, natural appearance as directed by the Engineer; and

to create a stable area to receive all proposed revegetation treatments as shown on the Project Plans (Sheets TI-14 through TI-18 of the Project Plans) and as specified elsewhere in these Special Technical Specifications.

The alignment, elevations, grades, slopes, dimensions, etc. of the proposed creek channel is shown on the Project Plans to provide a basis for construction and bidding purposes. The Engineer is expected to make minor revisions and provide direction in the field to fit any varying field conditions. The Contractor shall include all costs for working under the direction of the Engineer in his/her bid for this work, as no additional compensation will be allowed therefore. Removal and disposal of all excess materials and waste debris shall be as specified elsewhere in these Special Technical Specifications.

310.11 Measurement and Payment

“CHANNEL TYPE 1, PHASE 1”, “CHANNEL TYPE 2, PHASE 1”, “CHANNEL TYPE 3, PHASE 1”, “CHANNEL TYPE 4, PHASE 1”, “CHANNEL TYPE TRANSITION SECTION, PHASE 1”, “CULVERT OUTLET TREATMENT, PHASE 1”, “PROPOSED CREEK CHANNEL - TIE-IN SECTION (DOWNSTREAM), PHASE 3”, “PROPOSED CREEK CHANNEL - TIE-IN SECTION (CROSSING), PHASE 3”, and “PROPOSED CREEK CHANNEL - TIE-IN SECTION (UPSTREAM), PHASE 3” shall be measured on a per linear foot basis along the centerline of the facility (i.e. alignments as shown on the Project Plans), complete in place and accepted by the Engineer as conforming to all the requirements in the complete work.

The linear foot price for “CHANNEL TYPE 1, PHASE 1”, “CHANNEL TYPE 2, PHASE 1”, “CHANNEL TYPE 3, PHASE 1”, “CHANNEL TYPE 4, PHASE 1”, “CHANNEL TYPE TRANSITION SECTION, PHASE 1”, “CULVERT OUTLET TREATMENT, PHASE 1”, “PROPOSED CREEK CHANNEL - TIE-IN SECTION (DOWNSTREAM), PHASE 3”, “PROPOSED CREEK CHANNEL - TIE-IN SECTION (CROSSING), PHASE 3”, and “PROPOSED CREEK CHANNEL - TIE-IN SECTION (UPSTREAM), PHASE 3” shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in constructing the proposed creek channel types and sections, including but not limited to, excavation, sub-grade preparation, grading, stone materials, backfill, local borrow, import, compaction, and off-haul and disposal of excess materials, for a complete job in place to the lines, grades, and dimensions as shown on the Project Plans, and specified in the Contract Documents, Project Permits, SWPPP, Standard Specifications, these Special Technical Specifications, and as directed by the Engineer, and no additional compensation will be allowed.

320 CHANNEL GRADE CONTROL STRUCTURE

320.01 Description

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary to construct the channel grade control structure in accordance with the Project Plans, Contract Documents, Standard Specifications, these Special Technical Specifications, SWPPP, Project Permit(s), and as directed by the Engineer.

The designated area shall be cleared and grubbed, and excavated/fill to the lines and grades as shown on the Project Plans. The sub-grade shall be prepared and compacted as shown on the Plans, and all stone materials, including chinking, shall be placed to the lines, grades, and dimensions as shown on the Project Plans, and as directed by the Engineer (in accordance with Section 400, “Cobble, Rock, Boulder & Other Aggregates”, of these Special Technical Specifications). Uniformly distribute stone materials to produce the required configuration of the rock structure and to meet finished grades as shown on the Project Plans. As the work progresses, place all chinking and backfill and compact around the sides and edges of all stone materials to produce a stable structure, channel sub-grade and backing. Following the placement of all stone materials and chinking the Contractor shall then properly place and compact all designated fill

(as specified on the plans) to create the banks of the proposed creek channel and floodplain areas in order to produce a firm and stable creek channel and floodplain to the lines, grades, and dimensions as shown on the Project Plans and as directed by the Engineer. All fill including topsoil shall be placed to the required thickness, and finish graded to blend with the adjacent floodplain areas to create a smooth, natural appearance as directed by the Engineer; and to create a stable area to receive all proposed revegetation treatments as specified elsewhere in these Special Technical Specifications. Any willow/alder rootwads and/or willow stakes shall be incorporated with the work as necessary in order to meet the revegetation treatment requirements (see Section 600, "Soil Revegetation Treatment").

The location, angles, elevation, grade, dimensions, slope, etc. of the channel grade control structure is shown on the Project Plans to provide a basis for construction and bidding purposes. The Engineer is expected to make minor revisions and provide direction in the field to fit any varying field conditions. The Contractor shall include all costs for working under the direction of the Engineer in his/her bid for this work, as no additional compensation will be allow therefore. Removal and disposal of all excess materials and waste debris shall be as specified elsewhere in these Special Technical Specifications.

320.02 Measurement and Payment

"CHANNEL GRADE CONTROL STRUCTURE, PHASE 1" and "CHANNEL GRADE CONTROL STRUCTURE, PHASE 3" shall be measured on a per linear foot basis along the centerline of the facility (i.e. alignments as shown on the Project Plans), complete in place and accepted by the Engineer as conforming to all the requirements in the complete work.

The linear foot price for "CHANNEL GRADE CONTROL STRUCTURE, PHASE 1" and "CHANNEL GRADE CONTROL STRUCTURE, PHASE 3" shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in constructing the proposed creek channel types and sections, including but not limited to, excavation, sub-grade preparation, grading, stone materials, backfill, local borrow, import, compaction, and off-haul and disposal of excess materials, for a complete job in place to the lines, grades, and dimensions as shown on the Project Plans, and specified in the Contract Documents, Project Permits, SWPPP, Standard Specifications, these Special Technical Specifications, and as directed by the Engineer, and no additional compensation will be allowed.

330 VALLEY-WIDE GRADE CONTROL STRUCTURE

330.01 Description

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary to construct the valley-wide grade control structures in accordance with the Project Plans, Contract Documents, Standard Specifications, these Special Technical Specifications, SWPPP, Project Permit(s), and as directed by the Engineer.

The designated area shall be cleared and grubbed, and excavated/fill to the lines and grades as shown on the Project Plans. The sub-grade shall be prepared and compacted as shown on the Plans, and all stone materials, including chinking, shall be placed to the lines, grades, and dimensions as shown on the Project Plans, and as directed by the Engineer (in accordance with Section 400, "Cobble, Rock, Boulder & Other Aggregates", of these Special Technical Specifications). Uniformly distribute stone materials to produce the required configuration of the rock structure and to meet finished grades as shown on the Project Plans. As the work progresses, place all chinking and backfill and compact around the sides and edges of all stone materials to produce a stable structure, channel sub-grade and backing. Following the placement of all stone materials and chinking the Contractor shall then properly place and compact all designated fill (as specified on the plans) to create the banks of the proposed creek channel and floodplain areas in order to produce a firm and stable creek channel and floodplain to the lines, grades, and dimensions as shown on the Project Plans and as directed by the Engineer. All fill including topsoil shall be placed to the

required thickness, and finish graded to blend with the adjacent floodplain areas to create a smooth, natural appearance as directed by the Engineer; and to create a stable area to receive all proposed revegetation treatments as specified elsewhere in these Special Technical Specifications. Any willow/alder rootwads and/or willow stakes shall be incorporated with the work as necessary in order to meet the revegetation treatment requirements (see Section 600, “Soil Revegetation Treatment”).

The location, elevation, grade, dimensions, slope, etc. of the valley-wide grade control structure is shown on the Project Plans to provide a basis for construction and bidding purposes. The Engineer is expected to make minor revisions and provide direction in the field to fit any varying field conditions. The Contractor shall include all costs for working under the direction of the Engineer in his/her bid for this work, as no additional compensation will be allow therefore. Removal and disposal of all excess materials and waste debris shall be as specified elsewhere in these Special Technical Specifications.

330.02 Measurement and Payment

“VALLEY-WIDE GRADE CONTROL STRUCTURE, PHASE 1” and “VALLEY-WIDE GRADE CONTROL STRUCTURE, PHASE 3” shall be measured on a per linear foot basis along the centerline of the facility (i.e. alignments as shown on the Project Plans), complete in place and accepted by the Engineer as conforming to all the requirements in the complete work.

The linear foot price for “VALLEY-WIDE GRADE CONTROL STRUCTURE, PHASE 1” and “VALLEY-WIDE GRADE CONTROL STRUCTURE, PHASE 3” shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in constructing the proposed creek channel types and sections, including but not limited to, excavation, sub-grade preparation, grading, stone materials, backfill, local borrow, import, compaction, and off-haul and disposal of excess materials, for a complete job in place to the lines, grades, and dimensions as shown on the Project Plans, and specified in the Contract Documents, Project Permits, SWPPP, Standard Specifications, these Special Technical Specifications, and as directed by the Engineer, and no additional compensation will be allowed.

340 BURIED PROTECTION STRUCTURES

340.01 General

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary to construct the permanent and temporary buried protection structures in accordance with the Project Plans, Contract Documents, Standard Specifications, these Special Technical Specifications, SWPPP, Project Permit(s), and as directed by the Engineer.

All sub-grade preparation, specified fills, and compaction requirements shall be in conformance with Section 300, “Unclassified Fill”, of these Special Technical Specifications.

340.02 Permanent Buried Protection Structure

As indicated on the Project Plans, Permanent Buried Protection Structure shall consist of Low Permeability Channel Fill placed in a ten-feet (10') minimum thickness zone extending along the existing channel alignment, or other alignment as shown on the Project Plans, or as directed by the Engineer. Sub-grade preparation and Low Permeability Channel Fill compaction requirements shall be as addressed in other sections of these Special Technical Specifications. Low Permeability Channel Fill shall be keyed into the channel invert (*where applicable to backfill of existing channel*) for a minimum depth of two-feet (2') and extending at least twelve-inches (12") into the channel sidewall.

340.03 Temporary Buried Protection Structure

As indicated on the Project Plans, Temporary Buried Protection Structure shall consist of select stone aggregate material encased in a Low Permeability Geomembrane (Stego Wrap 15-mil, *Stego Industries*, or equal). Joints and seams shall be tight and sealed or taped in a manner consistent with the manufacturer's recommendations. In addition, overlap shall be a minimum of two-feet (2') and lapped in a direction consistent with the channel flow. Stone aggregate material within the Temporary Buried Protection Structure shall be placed to the thickness, lines and grades as shown on the Project Plans and as directed by the Engineer (and be in conformance with Section 400, "Cobble, Rock, Boulder & Other Aggregates", of these Special Technical Specifications).

Unless otherwise submitted and accepted (substitute), the stone aggregate material required for inclusion in the Temporary Buried Protection Structure as shown on the Plans shall generally meet the following gradation requirements:

<u>Sieve Size</u>	<u>Percent Passing</u>
6 inch	100
5 inch	70-85
3 inch	35-50
1 inch	5-15

The Temporary Buried Protection Structure where installed is intended to stay in place for the duration of the project, and is only required to be removed where it may obstruct or interfere with the proper construction of the proposed creek channel tie-in sections, floodplain grading, or other improvements completed as part of the Phase 3 work. Removal and disposal of any material and waste debris is the responsibility of the Contractor and shall be in accordance with provisions found elsewhere in these Special Technical Specifications.

340.04 Measurement and Payment

"PERMANENT BURIED PROTECTION STRUCTURE, PHASE 1", "TEMPORARY BURIED PROTECTION STRUCTURE, PHASE 1" and "PERMANENT BURIED PROTECTION STRUCTURE, PHASE 3" shall be measured on a per linear foot basis along the centerline of the facility, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work.

The linear foot price for "PERMANENT BURIED PROTECTION STRUCTURE, PHASE 3" shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in constructing the permanent buried protection structure, including but not limited to, excavation, sub-grade preparation, engineered fabrics, backfill, grading, compaction, and off-haul and disposal of excess materials, for a complete job in place to the lines, grades, and dimensions as shown on the Project Plans, and specified in the Contract Documents, Project Permits, SWPPP, Standard Specifications, these Special Technical Specifications, and as directed by the Engineer, and no additional compensation will be allowed.

The linear foot price for "TEMPORARY BURIED PROTECTION STRUCTURE, PHASE 1" shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in constructing and removing the temporary buried protection structure, including but not limited to, excavation, sub-grade preparation, engineered fabrics, backfill, grading, compaction, and off-haul and disposal of excess materials, removal, off-haul and disposal of removed portions of the temporary protection, for a complete job in place to the lines, grades, and dimensions as shown on the Project Plans, and specified in the Contract Documents, Project Permits, SWPPP, Standard Specifications, these Special Technical Specifications, and as directed by the Engineer, and no additional compensation will be allowed.

350 CONCRETE CUT-OFF WALL

350.01 Description

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary to construct the concrete cut-off wall in accordance with the Project Plans, Contract Documents, Standard Specifications, these Special Technical Specifications, SWPPP, Project Permit(s), and as directed by the Engineer. All concrete work applicable to this section shall be in accordance with Section 311, “Concrete Structures and Masonry Construction” of the Standard Specifications, except where modified herein. All concrete used shall be in conformance with Section 337.10, “General Structural Use Portland Cement Concrete” of the Standard Specifications. **The Contractor shall submit a concrete mix design (3000 psi) to the Engineer for review and acceptance at least ten (10) working days prior to placement in the work.**

The Contractor shall install/construct the concrete cut-off walls at the locations identified on the Project Plans as soon as practicable following the removal of the designated ends of the existing pipe culverts (Northwood Blvd), see Section 220, “Removal of Existing Improvements” of these Special Technical Specifications for additional information. The area to receive the concrete cut-off walls shall be properly excavated, filled, compacted or otherwise prepared in order to provide for a stable sub-grade and face of excavation to support the placed concrete. Note that sheeting and/or other temporary forms may be required as directed by the Engineer, to create a stable face of excavation, or cover the open ends of the existing pipe culverts.

The concrete cut-off walls shall be constructed to the lines, grades, and dimensions as shown on the Plans and applicable details, and as directed by the Engineer. The class of surface finish shall be in accordance with Section 311.14.01, “Ordinary Surface Finish” of the Standard Specifications.

350.02 Measurement and Payment

“CONCRETE CUT-OFF WALL, PHASE 3” shall be measured on a per linear foot basis along the centerline of the facility, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work.

The linear foot price for “CONCRETE CUT-OFF WALL, PHASE 3” shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in constructing the concrete cut-off walls, including but not limited to, excavation, sub-grade preparation, sheeting or other forms, mix design, Portland cement concrete, handling and placing concrete, curing, backfill, grading, compaction, and off-haul and disposal of excess materials, for a complete job in place to the lines, grades, and dimensions as shown on the Project Plans, and specified in the Contract Documents, Project Permits, SWPPP, Standard Specifications, these Special Technical Specifications, and as directed by the Engineer, and no additional compensation will be allowed.

400 GRAVEL, COBBLE, ROCK, BOULDER & OTHER AGGREGATES

400.01 General

Work under this item shall consist of furnishing all labor, tools, materials, and equipment necessary to furnish and place chinking, gravel, cobble, rock, boulder, sand aggregate, and other aggregates in the work, including but not limited to, proposed creek channel, channel grade control structure, valley-wide grade control structure, temporary buried protection structure, aggregate base courses, bituminous courses, bedding and backfill, mortar and grout, portland cement, and general rip-rap as indicated on the Project Plans, described in these Special Technical Specifications, and directed by the Engineer, in conformance with the Contract Documents, Project Permits, SWPPP, Standard Specifications, and these

Special Technical Specifications. The work will require excavation and preparation of the sub-grade, and possible embedment of larger rock and boulders in the sub-grade, in order to properly set the stone materials to the proposed finish grade as shown on the Project Plans. The limits of loose aggregate and aggregate base course placement as indicated on the Project Plans are approximate, and the exact limits of placement shall be determined in the field by the Engineer.

All aggregates used in the work for aggregate base courses, bituminous courses, bedding and backfill, mortar and grout, portland cement, and general rip-rap shall be in strict conformance with the Standard Specifications, and other applicable provisions found elsewhere in these Special Technical Specifications.

All chinking, gravel, cobble, rock, boulders, sand aggregate, and other loose aggregate used in the work for proposed creek channel, channel grade control structure, valley-wide grade control structure, temporary buried protection structure, and all other areas requiring said materials shall be in conformance with these Special Technical Specifications, and other applicable provisions of the Standard Specifications.

All stone, aggregate materials, and soils imported to the site shall be from a certified “Weed Free” source approved by the NDEP and/or TRPA.

All loading, transport, temporary stockpiling, on-site hauling, excavation, preparation of sub-grade, placement, embedment, chinking, backfill, compaction, clean-up, and off-haul and disposal of excess materials needed to install all chinking, gravel, cobble, rock, boulder, sand aggregate, and other aggregates where incorporated in the work shall be considered as included in the applicable bid item unit price, and no additional compensation will be allowed.

All aggregate materials generated on-site and meeting the quality requirements as stated in Section 400, “Gravel, Cobble, Rock, Boulder & Other Aggregates” of these Special Technical Specifications may be incorporated in the work upon acceptance of the Engineer prior to placement; any such material that is rejected for placement in the work shall be removed and disposed of in conformance with the provisions found elsewhere in these Special Technical Specifications, and the Standard Specifications. Use of said aggregate material in the work shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for.

400.02 Submittals

The Contractor shall submit certificate(s) and other material testing data as necessary to validate the source of the chinking, gravel, cobble, rock, boulder, sand aggregate, and other aggregate materials and its conformance with the Standard Specifications and these Special Technical Specifications. Include all applicable test results for specific gravity, resistance to degradation, absorption, durability index, and soundness (as described elsewhere in these Special Technical Specifications). Samples of loose stone aggregates shall be submitted to the Engineer a minimum of ten (10) working days prior to large-scale delivery to the project site or placement in the work, for review and acceptance of color and material.

All aggregate materials generated on site shall be reviewed and accepted by the Engineer, prior to placement in the work. Visual evaluation of the source, samples, suitable certificates and material testing data sheets, and service records may be used to determine the acceptability of any aggregate materials imported or generated on-site. The Engineer reserves to the right to reject said materials.

400.03 Quality Requirements for Loose Stone Aggregates

The Contractor shall use stone (i.e. chinking, gravel, cobble, rock, boulder, etc.) that is sound and durable against disintegration under conditions to be met in handling and placing, and is hard and tenacious and

otherwise of a suitable quality to ensure permanency in the specified kind of work. All applicable stone materials shall meet the requirements stated herein and conform to the following test requirements.

	<u>Requirement</u>	<u>Test Method</u>
Apparent specific gravity, minimum	2.5	ASTM C 97
Resistance to Degradation, maximum (%)	45	ASTM C 535
Absorption, maximum (%)	4.2	ASTM C 127
Durability Index, minimum	52	ASTM D 3744
Soundness, maximum (%) by freeze-thaw loss, after 12 cycles	10	AASHTO 103 Procedure A

Stone shall be of such shape to form a stable protection structure for the required section or feature. Flat or elongated shapes will not be accepted unless the thickness of the individual pieces is at least 1/3 of the length. Stones shall be sound, durable, hard, resistant to abrasion and free from laminations, weak cleavage planes, and the undesirable effects of weathering. It shall be of such character that it will not readily disintegrate from the action of air, water, or the typical conditions experienced during handling and placing. All aggregate material shall be clean and free from deleterious impurities, including alkali, earth, clay, refuse, and adherent coatings.

Gravel, cobble, rock, and boulder identified for use in the proposed creek channel, channel grade control structure, valley-wide grade control structure, and other areas subject to or where it is expected to be exposed to hydraulic conditions (water flow) shall be smooth and rounded in shape, as is typical of river run cobblestone, fieldstone, or that from a former stream deposited source. Angular rock, quarried, split rock, crushed rock or shot rock shall not be used (except where specified or allowed as shown on the Plans). In addition the said stone materials shall be of a native nature to the Tahoe Basin (i.e. of similar color and texture to that generally found within the Tahoe Basin and in particular the project area Incline Village, NV and vicinity). All creek channel toe boulders and other specified boulders used for the grade control structures that are located within and immediately adjacent to the proposed creek channel shall be smooth and rounded in shape as noted above and of a natural earth tone color/hue that blends with the surrounding environment (or generally described as “round and brown”). Attention is directed to the submittal requirements as noted in this section.

The stone used for “chinking” material, creek channel sub bed material (only where defined/shown on the Plans), shall be angular, fractured or crushed stone and be in conformance with these Special Technical Specifications, and applicable sections of the Standard Specifications.

400.04 Sand Aggregate

Unless otherwise submitted and accepted (substitute), the mineral materials required for the “sand” as designated on the Project Plans for inclusion in the proposed creek channel work shall generally meet the following gradation requirements (per ASTM C136):

<u>Sieve Size</u>	<u>Percent Passing</u>
3/8” (9.5 mm)	100.0
#4 (4.75 mm)	75.0 (max)
#8 (2.36 mm)	50.0 (max)
#30 (0.6 mm)	5.0 (max)
#100 (0.15 mm)	2.5 (max)
#200 (75 um)	2.0 (max)

The medium and coarse sand material shall be hard, durable, chemically inert, clean and free of clay or organic material, and have an apparent specific gravity of 2.5 minimum (per ASTM C128), and a plasticity index of non-plastic (per ASTM D4318). Volcanic cinder material shall not be acceptable.

The sand aggregate material shall be washed (at the point of supply) in a manner to reduce the percentage of fines (sieve #100 or less) and protected during all associated operations (i.e. loading, transport, stockpiling, on-site hauling, placement, etc.) to minimize or eliminate the potential for contamination. All relevant parts of equipment (i.e. truck beds, loader buckets) used for this work shall be clean and free of any undesirable materials that may contaminate the sand aggregate material; including washing and/or steam cleaning of the equipment where necessary.

400.05 Placement

Where applicable, a footing trench shall be excavated along the toe of slope where shown on the Project Plans, or as directed by the Engineer. In general, larger rock and boulders shall be placed with their longitudinal axis normal to the slope face, fully seated on a stable sub-grade or foundation course, and arranged so that each large rock or boulder above the foundation course has a minimum 3 point bearing on any underlying rocks. A full bearing load only on cobble and smaller rock, such as chinking rock for voids, shall not be acceptable.

The placement of any chinking, gravel, cobble, rock, or boulder strictly by dumping shall not be permitted. Hand and/or mechanical adjustments/placement of the stone materials are expected in order to meet the requirements stated herein. Larger rock and boulders shall not be dropped during placement operations, in a manner that will cause significant scaring of the surface, or fracture to minimize its roundness. All larger rock and boulder shall generally be placed with the smoothest side up; care shall be taken to place a rough or coarse textured side of a large rock or boulder to its underside (except where angular rock is specified, such as the rock lined channel).

All stone products shall be placed to follow the lines and grades shown on the Project Plans. Prevent the contamination of stone features, gravel and cobble creek bed mix, sand aggregate, and other designated rock fills (described elsewhere in the Special Technical Specifications) by soil and other earthen materials during excavation, placement, and/or backfill. All stone features shall be blended with adjacent rock areas and grades, by tapering margins, mixing rock color, and keying into and around existing bedrock, rock, soils, and vegetation. The Engineer will direct the Contractor in placement of chinking, gravel, cobble, rock, boulder, and sand aggregate for the construction of designated stone features and proposed creek channel, to attain a natural appearance and complete job in place as shown on the Project Plans and described in these Special Technical Specifications. Exact elevations and horizontal locations of the stone materials and features as shown on the Project Plans may be slightly adjusted in the field by the Engineer, with no additional compensation allowed for.

All river run creek bed mixes and sand aggregate shall be placed in the locations as shown on the Project Plans in such a manner to produce a relatively uniform graded mass. Place material to thicknesses shown on the Project Plans and uniformly distribute stone and sand materials to produce the required gradation of rock and wheel-roll into place (or compact/densify by other methods) to create a firm and stable structure, and meet finished grade as shown on the Project Plans. Placement of river run creek bed mixes or sand aggregate shall be conducted in a manner as not to produce a downstream turbidity or other pollutant discharge in violation of the project permit(s) or other water quality standards.

The segregation of mixed stone materials may occur during transport, dumping, on-site hauling, etc. The Contractor shall distribute all stone materials to produce the required gradation of rock. Routine control of gradation will be by visual inspection.

“Chinking” – All larger rock and boulders used in construction of the proposed creek channel toe rock, channel grade control structure, and valley-wide grade control structure, and other items requiring “chinking” placed for this project as shown on the Plans and details shall have chinking material (specified in Section 400.03) placed immediately adjacent to (minimum 9-inches) and into all void spaces. All said larger rock and boulders will be placed in succession and/or in combination with the chinking material in order to effectively reduce void spaces and produce a solid matrix of rock, which will help to control piping of waters and reduce the chances for failure of the structure. The Contractor is expected to hand place and tamp (using hand tools, feet, etc.) all chinking material to form a tight, firm, well compacted, and cohesive structure. Detailed inspection and/or direction from the Engineer shall occur in the field. The finished height or position of any chinking material shall be left below the top (3-6 inches +/-) of any exposed larger rock and boulders to where it is not readily visible and/or will be covered by any scheduled creek bed mix or other suitable backfill. The associated cost to furnish and place all chinking material in the work shall be considered as included in the unit bid price of the various items of work requiring said material, and no additional compensation will be allowed.

Rounded and smooth gravel, cobbles, rock, and boulder shall not be used on slopes steeper than 2:1 (horizontal: vertical) unless otherwise directed by the Engineer. Rounded and smooth gravel, cobbles, rock, and boulders are intended to be used in the proposed creek channel, channel grade control structure, valley-wide grade control structure, and other designated areas subject to or where it is expected to be exposed to hydraulic conditions.

As Directed Placement

Due to the nature of the project and expected field direction from the Engineer, the Contractor shall make provisions to furnish all labor, tools, materials, and equipment as necessary to furnish and place additional gravel, cobble, rock, boulder, and sand aggregate materials in the work (i.e. beyond or in addition to what is designated on the Project Plans and applicable cross sections and details) as directed by the Engineer, in conformance with the Contract Documents, Project Permits, SWPPP, Standard Specifications, and these Special Technical Specifications. Any loading, transport, temporary stockpiling, on-site hauling, excavation, preparation of sub-grade, placement, embedment, chinking, backfill, compaction, clean-up, and off-haul and disposal of excess materials needed to properly place the designated loose aggregates as part of the as directed work shall be considered as included in the applicable “as directed placement” bid item unit price, and no additional compensation will be allowed. The exact lines, grades, thickness, and/or limits of any designated loose aggregates made part of the as directed placement shall be as determined and marked in the field by the Engineer.

The intent of the as directed placement of designated loose aggregate bid items, is to provide the Engineer with a means and allowance for additional gravel, cobble, rock, boulder, and/or sand to be incorporated in the work where slight variations in field conditions and other potential minor unknowns can be adequately addressed, to achieve the desired outcomes for construction of a complete and whole project.

All of the “as directed” stone materials shall be “river run” as described in these Special Technical Specifications.

The Engineer, or his/her designee, shall visually observe and determine the quantity of material installed for all as-directed items installed and paid for as described in this sub-section to these Special Technical Specifications. The contractor shall not be entitled to any delay claims or allowed for any extra working time as a result of “waiting” for the Engineer, or his/her designee, to direct and observe the placement of as-directed items. No compensation allowed for materials placed without the Engineer or his/her designee, present, directing and observing the work.

The determination of measurement for all “as directed” items shall be determined by the Engineer during and upon completion of the directed additional material to be placed. The determination will be based on the approximate quantity placed (volume determined amount of material provided, per bucket or partial bucket – the cubic yardage of the bucket will be based off of manufacturer’s specifications for the piece of equipment being used). Additionally, the Engineer, or his/her designee, and contractor shall take a picture of every bucket placed and included in the Engineer’s daily logs and the contractor’s daily logs, documenting the general size of each bucket placed under this as-directed item. The as-directed materials, will in most instances, will be a blend of each of the various types of as directed materials. The conversion rate from the volume of the bucket to the weight paid shall be 1.5 tons/CY, no matter the mixture of materials directed to be placed, and no additional compensation shall be allowed for. The Engineer will further determine the percentages of each of the various as-directed items to be placed (generally will provide the contractor a prescription to be placed, i.e. ½ bucket of 20% sand, 40% ¾” to 3” and 40% 3” to 8”).

The Contractor will not be compensated for the installation of any additional “as directed placement” of designated loose aggregate materials without prior direction, observation and acceptance of the Engineer as described in this sub-section to these Special Technical Specifications.

Look at pay item

400.06 Size, Gradation, and Thickness

All loose aggregate/stone materials and sand aggregate shall be of the size specified for each improvement as shown on the Project Plans, or as specified elsewhere in these Special Technical Specifications, the Standard Specifications, or as directed by the Engineer. If conflict occurs, the size of loose aggregate/stone materials and sand aggregate shall be as shown on the Project Plans.

Where identified on the Project Plans all river run creek bed mixes shall be a well graded blend of the sizes as indicated, uniformly and evenly distributed by weight.

All loose aggregate/stone materials and sand aggregate shall be placed to thicknesses as shown on the Project Plans in such a manner to produce a well consolidated and relatively uniform graded mass.

400.07 Measurement and Payment

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with performing all the work involved in provisions of this section, complete in place as shown on the Project Plans, as specified in the Contract Documents, Project Permits(s), Standard Specifications, these Special Technical Specifications, the SWPPP, and as directed by the Engineer, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for.

“AS DIRECTED PLACEMENT OF SAND, PHASE 1”, “AS DIRECTED PLACEMENT OF 1-1/2” TO 3” RIVER RUN STONE, PHASE 1”, “AS DIRECTED PLACEMENT OF 3” TO 8” RIVER RUN STONE, PHASE 1”, “AS DIRECTED PLACEMENT OF 8” TO 12” RIVER RUN STONE, PHASE 1”, “AS DIRECTED PLACEMENT OF 12” TO 18” RIVER RUN STONE, PHASE 1”, “AS DIRECTED PLACEMENT OF SAND, PHASE 3”, and “AS DIRECTED PLACEMENT OF 12” TO 18” RIVER RUN STONE, PHASE 3” shall be measured per ton aggregate material, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. The determination of measurement for all “as directed” items shall be determined by the Engineer during and upon completion of the directed additional material to be placed. The determination will be as described in this section of these Special Technical Specifications. Further, the volume will be computed by the engineer to a weight/tonnage and the tons placed, as determined by the Engineer will be the quantity to be paid for, with no additional compensation allowed for. At the end of each work day “as directed” work occurs the

Contractor shall request the volumes determined by the engineer for each “as directed” item. The contractor shall review these quantities, and if the contractor does not agree with the values, the Contractor shall inform the Engineer, in writing, by the end of next working day (5:00 PM). If the contractor does not inform the Engineer the next working day of any disagreement in the value, the value (volume) determined by the engineer will be the paid value, and no additional compensation shall be allowed for. In the event the contractor does not agree with the value determined by the engineer, and notifies the engineer (in writing) by the previously stated deadline the contractor and engineer will work to determine an agreeable value, based on the work performed measurement of stockpiles, measurement of work performed, etc. In the event the contractor and engineer cannot come to an agreeable value after this effort, the conflict will be resolved in accordance with the Standard Specifications.

The unit price for “AS DIRECTED PLACEMENT OF SAND, PHASE 1”, “AS DIRECTED PLACEMENT OF 1-1/2” TO 3” RIVER RUN STONE, PHASE 1”, “AS DIRECTED PLACEMENT OF 3” TO 8” RIVER RUN STONE, PHASE 1”, “AS DIRECTED PLACEMENT OF 8” TO 12” RIVER RUN STONE, PHASE 1”, “AS DIRECTED PLACEMENT OF 12” TO 18” RIVER RUN STONE, PHASE 1”, “AS DIRECTED PLACEMENT OF SAND, PHASE 3”, “AS DIRECTED PLACEMENT OF 1-1/2” TO 3” RIVER RUN STONE, PHASE 3”, “AS DIRECTED PLACEMENT OF 3” TO 8” RIVER RUN STONE, PHASE 3”, “AS DIRECTED PLACEMENT OF 8” TO 12” RIVER RUN STONE, PHASE 3”, and “AS DIRECTED PLACEMENT OF 12” TO 18” RIVER RUN STONE, PHASE 3” shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved to furnish and place additional gravel, cobble, rock, boulder, and sand aggregate materials in the work, including but not limited to, loading, transport, temporary stockpiling, on-site hauling, excavation, preparation of sub-grade, placement, embedment, chinking, backfill, compaction, clean-up, and off-haul and disposal of excess materials, for a complete job in place to the lines, grades, thickness, and limits as directed by the Engineer, in conformance with the Contract Documents, Project Permits, SWPPP, Standard Specifications, and these Special Technical Specifications, and no additional compensation will be allowed.

500 REINFORCED CONCRETE BOX (RCB) CULVERT STRUCTURE

500.01 General

Work covered under this specification consists of furnishing all of the labor, materials, tools, and equipment necessary for the design, furnishing, and construction of a reinforced concrete box (RCB) culvert structure complete with headwalls, wing-walls, interior culvert weirs and interior rock baffles (doweled rock shown on the Project Plans in the inlet and outlet areas) in accordance with the Contract Documents, Standard Specifications, and these Special Technical Specifications, and in conformity with the lines, grades, dimensions, and general design parameters as shown on the Project Plans, and as established and directed by the Engineer. Where used in these Special Technical Specifications ‘RCB culvert structure’ shall mean to include all components necessary to provide for a complete and fully functional RCB culvert with headwalls, wing-walls, interior culvert weirs, and interior rock baffles as shown on the Project Plans. In situations where two or more specifications or standards apply to this work, the most stringent requirements shall govern.

In addition to these Special Technical Specifications and the Standard Specifications (see Section 203.13, “Precast Reinforced Concrete Box”) all work for the design, furnishing, and construction of the RCB culvert structure shall conform to the applicable portions of the State of Nevada Department of Transportation (NDOT) Standard Specifications and Plans for Road and Bridge Construction (current version). Attention is directed to the NDOT Standard Plans included as details in the Project Plans, and Sections 502 “Concrete Structures” and 502.03.24 “Precast Concrete Box Culverts” of the NDOT Standard Specifications. In addition the RCB culvert structure shall conform to the following applicable criteria:

- ACI 304 and 318
- CRSI Manual of Standard Practice
- AASHTO M259
- ASTM C1433, C1577
- Current/applicable AASHTO and ASTM standard(s)
- Current Building Codes for Washoe County
- AASHTO HS20-44 / HL-93 LRFD traffic loading (whichever is more stringent)

As part of other bid items and specifications found elsewhere in these Special Technical Specifications the Contractor will be required to relocate existing utilities and other improvements to facilitate construction of the RCB culvert structure. In no circumstance shall these relocations have cause for any modification to the lines, grades, dimensions, and general design parameters of the RCB culvert structure as shown on the Project Plans.

The Contractor will be responsible for all aspects of the structural design of a complete RCB culvert structure, including provisions for construction and materials for sub-grade preparation, bedding, and structural backfill. Excavation depths and cover heights for the RCB culvert structure is expected to be in close proximity to that which is depicted on the Project Plans. In consideration for buoyancy forces, the Contractor's structural design engineer (or pre-cast manufacturer) shall perform buoyancy calculations and provide submittal information to show that the RCB culvert structure can withstand the expected buoyancy forces (with a safety factor of 1.5) based on the information provided in the project geotechnical report, for review and acceptance by the Engineer. Design of joints and other connections shall also take account for tensile, shear, and moment forces likely to occur during seasonal high ground water levels and/or high flow runoff events, to guard against potential joint separation or displacement from differential settlement movements. All currently available ground water, creek flow, and geotechnical information as produced by the Owner has been provided as part of these Special Provisions (see Appendices and SWPPP); and is available to the Contractor for design of the RCB culvert structure to be completed by the Contractor. If any additional geotechnical or other exploratory information is deemed necessary for any aspect of the design of the RCB culvert structure, the Contractor is responsible to obtain and produce said information; and any associated costs shall be considered as included in the RCB culvert structure bid item and no additional compensation shall be allowed for. **All engineering efforts for the structural design of the RCB culvert structure shall be performed by a licensed engineer in the State of Nevada, in accordance with the Contract Documents, the Standard Specifications and these Special Technical Specifications.**

Any trench shoring/protective systems as necessary for protection of existing utilities and/or to facilitate complete of the work for the RCB culvert structure is the sole responsibility of the Contractor, including engineering design, and shall be considered as included in the prices paid for construction of the RCB culvert structure. The Contractor's attention is directed to the applicable provisions of Section 280, "Trench Excavation and Backfill" of these Special Technical Specifications.

All engineering design, submittals, furnishing and construction of a RCB culvert structure, transport, excavation, shoring, sub-base preparation, bedding materials, engineering fabrics, joint materials, seals, mortar, grout, structure backfill materials, pervious material, aggregate base, compaction, grading, disposal and other appurtenances as necessary for a complete structure in place including all work and equipment associated with the installation of the RCB culvert structure shall be included in the cost of this item, and no additional compensation shall be allowed for.

Submittals and Shop Drawings (or Working Drawings)

The details as provided on the Project Plans (including the NDOT Standard Plans) are for informational purposes and shall not be used to take place of the required structural design provisions as stated in these Special Technical Specifications. The Contractor shall utilize the details as provided on the Project Plans as a basis for the design requirements and for preparation of shop drawings and engineering calculations to be produced by the Contractor's structural design engineer and/or precast manufacture, as selected by the Contractor and accepted by the Engineer.

The Contractor shall submit all the necessary shop drawings and installation specifications for the complete construction of the RCB culvert structure. All shop drawings shall be certified (signed and sealed) by a registered professional engineer in the State of Nevada, licensed to perform such efforts. These shop drawings and installation specifications (three copies) and engineering calculations (three copies) shall be original, wet stamped, and submitted to the Engineer for review and acceptance prior to commencing any work associated with this task (the Contractor assumes all risk if production of any precast structure commences prior to the Engineers review and acceptance of the shop drawings and submittal requirements noted herein). The shop drawings shall include details for construction, reinforcing, joints and any cast-in-place appurtenances. The shop drawings shall be annotated to indicate all materials to be used and all applicable standards for materials, required tests of materials and design assumptions for structural analysis including height of earth cover design provisions and buoyancy forces. In addition to the information noted above, the submittals provided from the Contractor's structural design engineer and/or precast manufacture at a minimum shall include the following:

- Concrete mix design and other material specifications
- Sizes and dimensions for each segment, headwall, and wing-wall
- Reinforcement (including size, splice type, and location)
- Joint details and connections including gaskets, seals, etc
- Cast-in components and appurtenances
- Anchors, lift devices, and accessories
- Lifting and transport requirements
- Installation/construction methods and assembly requirements
- Mortar and grout materials and other finishing requirements
- Manufacture specifications and applicable design standards (precast elements)
- Source Quality Control Testing/Inspection certifications (precast elements)
- Certificate of Compliance from manufacturer's QC for each shipment (precast elements)

The engineering design, and associated submittals, shall include the necessary drawings/details, along with the engineering calculations and installation specifications (including provisions for construction and materials for sub-grade preparation, bedding, and structural backfill) to assure proper design and construction of the RCB culvert structure. All liability associated with the RCB culvert structure will be borne by the Contractor and the Contractor shall hold the County harmless for any claims associated with the RCB culvert structure or any RCB culvert structure failure. The liability duration/timeframe shall be five (5) years from the date of completion and final acceptance of the project work (or Notice of Completion). Should any failure, as determined by the County, occur during this time frame the Contractor will be liable for all costs associated with the repair and any other damages.

500.02 Joints

All joints and connections for the RCB culvert structure shall be joined and sealed in a watertight fashion in accordance with the Contractor's submitted and accepted installation specifications (including any manufacturer's recommendations for precast elements) and the requirements, as shown on the Project Plans, and as specified in these Special Technical Specifications, the Standard Specifications, and as directed by the Engineer. At a minimum precast units shall have tongue and groove or ship-lap joints with

a butyl mastic sealant conforming to ASTM C990 (such as ConSeal CS-102, or accepted equal) for internal joints, and exterior joint wrap/seal conforming to ASTM C877 (such as ConSeal CS-212, or accepted equal) to ensure a watertight system.

500.03 Interior Culvert Weirs

All interior concrete culvert weirs shall be constructed as part of the RCB culvert structure to the locations and dimensions as shown on the Project Plans, and as directed by the Engineer. **The construction approach, tools, and materials to be used for construction and installation/anchoring of the culvert weirs to the RCB culvert structure shall be submitted to the Engineer for review and acceptance prior to performance of the work.** As part of the structural design process (and included with the applicable shop drawings and submittals for review and acceptance of the Engineer), the Contractor's structural design engineer and/or precast manufacture shall clearly indicate the proposed method and materials to be used to securely anchor/attach the interior culvert weirs to the RCB culvert structure as necessary to resist the anticipated flow and shear forces from the creek flow and associated bed materials/aggregates that would occur during a 100-year flow event with a safety factor of 2 (*the HEC-RAS model and other hydrologic information used for the design of the project is available from Owner/Design Engineer upon request; the 100-year design flow value is 48 cfs*). In addition all interior culvert weirs shall be sealed to the interior RCB culvert walls and floor with a polyurethane construction sealant rated for use below the waterline (such as SikaFlex-1a, or accepted equal) or other equivalent method in accordance with the Contractor's structural design engineer and/or precast manufacturer's recommendations, as necessary to meet the anticipated hydrostatic forces.

500.04 Interior Culvert Rock Baffles

All interior culvert rock baffles shall be constructed as part of the RCB culvert structure to the locations and dimensions as shown on the Project Plans, and as directed by the Engineer. **The construction approach, tools, and materials to be used for installation/anchoring of the rock baffles to the RCB culvert structure shall be submitted to the Engineer for review and acceptance prior to performance of the work.** All individual stones (per the sizes as designated on the Plans) for the culvert rock baffles shall be selected for review and acceptance of the Engineer prior to placement in the work. All designated rock shall be securely anchored in place using coated stainless steel dowels and epoxy rated for use below the water line, as shown on the Plans and applicable detail and as directed by the Engineer.

500.05 Installation

All materials and construction methods shall conform to the applicable provisions of these Special Technical Specifications, the Standard Specifications, and NDOT Standard Plans and Specifications. Any precast units shall not be shipped until concrete has attained a minimum flexural strength of 4000 psi and/or have cured at least five (5) days following fabrication.

Any saw-cutting and removal of existing pavements shall be in conformance with Section 220 "Removal of Existing Improvements" of these Special Technical Specifications.

The RCB culvert structure shall be laid to the lines and grade shown on the Plans. The Contractor shall clean the interior of the RCB culvert structure as work progresses, and the RCB culvert structure shall be clear and free of all debris and sediment before acceptance by the Engineer and the introduction of channel flow to the proposed channel and culvert.

The bottom of the trench shall be graded and prepared so as to provide a firm and uniform bearing for the RCB culvert structure along its entire length (or applicable segment for portion of the work) and prepared as indicated in the submitted and accepted installation specifications. Where the trench bottom is unsuitable (i.e. soft muck/refuse or bedrock/unyielding material unable to provide long-term support), the

Contractor shall excavate to a depth required by the Engineer and replace with suitable material as specified or directed by the Engineer and geotechnical engineer. Sub-base and/or bedding materials shall be placed so as to provide a firm and uniform foundation and bedding for the RCB culvert structure along its entire length, well consolidated and compacted in conformance with the submitted and accepted installation specifications (bedding material shall be of no less quality and thickness as designated on the Plans). Structural backfill shall be as shown on the Plans and conform to Section 300.02 “Structural Fill” of these Special Technical Specifications. All backfill within the roadway prism and roadway structural section, including aggregate base, shall be as depicted on the Project Plans and conform to these Special Technical Specifications and Standard Specifications.

All lift holes, etc shall be filled with expansive mortar or tapered precast mortar plugs to provide a permanent watertight section, and shall be finished flush on the inside face of the RCB culvert structure. Seal with an exterior joint wrap material that is similar in characteristics and function as that which is stated above and used for any precast RCB culvert joints.

Following construction of the RCB culvert structure and any inspections, the upstream inlet opening of the RCB culvert structure shall be covered/seal in a temporary manner that will prevent any earthen material and water flows from entering the RCB culvert structure. **The construction approach, tools, and materials to be used for this work shall be submitted to the Engineer for review and acceptance prior to performance of the work.** The temporary closure method selected by the Contractor shall be suitable to remain in place and shall be continuously maintained and inspected at regular intervals for the duration of any Phase 1, Phase 2, and applicable Phase 3 time periods prior to completion of the upstream tie-in construction and introduction of flows to the proposed channel and culvert (*phases as described elsewhere in these specifications*). At a minimum the culvert opening will be covered with plywood (3/4 inch or greater thickness) securely fastened place, in order to prevent loose sediment and debris from entering the RCB culvert structure. In addition the prevailing open grade area or remnant “Hole” that is created from the Contractor’s operations shall be graded, filled and/or otherwise protected using a temporary berm (*water filled barrier, gravel bag, filter fabric, or other accepted method*), in order to prevent any water flows from entering the RCB culvert structure (*existing site condition, hydrology, flood frequency estimates, and stream flow information produced by the Owner is available for reference in the SWPPP document, at the discretion of the Contractor*). The temporary protection shall further provide for protection of the public (since the excavation is in a public right-of-way). **The public protection plan shall be developed by the Contractor and provided to the Engineer and Washoe County for review and acceptance prior to the installation of the culvert work.**

Any resultant disturbed areas, bare soils, etc that remain following the construction of the RCB culvert structure and completion of any applicable revegetation treatments, shall be stabilized/winterized and maintained in conformance with Section 140.04 “Winterization and Maintenance of Project Site” of these Special Technical Specifications. For additional measures and provisions the Contractor’s attention is directed to Sections 130 “Storm Water Pollution Prevention Compliance”, 180 “Temporary Erosion Control Measures & BMPs”, and 600 “Soil Revegetation Treatment” of these Special Technical Specifications.

500.06 Temporary Roadway Patch

Following completion of the RCB culvert structure and any inspections, the resultant disturbed area within the roadway (including the disturbance caused by the utility relocations described in other sections for these Special Technical Specifications) shall receive a temporary hot mix asphalt roadway patch as shown on the Plans, and as directed by the Engineer and Washoe County. This temporary roadway patch shall be in place prior to opening the full width of the roadway to public traffic. All backfill within the roadway prism and roadway structural section, including aggregate base, shall be as depicted on the

Project Plans and conform to these Special Technical Specifications and Standard Specifications. Attention is directed to Section 510 “Asphalt Concrete Paving” of these Special Technical Specifications.

500.07 Repairs and Rejection

Cast-in place or precast elements may be repaired, if necessary, because of imperfections in manufacture/construction or handling damage and will be acceptable if, in the opinion of the Engineer, the repairs are sound, properly finished and cured, and the repaired section conforms to the requirements of this specification and any manufacturer’s requirements.

Cast-in-place or precast elements shall be subject to rejection on account of failure to meet any of the specification requirements. Elements which show defects due to handling may be rejected at the site of installation regardless of prior acceptance. In addition any individual elements may be rejected, including but not limited to, any of the following:

- A. Fractures or cracks passing through the wall, except for a single end crack that does not exceed one half the thickness of the wall.
- B. Defects that indicates proportioning, mixing, and molding not in compliance with the specifications.
- C. Spalled, checked, honeycombed or open texture defects which are not purely surface in nature.
- D. Damaged ends, where such damage would prevent making a satisfactory joint.

Prior to acceptance of the RCB culvert structure any damage, defects, and/or associated repairs are subject to structural review by a licensed structural engineer (as selected by the Owner) and applicable precast manufacturer; and any associated costs shall be the responsibility of the Contractor, and no additional compensation shall be allowed for.

500.08 Marking for Precast Elements

Each section of the RCB culvert structure shall be clearly marked by waterproof paint of other means such that the date, manufacturer, plant location, material type, strength designation (design cover and loading) and nominal span and rise can be readily identified.

500.09 Culvert Maintenance and Bonding (5 years)

Work under this item shall consist of maintaining all structural aspects of the RCB culvert structure and appurtenances constructed in relation to the project, for five (5) years following completion of construction so that there is no evidence of failure to any aspect of the RCB culvert structure. Furthermore, the bonding shall additionally hold the Engineer, NTCD, and Washoe County harmless from any litigation, whether private or public, related to the RCB culvert structure. Finally the bonding shall include any structural maintenance, as deemed necessary by the Engineer or Washoe County for the RCB culvert structure during the bonding period.

The maintenance period, start date and end date will be as follows:

- o Start Date = final project payment
- o Duration = five (5) years
- o End Date = 5 years after final payment

All of the RCB culvert structure work will have final acceptance upon completion of all aspects of the associated work. As it relates to this section, Washoe County will not accept portions of the RCB culvert structure work nor will it “stager” the start of the maintenance period.

A Maintenance Bond shall be supplied by the Contractor prior to acceptance of the RCB culvert structure work. The Maintenance Bond shall be in the amount of \$240,000 or the sum of the value of applicable

items in the bid schedule (Bid items 22 through 25), whichever value is greater, for a length of five (5) years from the date of final acceptance and payment.

500.10 Measurement and Payment

“RCB CULVERT STRUCTURE, PHASE 1” shall be measured on a lump sum basis, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work.

The contract unit price paid for “RCB CULVERT STRUCTURE, PHASE 1” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved in constructing the RCB culvert structure, complete in place, including but not limited to saw-cutting and removal of existing pavements, excavation, shoring, sub-grade preparation, bedding, concrete, reinforcement steel, forms, curing, finishing, precast elements, mortar, grout, joint sealants, fabrics, structural backfill, compaction, transport, and disposal of excess materials and waste debris, and providing for the maintenance bond as shown on the Plans, as specified in these Special Technical Specifications, the Standard Specifications, NDOT Standard Plans and Specifications, and as directed by the Engineer; and no additional compensation will be allowed.

Full compensation for all labor, material, tools, equipment, and incidentals necessary to perform specified design tasks, furnish shop drawings and other specified submittal information, perform any conformance testing, provide temporary closure and protection of upstream inlet opening, construct temporary roadway patch, provide temporary soil stabilization and BMPs, provide the requested markings for any precast elements, furnish and execute the Culvert Maintenance Bond, and conform to all other applicable provisions as identified in this section or as required in the Standard Specifications, NDOT Standard Plans and Specifications, and as directed by the Engineer shall be considered as included in the contract unit price paid for “RCB CULVERT STRUCTURE, PHASE 1” and no additional compensation will be allowed.

510 ASPHALT CONCRETE PAVING

510.01 Description

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary for the complete construction of an asphalt concrete structural pavement section including excavation, sub-grade preparation, and aggregate base course, as shown on the Project Plans and in accordance with the Contract Documents, Standard Specifications, Special Technical Specifications, Project Permits, SWPPP, or as directed by the Engineer.

510.02 Roadway Excavation and Grading

All earthworks (i.e. excavation, sub-grade preparation, backfill, local borrow, grading, etc.) as shown on the Project Plans and described in the Special Technical Specifications, shall be considered as included in the roadway reconstruction work, and completed by the Contractor, for all areas within the grading limits as depicted on the Plans, which generally includes the areas within the limits of paving, road shoulders, and road prism embankment. Other areas that may be considered part of the road prism embankment but are outside of the defined grading limits for the roadway reconstruction work, are to be considered as part of the floodplain grading defined elsewhere in these Special Technical Specifications.

The Contractors attention is directed to the applicable sections of these Special Technical Specifications and the Standard Specifications for additional information in regards to provisions for excavation, sub-grade preparation, grading, backfill, and compaction operations.

510.03 Aggregate Base Course

The aggregate base course for roadway construction shall conform to the provisions of the applicable sections of the Standard Specifications and these Special Technical Specifications. Aggregate base courses shall be placed to the lines, dimensions, and grades shown on the Plans or as directed by the Engineer. The exact limits of the aggregate base course will be determined in the field by the Engineer.

Aggregate base shall be produced from commercial quality aggregates and be Type 2, Class B conforming to Tables 200.01.03-I and 200.01.03-II, of the Standard Specifications. Existing asphalt concrete (AC) pavement may be crushed or pulverized and mixed with virgin aggregate or used solely as aggregate base, provided the resulting processed material complies with the requirements of the Standard Specifications (Section 200.01.03 for Type 1, Class A or Type 2, Class B Crushed Aggregate Base) or where accepted and as directed by the Engineer comply with the requirements of the Standard Specifications for recycled asphalt concrete base (Section 200.01.04 for Type 1 or Type 2 Recycled Aggregate Base). The Contractor is responsible to perform and furnish all material testing as necessary to ensure compliance with the provisions in the Standard Specifications and these Special Technical Specifications.

No existing AC is to be recycled and used on the Project on-site.

The construction including placement, spreading, and compaction of one or more courses of aggregate base on a prepared sub-grade shall be in accordance with Section 308, "Aggregate Base Courses" of the Standard Specifications.

510.04 Asphalt Concrete

Asphalt concrete shall be Type 3 (4% Marshal Voids) and shall conform to the provisions of the applicable sections of the Standard Specifications and these Special Technical Specifications. Asphalt concrete shall be placed to the lines, dimensions, and grades shown on the Plans or as directed by the Engineer. The exact limits of asphalt concrete paving will be determined in the field by the Engineer.

Asphalt concrete shall be produced from commercial quality asphalt and aggregates at a central mixing plant and conform to the following requirements:

- A. Asphalt binder (cement) shall be performance graded PG 64-22NV conforming to Table 201.02-III, of the Standard Specifications.
- B. Aggregate shall be Type 3 conforming to Tables 200.02.03-I and 200.02.03-II, of the Standard Specifications.
- C. A mix design shall be completed and submitted by the Contractor prior to incorporation in the work, in accordance with Section 337, "Composition of Mixtures" and Section 337.04, "Bituminous Plantmix" of the Standard Specifications.

The construction including placement, spreading, and compaction of one or more courses of asphalt concrete pavement on a prepared base or road surface shall be in accordance with Section 320, "Plantmix Bituminous Pavement" of the Standard Specifications.

The Contractor shall make all provisions to saw cut the edges of existing asphalt to expose the full depth of the section and form a clean edge at any transverse joint, for the freshly laid mixture. As directed by the Engineer in the field, a twelve inch (12") "T" cap key-in joint shall be created at all transverse joints with existing asphalt structural sections.

510.05 Tack Coat

A tack coat of liquid asphalt shall be applied in accordance with the provisions in Section 316, “Tack Coat” of the Standard Specifications, to all contact surfaces of existing pavement, curbing, manholes, and other surfaces as designated by the Engineer prior to any asphalt concrete pavement being placed against them.

510.06 Slurry Seal

Slurry Seal shall be Type III (micro-surfacing) and shall be applied to the finish surface of all asphalt concrete installed by the Contractor in accordance with the provisions in Section 318, “Slurry Seal” of the Standard Specifications. Slurry Seal shall conform to the following requirements:

- A. Emulsified asphalt shall conform to Section 510.06 of these Special Technical Specifications.
- B. Aggregate shall be Type III conforming to Tables 200.02.06-I and 200.02.06-II, of the Standard Specifications.
- C. A mix design shall be completed and submitted by the Contractor prior to incorporation in the work, in accordance with Section 337, “Composition of Mixtures” and Section 337.07, “Slurry Seal and Micro-surfacing” of the Standard Specifications.

510.07 Asphalt Emulsion

The material for micro surfacing immediately prior to mixing shall conform to the following requirements.

Asphalt Emulsion

Asphalt emulsion shall be homogenous and shall be a polymer modified quick-setting, quick traffic cationic asphalt emulsion. The polymer material shall be co-milled with the emulsion solution. The emulsion manufacture shall certify that the emulsion contains a minimum of 4% polymer solids based on the mass of asphalt (asphalt residual) within the emulsion. Manufacture shall certify that the asphalt used in the micro-surfacing emulsion is Venezuelan Asphalt, or accepted equal before shipping. The emulsified asphalt shall be within ±1% of the design emulsion content.

The CCSIH polymer modified quick-traffic asphalt emulsion shall conform to the following requirements when tested in accordance with the specified method:

TEST OF EMULSION	TEST METHOD	SPECIFICATIONS
Viscosity, Saybolt Fural at 77°F. (25C.)	AASHTO T59	16-90 sec.
Storage Stability Test, 24 Hour, %	AASHTO T59	1% Max.
Settlement, % 5 day	AASHTO T59	5% Max.
Distillation	AASHTO T59	3% Max.
Residue	AASHTO T59	64% Min.

TEST ON RESIDUE	TEST METHOD	SPECIFICATIONS
Penetration, 77°F. (25C.), 100g, 5s	AASHTO T49	40-90 dmm
Ductility, 77°F. (25C.), 5cm/min.cm	AASHTO T51	60 cm Min.
Softening Point, R & B, Degrees F.	AASHTO T53	142° Min.
Polymer Content % (Solid polymer content based on weight of asphalt)	AASHTO T53	4% Min.
Or Tortional Recovery	CTM 332	18% Min.

Water

Water shall be of such quality that the asphalt will not separate from the emulsion before the micro-surfacing is in place on the pavement.

Additive

Per the mix design for the micro-surfacing.

Mineral Filler

Mineral filler shall be any recognized brand of non-air entrained Portland Cement or hydrated lime that is free of lumps. The type and amount of mineral filler needed shall be determined by the laboratory mix design and will be considered as part of the mineral gradation requirement. An increase or decrease of less than one-percent may be permitted when the micro-surfacing is being placed if it is found to be necessary for better consistency or set times.

Aggregate

The mineral aggregate used shall be of the type and grade specified for the particular use of the micro-surfacing. The aggregate shall be 100% crushed stone such as granite, slag, limestone or other high quality aggregate. The material shall be free from vegetable matter and other deleterious substances. All aggregate shall be free of caked lumps and oversize particles.

510.08 Measurement and Payment

“ASPHALT CONCRETE ROADWAY RECONSTRUCTION, TEMPORARY PHASE 1” and “ASPHALT CONCRETE ROADWAY RECONSTRUCTION, PHASE 3” shall be measured on a per square foot basis measured along the boundary of finished surface of the asphalt concrete pavement section constructed and compacted in place, and accepted by the Engineer as conforming to all the requirements in the complete work.

Full compensation for all labor, material, and equipment necessary to perform excavation, backfill, grading, sub-grade preparation, and compaction within the designated limits of grading shall be considered as included in the Contract price paid for various items requiring aggregate base, and no additional compensation will be allowed.

Full compensation for all labor, material, and equipment necessary to furnish and apply aggregate base courses shall be considered as included in the Contract price paid for various items requiring aggregate base, and no additional compensation will be allowed.

Full compensation for all labor, material, and equipment necessary to furnish and apply tack coat shall be considered as included in the Contract price paid for various items requiring tack coat, and no additional compensation will be allowed.

Full compensation for all labor, material, and equipment necessary to furnish and apply slurry seal shall be considered as included in the Contract price paid for various items requiring slurry seal, and no additional compensation will be allowed.

The contract price per square foot paid for “ASPHALT CONCRETE ROADWAY RECONSTRUCTION, TEMPORARY PHASE 1” and “ASPHALT CONCRETE ROADWAY RECONSTRUCTION, PHASE 3” shall include full compensation for furnishing all labor, materials (i.e. backfill, aggregate base course, asphaltic emulsions, liquid asphalts, asphalts, tack coat, slurry seal, and asphalt mix aggregate, etc.), tools, equipment, and incidentals, and for performing all the work involved in constructing an asphalt concrete pavement section, complete in place, including any saw cutting of existing asphalt concrete and to provide for key-in to existing asphalt concrete, excavation, sub-grade preparation, backfill, grading, compaction, off-haul and disposal of excess materials and waste debris, cold planning of existing asphalt, and application of slurry seal and prime coat and/or tack coat as shown on the Project Plans, as specified in the Standard Specifications, these Special Technical Specifications, and as directed by the Engineer; and no additional compensation will be allowed.

520 TRAFFIC CONTROL DEVICES

520.01 Description

Work for this project includes the removal and replacement of a section of roadway. Upon completion of the new and temporary roadway section, the contractor shall be responsible to complete all work associated with the installation of the new traffic control devices as shown on the Project Plans, as specified in the Contract Documents, Standard Specifications, these Special Technical Specifications, Project Permits, SWPPP, and as directed by the Engineer.

520.02 Traffic Striping

Paint for traffic striping shall conform to the provisions in Section 214, “Paint” of the Standard Specifications. Construction shall be performed in accordance with Section 324, “Painting, Pavement Striping, and Marking” of the Standard Specifications.

Any existing traffic striping including but not limited to lane lines, fog lines, stop bars, crosswalk striping and pavement markings that are destroyed or damaged during construction by the Contractor's activities shall be replaced in accordance with the Contract Documents, Standard Specifications, Special Technical Specifications, Project Plans, Project Permits and as directed by the Engineer.

520.03 Traffic Signs

Materials for permanent traffic signs shall conform to the provisions of Section 215, “Signs” of the Standard Specifications. Construction shall be performed in accordance with Section 332, “Signs, Permanent and Temporary” of the Standard Specifications.

Any existing traffic signs that are destroyed or damaged during construction by the Contractor's activities shall be replaced in accordance with the Contract Documents, Standard Specifications, Special Technical Specifications, Project Plans, and Project Permits, and as directed by the Engineer.

520.04 Measurement and Payment

“TRAFFIC STRIPING (DOUBLE YELLOW CENTERLINE), PHASE 1”, “TRAFFIC STRIPING (FOG LINE), PHASE 1”, “TRAFFIC STRIPING (DOUBLE YELLOW CENTERLINE), PHASE 3”, and “TRAFFIC STRIPING (FOG LINE), PHASE 3” shall be measured on a per linear foot basis for the traffic striping painted and completed in place, and accepted by the Engineer as conforming to all the requirements in the complete work.

“REMOVE AND RELOCATE SIGNS AND/OR SNOW MARKERS, PHASE 1” and “REMOVE AND RELOCATE SIGNS AND/OR SNOW MARKERS, PHASE 3” shall be measured per the number of each traffic sign and/or snow marker installed and completed in place, and accepted by the Engineer as conforming to all the requirements in the complete work.

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in installing the traffic striping, complete in place, including everything required for a complete job, as shown on the Project Plans and Standard Plans, as specified in the Standard Specifications, these Special Technical Specifications, and as directed by the Engineer shall be at the contract unit price per linear foot of traffic striping installed and accepted by the Engineer under the bid items for “TRAFFIC STRIPING (DOUBLE YELLOW CENTERLINE), PHASE 1”, “TRAFFIC STRIPING (FOG LINE), PHASE 1”, “TRAFFIC STRIPING (DOUBLE YELLOW CENTERLINE), PHASE 3”, and “TRAFFIC STRIPING (FOG LINE), PHASE 3” and no additional compensation will be allowed.

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in installing traffic signs and snow markers, complete in place, including everything required for a complete job, as shown on the Project Plans and Standard Plans, as specified in the Standard Specifications, these Special Technical Specifications, and as directed by the Engineer shall be at the contract unit price per each traffic sign installed and accepted by the Engineer under the bid item for “REMOVE AND RELOCATE SIGNS AND/OR SNOW MARKERS, PHASE 1” and “REMOVE AND RELOCATE SIGNS AND/OR SNOW MARKERS, PHASE 3” and no additional compensation will be allowed.

Full compensation for conforming to the provisions of this Section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

530 ROADSIDE BARRIERS

530.01 Description

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary for the installation and construction of the new roadside barriers including any excavation, sub-grade preparation, backfill, and compaction, as shown on the Project Plans and details in accordance with the Contract Documents, Standard Specifications, Standard Plans, Special Technical Specifications, Project Permits, SWPPP, or as directed by the Engineer.

All certificates, installation recommendations, and shop drawings for the guardrail, terminals, posts, foundation details, plates, connectors, fittings, hardware, and other appurtenances for a complete job in place shall be submitted to the Engineer, a minimum of ten (10) working days prior to placement in the work, for review and acceptance.

Reference shall be made to the applicable sections of the State of Nevada Department of Transportation (NDOT), Standard Specifications for Road and Bridge Construction (2001 or current version) and the NDOT Standard Plans for Road and Bridge Construction (2010 or current version).

530.02 Guardrail, Connections, and Terminals

Materials for guardrail shall conform to the provisions of Section 720, “Guardrail Materials” of the NDOT Standard Specifications for Road and Bridge Construction. Construction shall be performed in accordance with Section 618, “Guardrail” of the NDOT Standard Specifications for Road and Bridge Construction.

Construction of guardrail terminals shall be in conformance with the applicable NDOT Standard Specifications for Road and Bridge Construction and the Manufacturer's details and requirements.

Applicable components of the guardrail system including guardrail terminals shall only be accepted as furnished by manufacturers listed in the NDOT Qualified Product List (QPL), which is shown below at the time of printing these specifications:

[http://www.nevadadot.com/About_NDOT/NDOT_Divisions/Planning/Research/Qualified_Product_List_\(QPL\).aspx](http://www.nevadadot.com/About_NDOT/NDOT_Divisions/Planning/Research/Qualified_Product_List_(QPL).aspx)

Guardrail Terminal

- Road Systems Incorporated
<http://www.roadsystems.com/>
2183 Elm Trace
Austintown, OH 44515
330-799-9291 [John Durkos 432-263-2435]
- Trinity Highway Products LLC
<http://www.trin.net/> or <http://highwayguardrail.com/>
950 West 400 South / PO Box 99
Centerville, UT 84014
800-772-7976 [Mike Hooley 801-631-2695 (m)]

Guardrail Offset Blocks

- Arizona Structural Laminators
<http://www.azglulam.com/>
PO Box 2008
Eagar, AZ 85925
928-333-5501 [Ginger Wiltbank]
- Trinity Highway Products LLC
<http://www.trin.net/> or <http://highwayguardrail.com/>
950 West 400 South / PO Box 99
Centerville, UT 84014
800-772-7976 [Mike Hooley 801-631-2695 (m)]

All galvanized guardrail assembly shall be colored with the specified "Natina Steel" product (or equal). Attention is directed to Section 540, "Galvanized Steel Coloring" of these Special Technical Specifications.

530.03 Measurement and Payment

"GUARDRAIL, PHASE 1" shall be measured on a per linear foot basis measured along the centerline of the newly installed guardrail system complete in place, and accepted by the Engineer as conforming to all the requirements in the complete work. All guardrail terminals and end treatments shall be measured on a per linear foot basis and included with the total guardrail footage for payment.

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in installing guardrail and guardrail terminal(s) including but not limited to all fittings, hardware, posts, and other appurtenances for a complete guardrail system in place, as shown on the Project Plans and Standard Plans, as specified in the Standard Specifications, these Special Technical Specifications, and as directed by the Engineer shall be at the contract unit price per each linear foot of guardrail installed and accepted by the Engineer under the bid item for "GUARDRAIL, PHASE 1" and no additional compensation will be allowed.

Full compensation for conforming to the provisions of this Section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

540 GALVANIZED STEEL COLORING

540.01 General

Work under this item shall consist of furnishing all labor, materials, tools, equipment, and incidentals as necessary for cleaning and staining exposed galvanized steel components listed below or as identified on the Project Plans and details to achieve a brown natural color finish (level of darkness to blend with surrounding features and/or as directed by the Engineer) in accordance with the Contract Documents, Standard Specifications, Special Technical Specifications, Project Permits, SWPPP, or as directed by the Engineer.

The following galvanized steel components (exposed portions above grade) shall be colored with a "Natina Steel" product (or equal).

- All guardrails, guardrail barrier rail connections, guardrail terminals, fittings, hardware, and other galvanized steel appurtenances of the finished guardrail assembly.

540.02 Description

The Engineer will verify all locations of galvanized steel surfaces that are to be cleaned and stained prior to initiation of the work.

Materials

The stain must consist of a clear soluble solution of soft buffered organic acids that accelerates the oxidization process without compromising the protective qualities of the galvanized surfacing. No pigment based colorants should be added to achieve the desired color. The stain must react with the galvanized surface over a period of 5-10 days to produce a dark brown color with a matte finish. The stain must be resistant to fading in the sun.

Preparation

Galvanized surfacing to be stained must be free of oils, dirt, and other contaminants. Cleaning of galvanized surface must be performed by one of the following methods:

- a) Steam cleaning conforming to Section 324.03.03.c of the Standard Specifications.
- b) Scrubbing with a brush and biodegradable detergent and thoroughly rinsing with clean water.
- c) Pressure washing with biodegradable detergent and thoroughly rinsing with clean water.
- d) Solvent cleaning conforming to the requirements in Surface Preparation Specification No. 1, "Solvent Cleaning," of the "SSPC - The Society for Protective Coatings."

All surfaces must be dried thoroughly before application of stain.

Application

After the designated areas to be stained have been prepared and the test section accepted, apply stain to all visible galvanized surfaces. Apply stain according to the Manufacturer's instructions to achieve a color consistent with the accepted test section. Spray application must be contained to prevent overspray onto adjacent surfaces and wood posts. Spray application should not be performed under windy conditions.

Stain must be applied uniformly. Any irregularities must be corrected according to the stain manufacturer's recommendations. Stained surfaces must be kept dry for a period of ten (10) days following the application of stain.

Test Section

The Contractor shall apply stain to a minimum 2 foot test section of galvanized steel identified by the Engineer. The Engineer shall be notified not less than seven (7) days before staining the test section. Prepare and stain the test section with the same materials, tools, equipment and methods to be used in staining final surfaces. The applied stain must be allowed to cure for a minimum of five (5) days before the Engineer's inspection. In the event more than one test section is required by the Engineer, each additional test section will be paid for as change order work. Use the accepted test section as the standard of comparison in determining acceptability of staining.

Submittals

The Contractor shall submit the following items to the Engineer a minimum of seven (7) days prior to application of staining (see test section requirements above):

1. A copy of the stain manufacturer's product Material Safety Data Sheet, written stain application instructions, and the location and date of staining test section.
2. Certificate of Compliance for the stain product
3. Proposed methods to control overspray, spillage and protection of adjacent surfaces for staining work occurring at the job site, to the Engineer for acceptance not less than seven (7) days prior to applying stain. No staining work will be allowed prior to such acceptance.

Pre-Accepted Products

The following product(s) are accepted for use in conformance with this section. Any substitute product must be submitted at least one (1) week prior to the bid date.

Product: Natina Steel
Natina Products, LLC
1577 First Street, Coachella, CA 92236
Phone 877-762-8462

540.03 Measurement and Payment

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with performing all the work involved in provisions of this section, complete in place as shown on the Project Plans, as specified in the Contract Documents, Project Permits(s), Standard Specifications, these Special Technical Specifications, the SWPPP, and as directed by the Engineer, shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for.

550 NON-WOVEN GEOTEXTILE

550.01 Description

A Non-woven geotextile filter fabric shall be used, where identified, for all applications unless specified otherwise on the Project Plans or elsewhere in these Special Technical Specifications. **Prior to placement in the work, the Contractor shall submit a sample of the non-woven geotextile filter fabric, certification, and product specifications to the Engineer for review and acceptance.** Non-woven geotextile filter fabric shall meet or exceed the following minimum specifications.

Grab Tensile Strength	165 lbs.	ASTM D-4632
Grab Elongation	60%	ASTM D-4632
Puncture Strength	100 lbs.	ASTM D-4866
Mullen Burst	330 psi	ASTM D-3786
Trapezoidal Tear	80 lbs.	ASTM D-4533
Apparent opening Size (AOS)	100 Sieve	ASTM D-4751
Permittivity	2.10 sec	ASTM D-4491
Permeability	0.28 cm/sec	ASTM D-4491
Water Flow Rate	125 gpm/sq.ft.	ASTM D-4491
UV Resistance	70	ASTM D-4355

550.02 Measurement and Payment

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with performing all the work involved in provisions of this section, complete in place as shown on the Project Plans, as specified in the Contract Documents, Project Permits(s), Standard Specifications, these Special Technical Specifications, the SWPPP, and as directed by the Engineer, shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for.

600 SOIL REVEGETATION TREATMENT

600.01 Description General

Revegetation of the Project area shall consist of seedbed preparation, placement of seed, harvest, preparation and installation of willow stakes and willow/alder root wads, soil amendment, propagated wetland mat, erosion control blanket installation, temporary irrigation, mulch application, tackifier application and other elements necessary to complete the revegetation components of the project shown on the Project plans and described in these Special Technical Specifications. Areas to receive revegetation treatments shall include all areas disturbed during construction, as indicated on the Project Plans and as directed by the Engineer and/or the Revegetation Specialist. The installation of these materials shall be accomplished in accordance with these Special Technical Specifications as shown on the Project Plans, as stated in the Project SWPPP and as stated in the Standard Plans and Standard Specifications.

No substitutions or alterations to these Special Technical Specifications shall be accepted without the prior written approval of the Engineer and the Revegetation Specialist. No further disturbance of any treatment area shall be allowed once seeding or installation of cuttings and plant materials has been initiated (except where specifically directed by the Engineer and Revegetation Specialist as part of the requirements for Maintenance, and Plant Establishment Success, Monitoring and Reporting provisions as noted elsewhere in these Special Technical Specifications).

Care shall be taken at all times to protect and prevent any disturbance to existing vegetation or previously installed revegetation treatments. Under no circumstances will any disturbance be allowed outside the work areas identified on the Project Plans. Any damage occurring to existing vegetation or previously installed revegetation treatments during construction operations shall be repaired or replaced, as determined by the Engineer and/or the Revegetation Specialist, at the Contractor's sole expense and no additional compensation shall be allowed for.

Contractor shall submit to the Engineer within twenty (20) calendar days following the award of Contract proof that orders for all materials in accordance with these Special Technical Specifications have been received and accepted by the supplier(s). Statement shall include estimated date(s) for delivery. The Contractor shall submit seed labels a minimum of 20 working days prior to seed application for acceptance by the Revegetation Specialist. Labels shall show seed vendor's certification for required seed mixtures, indicating percentage by weight, and percentages of purity, germination and weed seed for each species. Statement shall also include the source of the seed.

The Contractor shall notify the Engineer and Revegetation Specialist no less than three (3) working days in advance of revegetation work and shall not begin work until prepared revegetation treatment areas have been accepted by the Engineer and Revegetation Specialist. The treatment type and boundaries shall be accepted by the Engineer and Revegetation Specialist prior to commencement of the revegetation work.

The Contractor shall assure revegetation success and monitor/document the revegetation success in accordance with Sections 600.06 "Revegetation Maintenance and Bonding" and 600.08 "Plant Establishment Success, Monitoring and Reporting" of these Special Technical Specifications.

600.01.01 Timing of Revegetation

Timing of revegetation activities is critical to the overall success of the Project, especially in areas that will be seasoned and rewetted (all Phase 1 work and revegetation areas), and all tie-in areas as shown on the "TI" sheets of the Project Plans, with flowing water (Revegetation Treatment Types A, B, C, D, F, H and I). Soil and vegetation treatment activities are timed such that in water-flow areas (Treatment Types A, B, C, D, F, H, and I) revegetation species shall be established and accepted by the Engineer and Revegetation Specialist prior to being subject to and to withstand water flow stresses (rewetting/rewatering of channel).

All revegetation within an implementation area shall be complete and accepted by the Engineer and the Revegetation Specialist prior to the contractor commencing on work in any other implementation area or subsequent work as defined in the Contractor's construction schedule. Revegetation activities prescribed for each Phase of Activities (Phase 1, 2 & 3) must be completed and accepted by the Engineer and Revegetation Specialist no later than October 15 of each construction season.

The construction Contractor shall organize his/her work in coordination with their revegetation subcontractor and in accordance with Section 110 of these Special Technical Specifications to assure that treatment areas are ready for treatment, allowing the revegetation sub-contractor ample time to revegetate these areas by the prescribed date in the Contractor's construction schedule thus allowing the treatment areas to adequately season to accept and withstand stream flows in accordance with the proposed project construction schedule.

For all areas that have not received a revegetation treatment by the prescribed date, the construction Contractor shall apply Coir DeKoWe 700 fabric, or equivalent, as shown below, to the entire area. The Coir DeKoWe 700 fabric, or equivalent, as shown below, shall be stapled on twelve inch (12") centers throughout the entire application area. Ends of the fabric shall be overlapped by twelve inches (12") where fabric ends meet and double staked at those spots. Where fabric edges meet soil, such as along the sides of the treatment areas, that fabric shall be keyed into the soil at least four inches below grade. Further, if treatment is not completed and weedy species germinate and/or establish by the end of a construction season due to improper treatment or non-compliance with treatment timing requirements, the contractor shall be responsible for retreating the areas the following season if necessary and shall be responsible for any sediment pollution resulting from inadequate plant coverage with no additional compensation being allowed for.

Coir DeKoWe 700 Specifications			
Properties	700		
Width (in)	78.7	118.1	157.5
Weight/Roll (lb)	154	231	308
Area/Roll (yd ²)	120	180	240
Yarn	100% Spun Coir		
Material	ANJENGO; wheel spun, well cleaned, evenly spun twisted; scorages range from 12 to 20.		
Weight/Unit Area (oz/yd ²)	ASTM-3776C	20.6	
Open Area (%)		50	
Wide Width Tensile, Dry (lb/in) Wrap x Fill	ASTM D 4595-86	112 x 54	
Wide Width Tensile, Wet (lb/in) Wrap x Fill	ASTM D 4595	86 x 41	
Elongation at Failure, Dry (%) Wrap x Fill	ASTM D 4595	51 x 36	
Elongation at Failure, Wet (%) Wrap x Fill	ASTM D 4595	64 x 48	
Maximum Shear Stress (lb/ft ²)		4.46	
Chezy- Manning's Coefficient of Roughness*		.0294	
"C" Factor, 1:5:1 slope		0.003	
Water Flow Velocity (ft/sec)		10	

600.02 Revegetation of Disturbed Areas

Following construction of the proposed improvements, the general sequence of activities (for applicable phase of the work) under Soil Vegetation Treatment shall be as follows:

1. Willow/Alder Root Wad & Willow/Alder Stake harvest and preparation
2. Soil infiltration/decompaction treatment – specified areas ONLY as shown on the Project plans and/or as directed by the Engineer and/or the Revegetation Specialist
3. Topsoil (salvaged topsoil, imported topsoil, or amended fill) application – specified areas ONLY as shown on the Project plans and/or as directed by the Engineer and/or the Revegetation Specialist
4. Willow/Alder Root Wad & Willow Stake installation
5. Propagated Wetland Mat installation – specified areas ONLY
6. Seedbed Preparation and Soil Amendments
7. Seed, Mulch and Tackifier, Erosion Control Blanket applications – specified areas ONLY
8. Temporary Irrigation
9. Revegetation maintenance and establishment success inspection

600.02.01 Soil/Revegetation Treatment Goals

The goal of the project soils/revegetation treatment is to construct a stable stream channel with a connected and functioning floodplain to enhance the riparian habitat corridor through structural species diversity. Primary objectives include provision for sediment source control through maximizing infiltration and soil stabilization through the use of native vegetation, and to provide maximum soil surface protection through the use of native mulch materials.

600.02.02 Treatment Type Description

This section briefly describes the areas to which each Revegetation Type is applicable as identified on the plans.

Revegetation Type A

Type A is generally applicable on new constructed channel banks (Channel Types 1, 2, 3, & 4 as shown on the Project Plans) and floodplain areas adjacent to the new channel (as shown on the Project Plans). Type A areas are relatively wet prior to, through and after, the growing season. However, Type A areas can also successfully tolerate partial drying of surface soils late in the growing season. These areas are designed to infiltration up to 5 inches of precipitation per hour when antecedent moisture conditions are low (non-saturated).

Revegetation Type A consists of a hydraulic application of soil amendment and seed using **Seed Mix 1 (Table 600-1)** of facultative to facultative wet herbaceous and woody riparian species.

Revegetation Type B

Type B is generally applicable on restored, created, and enhanced wetland areas and on the floodplain fringe of certain Channel Types. Type B areas are relatively wet prior to, through and after, the growing season. However, Type B areas can also successfully tolerate partial drying of surface soils late in the growing season. These areas are designed to infiltration up to 5 inches of precipitation per hour when antecedent moisture conditions are low (non-saturated).

Revegetation Type B consists of a hydraulic application of soil amendment and seed using **Seed Mix 2 (Table 600-2)** of facultative to facultative wet herbaceous species.

Revegetation Type C

Type C is generally applicable at tie in locations (“TI” sheets of the Project Plans) in the floodplain areas. Type C areas are consistently wet prior to, through and after, the growing season at depth. However, Type C areas can also successfully tolerate partial drying of surface soils late in the growing season.

Revegetation Type C consists of hand installation prepared willow stakes.

Revegetation Type D

Type D is generally applicable on backfill of existing channel areas and come new channel bank areas. Type D areas are consistently wet prior to, through and after, the growing season. However, Type D areas can also successfully tolerate partial drying of surface soils late in the growing season.

Revegetation Type D consists of installation of prepared willow and alder root wads.

Revegetation Type E

Type E is generally applicable on areas requiring structural support to protect against higher sheer velocities, requested screening and areas that may be subject to backfill channel recapture by the new channel. Type E areas are consistent to relatively wet prior to, through and after, the growing season. However, Type E areas can also successfully tolerate partial drying of surface and near surface soils late in the growing season. These areas are designed to infiltration up to 5 inches of precipitation per hour when antecedent moisture conditions are low (non-saturated).

Revegetation Type E consists of a hydraulic application of soil amendment and seed using **Seed Mix 3 (Table 600-3)** of facultative to facultative wet woody riparian and herbaceous species.

Revegetation Type F

Type F is generally applicable on restored floodplain fringe. Type F areas are consistent to relatively wet prior to, through and after, the growing season. However, Type F areas can also successfully tolerate partial drying of surface and near surface soils late in the growing season. These areas are designed to infiltration up to 5 inches of precipitation per hour when antecedent moisture conditions are low (non-saturated).

Revegetation Type F consists of a hydraulic application of soil amendment and seed using **Seed Mix 4 (Table 600-4)** of facultative to upland herbaceous and woody species.

Revegetation Type G

Type G is generally applicable on disturbed upland areas, storage and staging areas and access routes outside of all other treatment areas. Type G areas are presumed to be relatively dry through the growing season. These areas are designed to infiltration up to 5 inches of precipitation per hour when antecedent moisture conditions are low (non-saturated).

Revegetation Type G consists of a hydraulic application of soil amendment and seed using **Seed Mix 4 (Table 600-4)** of facultative to upland herbaceous and woody species.

Revegetation Type H

Type H is generally applicable at “tie in” locations as indicated on the Project Plans (“TI” sheets) and consists of erosion control blanket. Revegetation Type H will be applied in combination with the additional types as shown on the Project Plans.

Revegetation Type I

Type I is generally applicable at “tie in” locations as indicated on the Project Plans (“TI” sheets) and consists of propagated wetland mat.

600.02.03 Soil Infiltration Treatment

Soil infiltration treatment shall consist of soil loosening (decompaction), any amendment application and final soil preparation. The term soil loosening refers to any of a number of processes that decompact the soil prior to revegetation treatment. All areas planned for revegetation shall be loosened and/or decompacted following construction of the proposed improvements and prior to topsoil placement and initiation of revegetation treatments. The top twelve to eighteen inches (as shown on the Plans or as specified in these Special Technical Specifications [where no mention on plans or specification the depth shall be 12 inches]) of soil shall be decompacted in order to allow plant roots to penetrate and to allow infiltration. Soil condition shall be such that a cone penetrometer can reach the specified depth with a resistance pressure of no greater than 250 pounds per square inch. The Contractor shall be responsible for demonstrating depth of decomposition prior to initiating revegetation treatments.

The Contractor shall contact the Engineer and Revegetation Specialist a minimum of four (4) working days prior to commencement of decompaction so that the process can be accepted and a field demonstration and coordination can take place. Wherever soil loosening is to take place, tree roots and existing plants will be avoided wherever possible. Generally, no machine loosening shall take place within the dripline of mature trees or shrubs. Where tree roots are encountered, loosening shall take place by hand implements such as pick mattocks or Pulaskis to approximately a depth of six inches (6”).

Description

Compacted soil shall be decompacted to the appropriate depth, as shown on the Project Plans and stated in these Special Technical Specifications. Soil shall be completely loosened so that no solid 'clod' greater than eight inches across the longest axis exists. If soil is ripped with wheeled equipment, soil shall be ripped to the appropriate depth in one direction and then ripped at right angles to the first ripping pass.

Final preparation

Following decompaction, topsoil placement, and seedbed preparation the soil surface shall be finish graded and lightly smoothed by rake (utilizing low-pressure track equipment or other accepted methods) such that some amount of surface roughness is retained. Specifically, soil relief will be between four and eight inches over a twenty-four (24) inch distance. The Contractor shall minimize soil compaction by equipment during any topsoil placement, seedbed preparation, and finish grading or shaping operations.

Prior to any topsoil placement the underlying subgrade shall be graded to comply with the Soil Roughness requirement as noted above. Topsoil shall be placed to uniform depths and under no circumstances shall be utilized solely to meet the said Soil Roughness requirement.

Inspection

Following the operations for decompaction, topsoil placement, and incorporation of any specified amendments the entire soil treatment area shall be inspected by the Engineer and Revegetation Specialist to assure compliance with these specifications. The Contractor shall also make note of the site inspection requirement, prior to placement of any topsoil as noted in Section 300.06 "Topsoil Placement" of these Special Technical Specifications). NO seeding or other work will commence until the inspection is completed and the decompaction treatment has been accepted by the Engineer and Revegetation Specialist.

In the event a Treatment Area, that does not include the new channel banks and immediately adjacent frequently inundated floodplain, is compacted during the operations as noted above (determined by the Engineer and/or Revegetation Specialist), the Treatment Area shall be de-compacted (scarified) to a minimum depth of 12 inches, as directed and to the satisfaction of the Engineer and Revegetation Specialist prior to installation of revegetation treatments. For monitoring or specification compliance purposes or if a question arises regarding the need for soil loosening treatment, the Contractor shall demonstrate depth of decompaction in the area in question using a cone penetrometer. Any area requiring a force greater than 250 psi to penetrate to a depth of twelve inches (or as otherwise specified in these Special Technical Specifications or shown on the Project Plans) shall be deemed compacted and shall be loosened per these Special Technical Specifications.

600.02.04 Seedbed Preparation

Following the Soil Infiltration Treatment as noted above, the Contractor shall apply and incorporate all specified soil amendments, as described in these revegetation specifications. The Contractor shall minimize soil compaction by equipment, during any seedbed preparation operations.

No wheeled or other mechanical equipment shall be permitted to travel on the prepared seedbed, except where specifically required for hydraulic application of soil amendment and seed mix. The use of equipment for hydraulic applications shall be in a manner that will minimize compaction of the prepared seedbed; access to the application areas shall be well dispersed and use of planks, plywood or other suitable load spreading techniques may be directed where necessary by the Engineer and/or Revegetation Specialist.

600.03 Materials General

The materials used shall be those prescribed for the items that constitute the finished work, and shall conform to the applicable requirement for this section (Section 600). All required certificates and samples shall be submitted prior to performing any revegetation work.

Within twenty (20) calendar days following the award of Contract proof that orders for all materials have been received and accepted by the supplier(s) shall be submitted to the Engineer and Revegetation Specialist. Statement shall include estimated date(s) for delivery. Submit seed labels a minimum of 20 working days prior to seed application for approval and acceptance by Engineer and Revegetation Specialist. Labels shall show seed vendor's certification for required seed mixtures, indicating percentage by weight, and percentages of purity, germination and weed seed for each species. Statement shall also include source of seed.

600.03.01 Material Sources

Materials as specified in these Special Technical Specifications can be acquired from the sources suggested as follows:

Comstock Seed	(775) 746-3681
Pacific Coast Seed	(925) 373-4417
Granite Seed & Erosion Control Materials	(801) 768-4422
Quattro Environmental, Inc.	(619) 522-0044
Profile Products LLC	(800) 508-8681
North Fork Native Plants	(208)-354-3691
Al Pombo, Inc.	(530) 587-4112

600.03.02 Salvaged Topsoil, Imported Topsoil and Amended Fill

Salvaged Topsoil

During excavation of the new channel and floodplain, and other earth disturbing work, the Contractor shall stockpile all topsoil for reuse in the project area in accordance with these Special Technical Specifications. Salvaged Topsoil shall not be stockpiled for a period greater than two (2) months or greater than three (3) feet in height, except where approved and directed by the Engineer and Revegetation Specialist. Salvaged topsoil shall be re-applied in areas designated on the Project Plans and in these Special Technical Specifications.

Salvaged topsoil shall consist of salvaging all topsoil from locations that have been cleared and grubbed in each phase of the project (Phases 1 and 3). Salvaged topsoil shall be properly stored and protected in locations accepted by the Engineer and in accordance with the Project SWPPP. Salvaged topsoil shall be free and clear of cobbles and or gravel exceeding two (2) inches in size. Salvaged topsoil shall be used in an order of priority, as determined by the Engineer, but generally will be use adjacent to the new channel first, and work away from the new channel (floodplain areas). All salvaged topsoil will be used prior to the use of amended fill.

Imported Topsoil

Imported Topsoil used in construction of new channel banks (as shown on channel types 1, 2, 3 and 4 on Detail Sheets D-3 and D-4) shall be compacted to a minimum of 80% and a maximum of 85% Relative Compaction and at +/- 2% of optimum moisture content as measured using the Standard Method (ASTM D 698).

Topsoil that is imported shall be properly stored and protected, and shall be free of roots, hard clay and stones which shall not pass through a 1-inch square opening. It shall be a loam to a silt loam mixture having at least 90 percent passing No. 10 sieve. Imported topsoil shall comply with the following requirements:

1. Contain no less than 2 percent nor more than 13 percent organic matter, as determined by the test for organic matter in accordance with ASTM D2974.
2. Contain no less than 25 percent or more than 40 percent clay, as determined in accordance with ASTM D422.
3. Sand content shall not exceed 55 percent, as determined in accordance with ASTM D422.
4. Silt Content shall be between 30 and 50 percent, as determined in accordance with ASTM D422.
5. The pH shall not be lower than 5.0 or higher than 8.0. The pH shall be determined with an acceptable pH meter on that portion of the sample passing the No. 10 sieve, in accordance with the "Suggested Methods of Tests for Hydrogen Ion Concentration (pH) of Soils," included in the ASTM Procedures for Testing Soils issued December 1964.
6. Topsoil shall meet the following mechanical criteria: 100 percent shall pass the 1-inch screen; 97-100 percent shall pass the 1.5-inch screen; and 40-60 percent shall pass the No. 100 mesh sieve.
7. Topsoil shall be free of clods, gravel, and other inert material. **Topsoil shall be certified to be free of non-native noxious vegetation and seed documented in writing from the Vendor.** Should such regenerative material be present in the soil, the Contractor shall remove, at his expense and in a manner satisfactory to the Engineer, all such growth, both surface and root, which may appear in the imported topsoil within 1 (one) year following acceptance of the work.
8. Topsoil used in construction of the new channel banks shall be compacted to a minimum of 80% and a maximum of 85% at +/- 2% of optimum moisture content as measured using the Standard Method (ASTM D 698).

Amended Fill

Amended Fill used in construction shall be placed in areas as shown on the Project Plans and described in these Special Technical Specifications. The amended fill shall be used as a "last case" in areas where topsoil is shown on the Project Plans; except under no circumstance used in the channel bank areas (areas depicted in channel type details on Sheets D-3 and D-4 of the project Plans). Generally, amended fill shall be used in the areas of the existing channel backfill and at the fringe of the floodplain areas, where not enough salvaged topsoil is available to cover the entire area to be revegetated.

Amended fill shall be amended native fill, as described in this subsection of these Special Technical Specifications. The amendments, to be added to the native fill, shall be determined by the Revegetation Specialist based on the soil test results performed by the Contractor as described in this subsection of these Special Technical Specifications.

Prior to the Contractor performing any earth disturbance work on the construction site (other than utility potholing and temporary erosion control efforts) the Contractor shall obtain four topsoil samples, at locations determined by the Revegetation Specialist. These locations will be scattered throughout the project site to obtain a representation of the topsoil characteristics in the Project area. These soil samples shall be sent to a laboratory testing facility, by the Contractor, and tests performed, as directed by the Revegetation Specialist to determine the composition and characteristics of the existing topsoil on the Project site.

Prior to the Contractor producing any amended fill topsoil at the Project site, the Contractor shall test the native fill to be used in the production of amended fill for the revegetation aspects. This native

fill shall be in a separate stockpile from that of native fill to be used for other aspects of the project and be solely used as amended fill for revegetation efforts. The Contractor shall take four (4) soil samples from each separate stockpile area to provide a representative sampling of the native fill to be used for amended fill. These soil samples shall be sent to a laboratory testing facility, by the Contractor, and tests performed, as directed by the Revegetation Specialist to determine the composition and characteristics of the select native fill to be used for production of any amended fill. The Revegetation Specialist will review both the existing topsoil sample results and the native fill sample results and develop an amendment prescription for the native fill. The Contractor shall apply and/or properly incorporate the prescribed amendments with the select native fill as necessary to produce the amended fill topsoil as described and directed by the Engineer and Revegetation Specialist, and to the acceptance of the Revegetation Specialist. The produced amended fill shall be stockpiled in a separate location from all other “dirt” materials (or immediately placed in the construction area as shown on the Project Plans).

600.03.03 Soil Amendments and Fertilizer

Soil amendments shall include those materials integrated into the soil growth medium that result in improved potential for seed germination and establishment, and soil moisture conditions.

600.03.03.01 New Channel Banks and Adjacent Frequently Inundated Floodplain:

This section shall apply to Revegetation Types A and B, and all areas shown in the Channel Type Details (Sheets D-3 and D-4) of the Project Plans only. The soil amendments submitted by Contractor to the Engineer and Revegetation Specialist for acceptance shall meet the minimum analyses presented below, shall be applied at the rate specified and shall use the method of application detailed in these Special Technical Specifications. Equivalents may be proposed by the Contractor for acceptance by the Engineer and Revegetation Specialist, however the burden of proof for equivalence in minimum analysis and performance are placed on the Contractor. Submittals for equivalent soil amendment materials must be accompanied by documentation of performance within the climatic zone and ecological application. Soil amendments specific to new channel banks and adjacent frequently inundated floodplain (Revegetation Types A and B, and all areas shown in the Channel Type Details [Sheets D-3 and D-4] of the Project Plans) shall not be applied in any other treatment areas as specified on the plans and as described in the Special Technical Specifications.

<i>Soil Amendments</i>	<i>Application Rate</i>
Humic Shale or equivalent	500 lbs/acre
Liquid Humus or equivalent	3 gal/acre
Soil Building Amendment (Kiwi Power or equivalent)	5 gal/acre

Soil Amendment and Fertilizer Specifications.

The following soil amendments have been selected based on their individual ability to perform in combination with the other specified amendments. Amendments selected must meet the following specifications:

Humic Shale

Humic shale shall meet the following minimum specifications:

- Not less than 6% OMRI-certified granular humic shale ore, comprising a minimum
- 45% humic acid, 4.5% fulvic acid, 1.5% sulfur, 2.25% iron, and 10% plant-derived mineral trace elements.

Liquid Humus

Liquid humus shall meet the following minimum specifications:

- 22% organic acids extracted from leonardite and other soluble carbohydrates in a patented formulation.
- Guaranteed analysis. 4% Soluble Potash (K₂O) derived from potassium hydroxide.

Soil Building Amendment

The liquid amendment shall meet the following minimum specifications (e.g. Quattro Environmental Kiwi Power or equivalent):

- The liquid amendment shall be a non-toxic liquid complex of organically-derived microbacteria, enzymes, humic acid, organic wetting agents and biostimulants to flocculate compacted soil, improve water penetration and activate soil nutrients will contain not less than: 11.5% Sarsapogenin, 20.0% Spirostant, 10.0% Sarsaponin, 10% Humic Acid, 10% Pargenin, and 0.25% Cytokinins.

The product must be biodegradable, non-polluting, non-volatile and non-toxic, and should not leave undesirable residues in the soil. Chemically derived substitutions are not acceptable. The product must not impair existing vegetative growth, be non-injurious to seeds, human, or animal life, and be effective with either acidic or alkaline soils.

600.03.03.02 All Other Revegetation Treatment Areas

Soil Amendments in all other Revegetation Types and areas of the Project (except Revegetation Types A and B, and all areas shown in the Channel Type Details [Sheets D-3 and D-4] of the Project Plans), shall be as described in this sub-section of these Special Technical Specifications.

Compost shall consist of Full Circle Integrated Tahoe Blend Coarse Mix consisting of approximately 33%, 7/8" to 4" composted coarse wood, 33% 7/8" to 3/8" composted coarse wood and 33% humus fines.

Compost shall consist of material derived from some combination of chipped, shredded or ground vegetation, wood products, and horse or cattle manure. No biosolids or biosolids compost shall be used. Wood feedstock shall be derived from the Lake Tahoe region wherever possible. Compost shall be processed so that an internal process of at least 57 degrees C (135 degrees F) is maintained for 15 continuous days. The compost shall be turned a minimum of 5 times during the composting process. Compost shall go through a minimum of 15 days curing period after the 15 day thermophilic process has been completed. Deleterious materials such as plastic, glass, metal or rocks shall not exceed 0.1 percent by weight or volume.

The compost shall contain between 0.6 and 2.0 percent total nitrogen, 2.0 to 3.0 percent phosphorus (as a combination of P and P₂₀₅), 2.0 to 7.0 percent potassium (as a combination of K and K₂O), 0.3 to 4.0 percent sulfur, 0.8 to 1.5 percent magnesium, 1.5 to 2.0 percent calcium and 0.3 to 0.5 percent sodium.

Application Rate

For bidding purposes, assume that compost shall be applied to a minimum depth of 3 inches evenly over the specified treatment areas (all areas except Revegetation Types A and B, and all areas shown in the Channel Type Details [Sheets D-3 and D-4] of the Project Plans), prior to tilling. Compost shall be mixed during the tilling process.

Compost Application

Compost shall be applied to the specified treatment areas (all areas except Revegetation Types A and B, and all areas shown in the Channel Type Details [Sheets D-3 and D-4] of the Project Plans). Compost shall be applied prior to decompaction activities. Compost shall be applied evenly to the treatment area surface to the specified depth. Prior to incorporation, the Engineer and Revegetation Specialist shall be

contacted (four working day notice required) and shall inspect the compost depth. No incorporation shall take place until the depth has been accepted by the Engineer and Revegetation Specialist.

600.03.03.03 Willow/Root Wad Fertilizer Specifications

This sub-section shall apply to Revegetation Treatment Type D and all relocated/replanted willows and alders shown on the Project Plans, stated in these Special Technical Specifications and as directed by the Engineer and/or Revegetation Specialist.

Willow/Alder root wad fertilizer shall be slow release tablets 20-10-5 (N-P-K). Granular slow release 17-7-12 (N-P-K) fertilizer may be substituted at the rate of one ounce per specified tablet.

Application rate

Two slow release tablets 20-10-5 (N-P-K) or one ounce slow release granular fertilizer 17-7-12 (N-P-K) per tablet shall be placed in the root wad planting hole subsequent to pre installation wetting of the planting hole per Section 600.03.06.

600.03.04 Seed Mixes

All seed shall be in conformance with the Nevada Department of Agriculture requirements (NRS Chapter 555) for freedom from noxious weeds, and will be delivered to the Contractor at the project site with each treatment area designated in separate bags. Each treatment area seed mix shall be delivered to the site sealed and clearly marked as to its species, purity, percent germination vendor's guarantee, and dates of test. In addition, the container shall be labeled to clearly reflect the quantity of Pure Live Seed (PLS) contained. Prior to seeding at the request of the Engineer and/or Revegetation Specialist, the Contractor shall provide letter of certification, original Association of Official Seed Analysts (AOSA) seed test results, and calculations of PLS content.

Table 600-1 Seed Mix 1 Facultative to Facultative Wet Herbaceous and Woody Riparian Species
Seed Mix 1 shall consist of the following:

<u>Species (Common Name)</u>	<u>Species (Botanical Name)</u>	<u>Wetland Indicator Status (Region 8)</u>	<u>PLS LBS per Acre</u>
Baltic rush	<i>Juncus balticus</i>	FACW	0.05
swordleaf rush	<i>Juncus ensifolius</i>	FACW	0.25
streambank wheatgrass (Sodar)	<i>Elymus lanceolatus ssp psammophilus</i>	FAC	1.00
creeping wildrye (Shoshone)	<i>Leymus triticoides</i>	FAC	1.00
meadow sedge	<i>Carex praegracilis</i>	FACW	0.50
analogue sedge	<i>Carex simulata</i>	FACW	0.25
tufted hairgrass	<i>Deschampsia cespitosa</i>	FACW	0.25
meadow barley	<i>Hordeum brachyantherum</i>	FACW	2.00
blue verbena	<i>Verbena hastata</i>	FACW	0.13
Western red columbine	<i>Aquilegia formosa</i>	FACW	0.50
Canadian milkvetch	<i>Astragalus canadensis</i>	FACW	1.00
redosier dogwood	<i>Cornus sericea ssp. sericea</i>	FACW	5.00
Woods rose	<i>Rosa woodsii</i>	FAC	3.00
golden currant	<i>Ribes aureum</i>	FACW	0.50
silver sagebrush	<i>Artemisia cana</i>	FACW	0.25
blue elderberry	<i>Sambucus nigra ssp. cerulea</i>	FACW	2.00
TOTAL PLS LBS/ACRE RATE			17.7

Table 600-2 Seed Mix 2 Facultative to Facultative Wet Herbaceous Species

Seed Mix 2 shall consist of the following:

<u>Species (Common Name)</u>	<u>Species (Botanical Name)</u>	Wetland Indicator Status (Region 8)	PLS LBS per Acre
Baltic rush	<i>Juncus balticus</i>	FACW	0.05
swordleaf rush	<i>Juncus ensifolius</i>	FACW	0.25
streambank wheatgrass (Sodar)	<i>Elymus lanceolatus ssp psammophilus</i>	FAC	2.00
creeping wildrye (Shoshone)	<i>Leymus triticoides</i>	FAC	2.00
meadow sedge	<i>Carex praegracilis</i>	FACW	0.50
analogue sedge	<i>Carex simulata</i>	FACW	0.25
tufted hairgrass	<i>Deschampsia cespitosa</i>	FACW	0.25
meadow barley	<i>Hordeum brachyantherum</i>	FACW	4.00
blue verbena	<i>Verbena hastata</i>	FACW	0.13
Western red columbine	<i>Aquilegia formosa</i>	FACW	1.00
Canadian milkvetch	<i>Astragalus canadensis</i>	FACW	1.00
TOTAL PLS LBS/ACRE RATE			11.43

Table 600-3 Seed Mix 3 Facultative Woody Riparian with Herbaceous Species

Seed Mix 3 shall consist of the following:

<u>Species (Common Name)</u>	<u>Species (Botanical Name)</u>	Wetland Indicator Status (Region 8)	PLS LBS per Acre
redosier dogwood	<i>Cornus sericea ssp. sericea</i>	FACW	6.00
Woods rose	<i>Rosa woodsii</i>	FAC	4.00
golden currant	<i>Ribes aureum</i>	FACW	1.00
silver sgaebush	<i>Artemisia cana</i>	FACW	0.5
blue elderberry	<i>Sambucus nigra ssp. cerulea</i>	FACW	4.00
Baltic rush	<i>Juncus balticus</i>	FACW	0.05
streambank wheatgrass (Sodar)	<i>Elymus lanceolatus ssp psammophilus</i>	FAC	4.00
creeping wildrye (Shoshone)	<i>Leymus triticoides</i>	FAC	4.00
meadow barley	<i>Hordeum brachyantherum</i>	FACW	6.00
TOTAL PLS LBS/ACRE RATE			29.55

Table 600-4 Seed Mix 4 Mesic Herbaceous and Woody Species

Seed Mix 4 shall consist of the following:

Species (Common Name)	Species (Botanical Name)	Wetland Indicator Status (Region 8)	PLS LBS per Acre
blue wildrye	<i>Elymus glaucus</i>	UPL	2.00
orchard grass	<i>Dactylis glomerata</i>	UPL	0.50
big bluegrass (Sherman)	<i>Poa secumda ssp. ampla</i>	UPL	0.25
Canby bluegrass (Canbar)	<i>Poa secunda ssp. canbyi</i>	UPL	0.25
creeping wildrye	<i>Leymus triticoides</i>	FAC	2.00
streambank wheatgrass (Sodar)	<i>Elymus laceolatus ssp. psammophilus</i>	FAC	2.00
Mountain brome (Bromar)	<i>Bromus marginatus</i>	UPL	4.00
Western yarrow	<i>Achillea millefolium ssp. occidentalis</i>	UPL	0.05
lacy phacelia	<i>Phacelia tanacetifolia</i>	UPL	0.50
fireflower	<i>Epilobium angustifolium</i>	UPL	0.05
aroowleaf balsamroot	<i>Balsamorhiza sagittata</i>	UPL	0.25
kinnikinnick	<i>Arctostaphylos uva-ursi</i>	UPL	4.00
common snowberry	<i>Symphoricaros albus</i>	UPL	3.00
snowbrush ceanothus	<i>Ceanothus velutinus</i>	UPL	0.50
wax xurrant	<i>Ribes cereum</i>	UPL	0.25
antelope bitterbrush	<i>Purshia tridentata</i>	UPL	6.00
chokecherry	<i>Prunus virginiana</i>	UPL	8.00
creeping Oregon grape	<i>Mahonia repens</i>	UPL	4.00
Woods rose	<i>Rosa woodsii</i>	UPL	3.00
TOTAL PLS LBS/ACRE RATE			40.6

600.03.04.01 Seed Origin

All seed shall originate from within the Lake Tahoe Basin or within 50 miles of the Basin and within 1000 vertical feet of the project elevation. Species such as *Elymus glaucus*, Stanislaus 5000 or *Mokolumne Brome* may be acceptable as a partial component of the seed mix; these non-local materials should make up only a portion of the entire seed mix, not to exceed 25%. Seed mixes shall be ordered premixed. Seed shall be certified weed free.

Seed from origins other than that specified may be used on accepted of the Engineer and Revegetation Specialist. Species and source must be specified as well as Pure Live Seed value. ALL SEED PROPOSED FOR USE ON THIS PROJECT MUST BE APPROVED BY THE ENGINEER AND REVEGETATION SPECIALIST PRIOR TO ORDERING FROM THE SEED SUPPLIER. Any seed that has not been accepted by the Engineer and Revegetation Specialist prior to application may not be used.

Areas to be seeded include all areas identified as "Treatment Areas" on the plan sheets. Seeding shall not begin until the Engineer and Revegetation Specialist have accepted the prepared treatment areas. The Contractor shall notify the Engineer not less than four working days in advance of any seeding. The Engineer or Revegetation Specialist will remove seed labels from the seed sacks at the time of seeding to verify species in the mix, varieties, and application rate according to these specifications.

600.03.05 Willow Stake Harvest, Preparation, Storage and Installation

Harvesting

Willow stake cuttings shall first be harvested from willow root wads (See Section 600.03.07) excavated to facilitate the project and then from remaining willows within Implementation Area A. Phase 1 willow stakes shall be harvested from phase 1 work areas, and phase 1 willows to be relocated and Phase 3 willow stakes shall be harvested from phase 3 work areas, and phase 3 willows to be relocated. Any necessary willow stakes for phase 2 work shall be harvested from Phase 3 willows to be relocated in Phase 3 work efforts. Cuttings shall be taken from live, dormant willows in the early spring before the buds start to break. If cuttings are taken after buds have broken, all new growth shall be removed from the cutting. Willow cuttings shall be at least ¾ inch in diameter. Cuttings used for staking shall be at least four (4) feet in length, or as directed by the Revegetation Specialist. Willow cuttings shall be harvested with lopping shears, pruning shears, or a small wood saw. Cutting tools used to harvest willows shall be extremely sharp to ensure a clean cut.

Storage and Handling

Growth and survival of willow cuttings is dependent on proper storage. The Revegetation Sub-Contractor shall wrap all stakes in burlap. Harvested cuttings shall be placed in temporary storage consisting of moist, dark, and cool (40 to 55 degrees F) conditions. Cuttings shall be placed in storage within 6 hours of harvesting. During the period between harvesting and placing in storage, the cuttings shall be kept moist and out of direct sunlight.

Immediately prior to planting, all willow cuttings shall be soaked in water for a minimum of 24 hours to improve stem water content and root and shoot initiation. Soaking cuttings for 10-14 days is recommended. During soaking, the entire cutting shall be covered with water and be kept away from direct light.

Staking

Willow stakes shall be planted in areas designated on the plans, or as directed by the Engineer and/or Revegetation Specialist. Willow stakes shall be driven into the soil in a manner that will not result in splitting of the stake, and so that at least half the length (2 feet) of the cutting is beneath the soil surface. Willows shall be staked at an average spacing of 3-foot centers, as shown on the Plans, or as Directed by the Engineer and/or Revegetation Specialist. However, willow stakes shall be arranged in clusters, rather than being evenly spaced. The exact arrangement of willow stakes will be guided in the field by the Engineer and/or Revegetation Specialist.

The willow cuttings shall be installed after all other revegetation efforts have been completed.

600.03.06 Willow/Alder Root Wad Harvest, Preparation, Storage and Installation

The term “**willow/alder**” used in these Special Technical Specifications includes all branches, leaves, and entire root ball and soil attached. “Willow/alder” shall be referred to in this procedure as a “**willow/alder root wad.**”

Work under this item shall consist of furnishing all labor, tools, materials, and equipment necessary to salvage and transplant willow/alder and/or alder root wads in accordance with the Plans and these Special Technical Specifications. Work under this item in general consists of the following tasks: (1) trimming willow/alder branches and removing and disposing of all parts of the willow/alder not being used on the Project, (2) removing willow/alder root wads, salvaging willow stakes (See Section 600.03.05), and installation of willow/alder root wads. All willow/alder root wads excavated as a part of site preparation activities may be salvaged and replanted elsewhere within the project.

Locations for salvaging willow/alder root wads shall be located within the areas to be disturbed by the contractors operations to properly construct the project. The Contractor and Engineer and/or Revegetation Specialist shall identify and mark the willow/alder to be salvaged and transplanted prior to the contractor salvaging, or removing any willow/alders within the project area. The Contractor and Engineer and/or Revegetation Specialist shall further identify the transplanted/relocated locations for each of the willow/alders to be transplanted/relocated. The Contractor shall identify each willow/alder to be relocated with flagging, or other identifiable information that will not harm the willow/alder and stake the transplanted/relocated location with identifiable information.

All root wads of willows/alders to be transplanted/relocated shall be placed in trenches. These trenches shall be dug and then filled with water, allowed to drain completely and then filled with water again and drained. Following drainage of trenches, root wads shall be placed into the trenches and backfilled with soil removed from trenches. The entire root wad storage area shall then be irrigated so that root wads are not allowed to dry. The trenches shall be of sufficient depth and width to secure, protect and cover the entire root mass of all wads.

The Contractor shall restore the root wad storage area to the proposed finished condition as shown on the Project Plans and as stated in these Special Technical Specifications.

The following detailed procedure shall be followed in salvaging and transplanting the willow/alder roots wads:

Transplanting of willow/alder root wads shall occur immediately after removal and no more than 8 hours after salvage. If the willow/alder is not to be transplanted within 8 hours of its salvage, the revegetation sub-contractor shall follow the instructions for “willow/alders to be transplanted later”, as stated in this sub-section.

Grading for construction of areas where willow/alder root wads will be transplanted shall progress so that the willow/alder to be removed and transplanted can be replanted immediately after salvage without interfering with the final grading in the areas of replanted willow/alder root wads. The exact location where the willow/alder root wads are to be transplanted will be designated in the field by the Engineer and/or the Revegetation Specialist.

For those willow/alders that will be transplanted immediately (within 8 hours or salvage):

1. Prior to removal of willow/alder roots wads, all growth over one (1) year old shall be cut to within twelve (12) inches above the crown in order to reduce transpiration during storage. All fresh shoots shall be left intact. Cuttings shall be salvaged for stakes. Willow/alder/alder roots wads shall be planted in areas designated on the plans, or as directed by the Engineer and/or Revegetation Specialist.
2. Planting holes shall not be prepared more than two (2) hours prior to willow/alder clump removal. The Contractor shall excavate an area large enough (approx. 150% of the diameter of the root ball) to receive the willow/alder/alder root ball to a depth of 12” below the root zone. The Contractor shall loosen soils in the bottom and along the sides of the hole, and moisten soils to the rooting depth.
3. Following excavation, the hole shall be filled to the top with water and allowed to drain completely (this process may take up to several hours, depending on soil conditions).
4. Following planting hole wetting, slow release fertilizer shall be placed in the bottom center of the hole and covered by hand with up to ½ inch of soil.
5. Contractor shall remove each willow/alder clump using an 18” minimum bucket. Removal shall include willow/alder and root ball with soil attached. Willow/alder roots wads shall be removed in such a manner that the main root structure is not damaged.

6. Contractor shall place willow/alder clump in the excavated area to receive the willow/alder/alder root ball. Small amounts of backfill soil shall be added such that the root ball is leveled with the main stem of the willow/alder oriented vertical, the rest of the hole shall be backfilled.
7. Contractor shall backfill with the moist excavated soil. Soil shall be tamped firmly in place such that the backfill matches the surrounding grade and no voids exist around the root ball. A circular berm at the base of the clump shall be built to hold at least 2 inches of water.
8. Immediately after planting, the Contractor shall irrigate the transplanted willow/alder clump thoroughly. Each willow/alder clump shall be watered such that the circular berm areas at the base is filled with water and allowed to drain. This procedure shall be completed two more times. Following this procedure, planted willow/alder root wads shall be irrigated regularly as described below.
 - Root wads shall be watered as described above at least twice per week until October 30th or until snow covers the ground, whichever occurs first.

For those willow/alder roots wads to be transplanted later (transplanted more than 8 hours after salvage):

1. Contractor shall trim willow/alders to a height of two (2) feet above the crown. Cuttings shall be salvaged for willow/alder stakes.
2. Contractor shall remove each willow/alder clump using an 18" minimum bucket. Removal shall include the willow/alder and root ball with soil attached.
3. Contractor shall wrap root ball in burlap and tie burlap with heavy-duty cord to willow/alder clump at top of roots.
4. Contractor shall transport and store willow/alder clump(s) in a protected area with shade adjacent to transplant area(s) or shall be placed within the staging areas indicated on the Plans in trenches dug to at least the depth of the root wad balls.
5. Contractor shall irrigate the willow/alders on a daily basis to maintain willow/alder health.
6. At the time of transplanting, but no sooner than two (2) hours after removing willow/alder roots wads from storage, Contractor shall install willow/alder roots wads as directed above (in the "transplanted immediately" sub-section) in steps 3 through 8.

Note, the contractor shall not store willow/alders for a time greater than 2 weeks. All willow/alder salvaged shall be transplanted within 2 weeks of salvage or no compensation will be allowed for.

600.03.07 Mulch and Tackifier

600.03.07.01 Mulch Specifications

New Channel Banks, Frequently Inundated Floodplain, Wetland Areas

These areas shall include Revegetation Treatment Types A, B and F.

Mulch material includes mulch and bonding fibers, and shall meet the following minimum specifications:

Mulch

Contains a nutrient ratio of 6-4-1 N-P-K, which is time released by combining ingredients with distinctly different degradation rates.

Contains at least 12% composted layer poultry manure analyzing not less than 2-5-3 N-P-K nutrient ratio.

- Contains not less than 3.5% N derived from natural proteins.

- Contains not more than 3.0% N derived from non-protein sources.
- Contains a minimum of 85% organic substances (derived from plant or animal material).
- Contains not less than 2.5% Calcium.
- Contains not less than 14%, nor more than 18% Crude Fiber.
- Contains not less than 5% OMRI-certified granular humic shale ore, itself comprising a minimum 45% humic acid, 4.5% fulvic acid, 1.5% sulfur, 2.25% iron, and 10% plant-derived mineral trace elements.
- Contains Sarsaponin.
- Biodegradable, non-polluting, non-volatile, non-toxic, free of weed seed, and contains no heavy metals.
- Contains not more than 13% moisture.
- Pelletized and bagged for handling ease.

Bonding Fibers

Bonding fibers are the pure fibers produced from Yucca schidigera and are designed to promote water infiltration into the soil, while enhancing the holding performance of the hydraulic seeding slurry by providing mechanical cross bonding upon the soil surface. Other products meeting the following salient characteristics will also be acceptable:

- Consist of pure fibers produced from the Yucca plant Yucca schidigera.
- Particle size, through 40 mesh >20%, between passing 16 and 40 mesh minimum 45%.
- Bark particles minimum 20%.
- Fibers 1/2” – 1” >25%.
- Remain functional through one growing season.
- Product is organic and fully biodegradable.

All Other Treatment Areas (Valley-wide Grade Control Structures, Old Channel Backfill, Upland, Floodplain Fringe)

These areas shall include Revegetation Treatment Types E and G.

Mulch shall consist of either pine needles or associated duff material and/or tub ground wood chips. Pine needles shall contain no more than 15% impurities by weight such as pine cones, twigs, rocks or other material. Garbage shall represent no more that 0.5% of the total volume. Mulch shall contain no more than 2% by volume mineral soil and no more than 10% decomposed organic matter. The Contractor shall submit a sample of the mulch proposed for the Project to the Engineer for review and acceptance a minimum of ten (10) working days before scheduled application of the mulch. If the mulch is rejected, a minimum of five (5) working days shall be provided to the Engineer for review of any subsequent samples. Wood chip mulch shall consist of tub ground, clean wood chips with uneven spear length and configuration and shall be derived from disease free, virgin wood material. No recycled building materials shall be acceptable.

600.03.07.02 Tackifier Specifications

Tackifier

Tackifier material includes soil stabilizing compound and soil binder reinforcement, and shall meet the following minimum specifications:

The soil stabilizing compound shall be a polymer dispersion, (e.g. Quattro Environmental “ATLAS SoilLok™” or equivalent) designed to form a flexible,

water-insoluble, porous membrane (distinctive lattice-like structure) in the topmost soil layer. Land-Grab™ (Cognis) and Henkel 56-8379™ (Henkel) are also acceptable products and may be applied at the same rate as specified herein. Other products meeting the following salient characteristics will also be acceptable:

- Consists of a polyvinyl-acetate compound containing not less than 55% active solids.
- Contains no poly-acrylates or polyvinyl-acrylics.
- Readily miscible in water.
- Flexible and retains its flexibility after curing.
- Does not inhibit water and oxygen infiltration.
- Organic, biodegradable, non-polluting, non-volatile, non-toxic, and leaves no undesirable residues in the soil.
- Does not impair existing vegetative growth.
- Does not re-emulsify once dry.
- Non-injurious to seeds, human and animal life.
- Non-flammable.
- Effective with either acid or alkaline soils.

Soil Binder (Tackifier) Reinforcement

To enhance the performance and structural integrity of the hydraulically-applied nutritious bonded fiber membrane slurry, 1/2” polypropylene fibers (e.g. Quattro Environmental “Tackifibers” or equivalent) formulated to provide mechanical cross bonding within the membrane and between soil. The product shall have the following characteristics:

- Consists of polypropylene fibers.
- Minimum 12 millimeters long (ASTM D-4101, Group 1/Class 1/Grade 2).
- Tensile strength – 20,000 psi (ASTM D-2256).
- Specific gravity – 0.91 (ASTM D-792).
- Photo-degradable.
- Remain functional for one growing season.

600.03.07.03 Application Rates for Mulch and Tackifier

<i>Mulch & Tackifiers</i>	<i>Application Rate</i>
Mulch (Fertil Fibers or equivalent)	1.5 tons/acre
Stronghold Fibers or equivalent (Bonding Fibers)	60 lbs/acre
Soil Binder (ATLAS SoilLok™ or equivalent)	50 lbs/acre
Soil Binder Reinforcement (Tackifibers or equivalent)	35 lbs/acre

600.03.08 Propagated Wetland Mat

This subsection relates to Revegetation Treatment Type I.

Propagated wetland mat delivery should be scheduled to coincide with immediate job site installation. If mats cannot be immediately installed, they can be stored in a shady location for no more than **three** days and must be kept thoroughly saturated and covered (tarp) during that time. In hot, dry weather (as determined by the Engineer and/or the Revegetation Specialist) mats should be stored under the same conditions for no more than **two** days. The contractor and revegetation sub-contractor shall take

all measures necessary to provide for immediate placement of propagated wetland mats in all areas to assure a greater likelihood and success. Any propagated mat that has sat for more than 12 hours and not installed will be inspected by the Revegetation Specialist, and if not deemed acceptable by the Revegetation Specialist, will not be installed by the Contractor and shall be removed from the Project site. The rejected material will become the property of the Contractor and the contractor shall provide new propagated mat for installation on the project. No additional compensation shall be allowed for disposal of the rejected mat and/or replacement mats. Mats are delivered rolled and are most easily moved by two people with hay hooks. Propagated Wetland mats are not shipped on pallets.

600.03.08.01 Propagated Wetland Mat Specifications

Wetland mats are approximately 16.2 feet in length and 3.2 feet wide. Per mat weights vary seasonally between 120 - 170 pounds.

Mat material shall be constructed of biodegradable, processed coconut fiber plugged with native wetland plants (or approved equivalent) as follows.

- Area: Wetland Sod units are 52-53 Sq. ft. per unit
- Length: 16.2 ft. (5m) long,
- Width: 3.2 ft. (1m) wide
- Coir Mat Thickness: 3-4 inches
- Coir Mat Weight– 2.7 kg/m²

Each mat shall be banded with a species classification tag for identification. For example, a mix with *Carex nebrascensis*, *Carex aquatilis* and *Juncus arcticus* will read *CnCaJa*.

600.03.08.02 Propagated Wetland Mat Installation and Stake Removal

Mats are simply moved to the installation site, unrolled and then staked down. The Contractor shall ensure that the plant roots and the bottom of the mat are in direct contact with the soil. Space between the mat bottom and ground caused by folds, wrinkles or upturned mat edges will create a void that will allow the root system to dry out. Installing mats over large rocks, tree branches, very rough ground or anything that prevents root-to-soil contact shall not be allowed.

Propagated Wetland Mats shall only be installed within Revegetation Type I as indicated on the plans.

Wetland mats shall be staked in placed in accordance with the following guidance.

- 12 to 16 inch wooden stakes shall be driven through the mat at a slight angle with about 4” of the stake left protruding above the mat. Twelve to sixteen wooden stakes shall be used per mat for staking in place.

During the revegetation maintenance period (approximately in the second growing season after installation of the propagated mat), all stakes shall be removed upon vegetation establishment as directed by the Engineer and/or Revegetation Specialist.

During the establishment period, wetland mats shall be irrigated in accordance with Section 600.05 of these Special Technical Specifications.

600.03.09 Erosion Control Blanket

This subsection relates to Revegetation Treatment Type H.

Erosion control blanket (North American Green SC150BN™ or equivalent) shall be constructed of 100% biodegradable blanket and of 70% agricultural straw and 30% coconut fiber with a functional

longevity of up to 18 months. Erosion Control Blanket shall be installed in specific areas as indicated on the Project Plans as shown in Revegetation Treatment Type H.

600.03.09.01 Erosion Control Blanket Specifications

The erosion control blanket shall be of consistent thickness with the straw and coconut evenly distributed over the entire area of the mat. The blanket shall be covered on the top and bottom sides with 100% biodegradable woven natural organic fiber netting. The top netting shall consist of machine directional strands formed from two intertwined yarns with cross directional strands interwoven through the twisted machine strands (commonly referred to as a Leno weave) to form an approximate 0.50 x 1.0 (1.27 x 2.54 cm) mesh. The blanket shall be sewn together on 1.50 inch (3.81 cm) centers with degradable thread.

Material Content shall be as follows:

- Matrix 70% Straw Fiber 0.35 lbs/yd² (0.19 kg/m²)
- 30% Coconut Fiber 0.15 lbs/yd² (0.08 kg/m²)
- Nettings Top – Leno Woven 100% biodegradable organic jute 9.3 lb/1000 ft² (4.5 kg/100 m²)
- Bottom – 100% biodegradable organic jute fiber 7.7 lb/1000 ft² (3.76 kg/100 m²)
- Thread Biodegradable

600.03.09.02 Erosion Control Blanket Stakes

Erosion Control Blanket Stakes shall be 100 % biodegradable "T"- shaped pin designed to safely and effectively secure erosion control blankets. The biodegradable stake shall be fully degradable by biological activity within a reasonable time frame. The bio-plastic resin used in production of the biodegradable stake shall consist of polylactide, a natural, completely biodegradable substance derived from renewable agricultural resources. The biodegradable stake must exhibit ample rigidity to enable being driven into hard ground, with sufficient flexibility to resist shattering. The biodegradable **stake shall have adequate serrations on the leg to increase resistance to pull-out from the soil.** The biodegradable stake shall be the North American Green Bio-STAKE or accepted equal, with the following dimensions:

- Leg Length: 6.00 in. (15.24 cm)
- Head Width: 1.25 in. (3.18 cm)
- Head Thickness: 0.25 in. (0.64 cm)
- Leg Width: 0.50 in. (1.30 cm)
- Leg Thickness: 0.25 in. (0.64 cm)

600.03.09.03 Erosion Control Blanket Installation

Erosion control blanket shall only be installed within Revegetation Type H as indicated on the project plans.

Erosion control blanket shall be installed after installation of rock armoring, willow/alder root wad installation, hydraulic application of seed, soil amendment, mulch and tackifier, however prior to installation of willow stakes.

Erosion control blanket shall be installed in a manner such that the blanket is cut to fit around rock armoring and root wads and fastened to the soil without overlap of erosion control blanket. All erosion control blankets and associated stakes shall be installed per manufacturer's requirements.

600.04 Seed, Soil Amendment, Mulch and Tackifier Application

New Channel Banks, Frequently Inundated Floodplain, Wetland Areas

These areas shall include Revegetation Treatment Types A, B and F.

The Revegetation Specialist shall verify labeling of soil amendments, mulch and tackifier materials upon delivery to the site and prior to mixing for application. The Revegetation Specialist will remove the seed labels from the seed sacks at the time of seeding to verify species in the mix, varieties of species, and application rate according to these specifications. Seed, soil amendments, mulch and tackifier shall be mixed and applied simultaneously in a hydraulic slurry. Slurry materials shall be mixed and applied in accordance with the manufacturer's specifications.

Equipment

The hydraulic application of the seed, amendment, mulch and tackifier slurry shall be accomplished using a hydroseeding unit that must be capable of providing a uniform application using water as the carrying agent. Use of a hydroseeding unit equipped with gear driven pumps will not be permitted as it may result in damage to the seed. The hydroseeding unit must be equipped with a centrifugal pump with a minimum discharge capacity of 275 GPM, 105 PSI, with 3/4 inch solid clearance. Tanks shall be equipped with a paddle type agitator designed for maximum mixing extending the full length of the tank and supported on each end. The agitator should be variable from 10 to 120 RPM, reversible, and should provide valved by-pass back to the tank to allow for liquid recirculation to implement mixing and allow for remote valve operation.

Treatment Area Pre-Wetting and Weather Conditions

All areas receiving a specified seed mix, amendment and mulch and tackifier slurry shall be pre-wet with water to a depth of one inch. The application of seed, soil amendments, mulch and tackifier will not be permitted during rain, or when the weather forecast calls for heavy precipitation within 72 hours of application or under windy conditions.

Mixing of Slurry

While loading the hydroseeder tank with water and with agitator in operation, add bonding fibers to tank by vigorously shaking and dispersing handfuls of fibers into the slurry. The contractor shall take care to prevent clumping of fibers which has the potential to plug equipment. The hydroseeding unit must be flushed and washed out to eliminate any contamination from previous use. Seed shall be added to the slurry mixture just prior to beginning application. Slurry shall be applied within 15 minutes of adding the seed to the slurry mixture.

Slurry Application

During application of soil amendment/seed, mulch, and tackifier, extreme care shall be taken to avoid puddling, runoff, and over-spray of the slurry. The slurry shall be applied under but **not on the foliage of existing vegetation**. Burlap bags or other materials approved by the Revegetation Specialist shall be used to cover plant canopies in areas where the slurry cannot be applied without over-spray onto adjacent vegetation. The burlap coverings shall be removed immediately after completion of tackifier application with extreme care to minimize disturbance to where slurry has been completed. Completed areas subsequently disturbed by the Contractor shall be repaired at the Contractor's expense and no additional compensation shall be allowed for. The Engineer and Revegetation Specialist shall determine the appropriate method to repair the area, which may include combinations of seeding, soil amending, mulching, and tackifier applications. Treatment areas shall be evaluated on a continual basis during the project for needed repairs.

All Other Treatment Areas (Valley-wide Grade Control Structures, Old Channel Backfill, Upland, Floodplain Fringe)

These areas shall include Revegetation Treatment Types E and G.

Following soil amendment (compost) applications, the seed shall be spread by hand operated broad-cast seeder evenly across the treatment area. Seed should then be mixed with the soil surface using the flat side of the rake so that seed is covered by a maximum of 1/4" inch of soil material. Seed mix shall be approved by the revegetation inspector. No seed shall be applied until approved by the Revegetation Inspector.

Pneumatic Mulch Application

Mulch shall be applied to the soil surface either pneumatically to a depth of 1 inch or by hand to a depth of 2 inches. (Note: pneumatic application may reduce raw volume by 10-20%). The needle length of the material shall be as follows: 25% to be less than 1 inch in length; 50% to be between 1 inch and 3 inches; 25% to be greater than 3 inches. Tub ground wood chip mulch, where used, shall be applied to a depth of 1.5 inches and such that 98% of the ground surface is covered (no more than 2% soil visible as measured by cover point measurements.)

Tackifier Application

Mulch shall be tackified following pneumatic application using Soil Binder (ATLAS SoilLok™ or equivalent) at a rate of 50 Lbs/Acre or as specified within these Special Technical Specifications. If a disagreement arises about the cover amount of mulch, the contractor shall arrange to have the mulch cover assessed using cover point methods described in Hogan (2003) to a confidence level of 90%.

Tackifier shall be applied using hydroseeding equipment capable of adequately mixing, suspending, and delivering specified rates of tackifier and cellulose fiber to treatment areas on the project site. See Section 600.03.07.02 for Tackifier Specifications.

Mulch must be of adequate amount and color to visually determine even application. The tackifying solution shall be applied under but not on the foliage of existing vegetation. The Contractor shall exercise extreme care during tackifier application to refrain from allowing overspray onto installed containerized plant materials. The use of burlap or clear plastic sheeting to shield installed containerized plant materials during application of tackifier is permissible. Protective cover must be removed immediately following application in the vicinity of the protected plant materials.

600.05 Temporary Irrigation

Temporary irrigation shall be used to encourage rapid plant establishment and deep root penetration. Low-flow, long-duration irrigation is intended to provide deep infiltration to assist with initial germination, plant establishment and sod re-establishment so that above-ground biomass provides surface cover and roots provide soil strength and cohesion. Irrigation is intended solely as an initial assistance for germination and sod establishment and is not intended to continue past the initial vegetation establishment period.

All areas to be revegetated as shown on the plans, or as directed by the Engineer and/or Revegetation Specialist shall receive temporary irrigation. These areas include all revegetation types, except willow/alder root wads, which irrigation of are described in section 600.03.06 of these Special Technical Specifications. The irrigation aspect shall be two fold. The first aspect will be that of spray irrigation of all disturbed areas, and the second aspect will be specific irrigation of all installed willow/alder root wads and willow stakes.

Temporary irrigation shall be performed to all revegetated areas/types with a low-pressure impact system in order to establish vegetation to conditions described in these Special Technical Specifications. Irrigation be performed such that water is applied evenly throughout all revegetation treatment areas and shall penetrate to at least twelve (12) inches below the ground surface within twelve (12) hours of irrigation and allows the surface soil to dry out while maintaining adequate moisture levels at depth. **Exact irrigation scheduling for all areas shall depend on air and soil temperatures and will require adjusting during the course of the growing season.** Irrigation schedules shall be as described in these Special Technical Specifications and submitted to the Revegetation Specialist for acceptance to ensure proper timing, frequency and duration. Above-ground irrigation shall take place early in the morning or late in the evening whenever possible in order to minimize water loss due to high air temperatures and wind. A suitable timer/controller device shall be part of the temporary irrigation system in order to program an irrigation schedule an apply water to the revegetation treatments areas as specified herein.

The temporary irrigation system shall consist of above-ground piping that is flexible, highly burst-resistant and suitable for use in a pressure piping system (Certa-Lok Yelomine™ or accepted equal), and the piping shall be capable of connecting to full circle heads (low precipitation rate, < 2.5 gallons per minute [gpm]) each with a radius of 20 feet stream rotor or equivalent spray heads capable of delivering water to the areas where the applicable revegetation treatments are applied as shown on the Plans. Previously used piping and spray heads may be used in the project work as long as the materials are in good working condition and meet the standards as noted herein. Above-ground irrigation shall be constructed in a manner that the reach of sprinklers shall overlap thirty (30) percent in order to cover the entire surface of the restored area. The Contractor shall be responsible to provide for any underground crossings and pipe sleeves as may be necessary to avoid surface conflicts with roads, trails, and other public use areas. Restoration of any paved/concrete surface shall be considered included with this item of work, and no additional compensation will be allowed for.

The contractor shall develop a proposed irrigation plan for each phase of the Project for submittal to the Engineer and Revegetation Specialist for review and acceptance. The irrigation plan shall show a minimum of the following information items:

- Connection points to existing service lines
- Locations of all meters
- Locations of all valves
- Zones of the irrigation system
- Locations, types of all irrigation heads
- Locations, types and sizes of all piping and fittings

The proposed irrigation plan shall be developed on the Revegetation Plans (Sheets R-1 through R-4) of the Project Plans.

The irrigation water is proposed to be supplied by the Third Creek Homeowner Association. The Contractor is responsible for coordination with the Homeowners association (and/or their management company)for the allowable connection points to the system (southerly of Northwood Boulevard on the eastern side of the creek is the anticipated location) The contractor is further responsible for the connection to the existing system, disconnection of the existing system and the necessary repairs to the existing system when complete to assure a properly function system during and after the contractors irrigation period. **Alternate irrigation methods proposed by the Contractor shall be submitted to the Engineer for review and acceptance prior to commencement of irrigation activities.** Should an alternative method not be accepted, the method outlined in these Special Technical Specifications shall be undertaken by the Contractor. A water meter shall be installed at each water supply tie-in to monitor and report the volume of water used to the Engineer.

Visual inspection of the temporary irrigation system and areas of coverage shall be performed by the Contractor on a regular basis (at least weekly during periods of operation) to confirm the constructed irrigation system functions in accordance with these Special Technical Specifications. Above-ground temporary irrigation systems shall be inspected before each irrigation cycle. Irrigation will not produce rills, gullies or sheet flow and be regularly maintained so that leakage is minimized. The irrigation system must ensure that no soil movement takes place and that water penetration meets the requirements of these Special Technical Specifications.

The temporary irrigation system must be winterized in the fall and re-activated in the spring for each applicable growing season for the duration of the contract work and maintenance period. As part of the winterization procedures, the Contractor shall make all provisions as necessary to ensure the safety of the public and protect the components of the temporary irrigation system and source water service connections from damage. Any metal stakes and other hard objects that may present a tripping hazard or be cause for injury, shall be removed from the area when the irrigation system is not in use. For any winter period the Contractor shall be prepared to fully dismantle and remove the entirety of the temporary irrigation system, if so directed by the Engineer and/or Revegetation Specialist.

Upon completion of irrigation activities as determined by fulfillment of revegetation success criteria and any applicable project permit requirements, the irrigation system shall be removed and disposed of in accordance with the Standard Specifications and these Special Technical Specifications, and all residual disturbed areas restored in accordance with these Special Technical Specifications.

Irrigation scheduling shall be as follows:

- Following initial installation of revegetation (all revegetation treatment areas):
 - Irrigation shall take place every 3-4 days for a period of two weeks after initial installation, or for a longer period, as directed by the Revegetation Specialist if initial revegetation establishment has not been met, as determined by the Revegetation Specialist.
- After initial irrigation period:
 - Irrigation shall take place approximately every 8-10 days for the remainder of the initial growing season (year of construction) and then every 8 – 10 days for the entirety of Phase 2 of the Project
 - The Revegetation Specialist will determine start and stop dates of irrigation (Spring turn on/charge of system, and Fall turn off of system)

The above irrigation schedule is general in nature, and not the “exact” schedule which shall be followed. During the course of the irrigation process, the Revegetation Specialist will review and monitor the irrigation and revegetation establishment and direct modifications to the schedule as needed to keep soil moist but below saturation levels. Exact irrigation scheduling will depend on air and soil temperatures. An irrigation schedule shall be prepared by the contractor prior to the start of irrigation of each year irrigation is required for review and acceptance of the Revegetation Specialist. In the event the irrigation schedule is not sufficient (determined by the Revegetation Specialist during the time periods irrigation is occurring) the contractor will be required to update the irrigation schedule to the acceptance of the Revegetation Specialist.

Irrigation of installed willow/alder root wads and willow stakes shall be irrigated as described under Section 600.03.06 as accepted by the Revegetation Specialist.

Since the irrigation will occur on private land, the contractor will be required to complete all irrigation activities during normal working hours. These days include Monday through Friday (non Federal

Holiday) and between the hours of 8:00 AM and 6:30 PM. The contractor will not be permitted on the project site for irrigation purposes other than these days/times without prior approval of the Engineer, unless an emergency/irrigation break has occurred that requires immediate repair.

600.06 Revegetation Maintenance and Bonding

Work under this item shall consist of maintaining all revegetation areas (and revegetation types) and irrigation systems for two years following completion of construction and acceptance of the Project (acceptance of the entire project, and closeout of the construction contract, NOT upon completion of any specific revegetation component) so that there is no evidence of erosion, such as rills or gullies, or failure to the irrigation system. This may require re-application of seed, mulches, and tackifiers. Revegetation maintenance shall further include the following:

- Maintain health of all transplanted willow/alders and willow stakes,
- Maintain irrigation system, and
- Insure establishment of revegetation.

The two year maintenance period shall start when the overall project has been accepted, in full, by the Engineer in writing (completion of construction of the project – final payment). The Owner and Engineer will not accept portions of the revegetation or irrigation work nor will it “stager” the start of the two year maintenance period.

A Maintenance Bond (24 month) shall be supplied by the Contractor prior to acceptance of the revegetation and irrigation work, by the Contractor (at the completion of the construction of the project and acceptance of the entire project by the Engineer). The Maintenance Bond shall be in the amount of \$300,000 or the sum of the value of the revegetation, willow/alder transplanting and irrigation items in the bid schedule, whichever value is greater, for a length of two years from the date of final acceptance.

600.07 Additional Disturbance

Any area outside of specified project area that is disturbed by the Contractor shall be treated per above specifications at the Contractor's sole expense and is to meet the acceptance of the Engineer and Revegetation Specialist. No additional compensation shall be allowed for any of these efforts.

600.08 Plant Establishment Success, Monitoring and Reporting

The Contractor shall be responsible for and documentation of revegetation success of all revegetation treatment types and areas for the Project.

At the end of the growing season after installation of revegetation (September or October as directed by the Revegetation Specialist) the status and condition of transplanted willow/alder root wads, willow stakes and site stabilization (revegetation treatment types) for all revegetation treatment types/areas shall be photo documented and submitted to the Engineer and Revegetation Specialist by the Contractor.

Each year, for a minimum of two full growing seasons after completion and acceptance of the construction of the Project by the Engineer, the Contractor shall assess twice on an annual basis at the beginning (June) and end (September) of each growing season subsequent to each revegetation implementation. Cover assessment shall be assessed by ocular estimate and photographic documentation. If adequate coverage of seeded species and/or mulch is not achieved, as determined by the Engineer and Revegetation Specialist, the Contractor will be required to re-seed, re-amend the soil, and/or re-mulch the area as directed by the Engineer and Revegetation Specialist.

For each twice annual assessment the contractor shall document and provide written reports, with results, to the Engineer and Revegetation Specialist for review and acceptance. The reports shall include the following information:

- Date of inspection
- Names and associations of those present/performing the inspection
- Map depicting locations being assessed (redlined copy of Revegetation Plans)
- Photos of assessed areas, with locations and orientations of photos documented on the map (as described in the previous bullet)
- Coverage assessment results for each location assessed
- Documentation of areas that are in compliance with these special technical specifications
- Documentation of areas that are NOT in compliance with these special technical specifications
 - Documentation of the contractor's proposed resolution/approach to resolve the issues and provide an approach to address the problem and attain coverage in accordance with these special technical specifications in the next period

The inspections and development of the reports shall be performed by experience revegetation professionals with experience and knowledge of the specific revegetation being inspected and reported on (principal/owner of the revegetation sub-contractor holding the revegetation contractor's license as an example). The Contractor shall submit, for review and acceptance by the Engineer and Revegetation Specialist, the name, company and resume of the person responsible for these efforts.

The revegetation coverage rates (percentages of area) shall be as follows:

- At the end of the year of installation of revegetation treatments the Contractor shall guarantee 95 percent combined coverage by seeded species and mulch in upland areas (Revegetation Treatment Type G areas), and 25 percent coverage by seeded species and live replanted root wads in the new channel and floodplain areas (Revegetation Treatment Type A, B, E, F and I areas). There shall be no evidence of rills, gullies or other evidence of erosion in any area of the Project.
- At the end of second year after installation of revegetation treatments the Contractor shall guarantee 95 percent combined coverage by seeded species and mulch in upland areas (Revegetation Treatment Type G areas), and 80 percent coverage by seeded species and live replanted root wads in the new channel and floodplain areas (Revegetation Treatment Type A, B, E, F and I areas). There shall be no evidence of rills, gullies or other evidence of erosion in any area of the Project.
- Prior to the completion of Phase 2 (one of the criteria for Phase 2 to be completed and Phase 3 to commence) the Contractor shall guarantee 95 percent combined coverage by seeded species and mulch in upland areas (Revegetation Treatment Type G areas), and 95 percent coverage by seeded species and live replanted root wads in the new channel and floodplain areas (Revegetation Treatment Type A, B, E, F and I areas). There shall be no evidence of rills, gullies or other evidence of erosion in any area of the Project.
- At the end of the revegetation maintenance period (2 years after project completion and acceptance) the Contractor shall guarantee 95 percent combined coverage by seeded species and mulch in upland areas (Revegetation Treatment Type G areas), and 95 percent coverage by seeded species and live replanted root wads in the new channel and floodplain areas (Revegetation Treatment Type A, B, E, F and I areas). There shall be no evidence of rills, gullies or other evidence of erosion in any area of the Project. In the event these thresholds are not met, as determined by the Engineer and Revegetation Specialist, the Contractor will be required to provide additional revegetation efforts to attain these coverage's. No additional compensation shall be allowed for any of these additional efforts.

The Contractor shall coordinate and schedule revegetation establishment inspections with the Engineer and Revegetation Specialist not less than three working days in advance of each inspection as required by these Special Technical Specifications. The Contractor shall contact the Engineer and Revegetation Specialist to arrange for a date and time to accomplish these inspections and acceptance in writing at the conclusion of the maintenance period (two full growing seasons after the completion of Phase 3 activities). The Contractor shall submit to the Engineer documentation of successful revegetation establishment within 10 working days of the completion of each scheduled inspection.

600.09 Measurement and Payment

REVEGETATION TYPE A:

“REVEGETATION TREATMENT TYPE A, PHASE 1”, “REVEGETATION TREATMENT TYPE A, PHASE 2 - YEAR 1”, “REVEGETATION TREATMENT TYPE A, PHASE 2 - YEAR 2” and “REVEGETATION TREATMENT TYPE A, PHASE 3” shall be measured on a square foot basis parallel to the surface from the outside dimensions of the facility, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work.

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved for the installation and maintenance of the revegetation type, complete in place, including but not limited to submittals, material salvage and storage, seed bed preparation, salvaged topsoil, imported topsoil, amended fill, inoculants, seed mix, salvaged wood chips, salvaged duff and organic matter, recycled paper mulch, tackifier, stakes, replacement/application and incorporation of designated materials, excavation, grading, backfill, irrigation, disposal of materials, and any and other appurtenances and materials, as shown on the Project Plans, as specified in these Special Technical Specifications, the Standard Specifications, as directed by the Engineer and Revegetation Specialist for a full and complete job shall be at the contract unit price paid per each square foot of revegetation installed, maintained, and accepted by the Engineer and Revegetation Specialist under the bid items for “REVEGETATION TREATMENT TYPE A, PHASE 1”, “REVEGETATION TREATMENT TYPE A, PHASE 2 - YEAR 1”, “REVEGETATION TREATMENT TYPE A, PHASE 2 - YEAR 2” and “REVEGETATION TREATMENT TYPE A, PHASE 3”, and no additional compensation will be allowed.

REVEGETATION TYPE B:

“REVEGETATION TREATMENT TYPE B, PHASE 1”, “REVEGETATION TREATMENT TYPE B, PHASE 2 - YEAR 1”, “REVEGETATION TREATMENT TYPE B, PHASE 2 - YEAR 2” and “REVEGETATION TREATMENT TYPE B, PHASE 3” shall be measured on a square foot basis parallel to the surface from the outside dimensions of the facility, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work.

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved for the installation and maintenance of the revegetation type, complete in place, including but not limited to submittals, material salvage and storage, seed bed preparation, salvaged topsoil, imported topsoil, amended fill, inoculants, seed mix, salvaged wood chips, salvaged duff and organic matter, recycled paper mulch, tackifier, stakes, replacement/application and incorporation of designated materials, excavation, grading, backfill, irrigation, disposal of materials, and any and other appurtenances and materials, as shown on the Project Plans, as specified in these Special Technical Specifications, the Standard Specifications, as directed by the Engineer and Revegetation Specialist for a full and complete job shall be at the contract unit price paid per each square foot of revegetation installed, maintained, and accepted by the Engineer and Revegetation Specialist under the bid items for “REVEGETATION TREATMENT TYPE B, PHASE 1”, “REVEGETATION TREATMENT TYPE B, PHASE 2 - YEAR 1”, “REVEGETATION TREATMENT TYPE B, PHASE 2 - YEAR 2” and “REVEGETATION TREATMENT TYPE B, PHASE 3”, and no additional compensation will be allowed.

REVEGETATION TYPE C:

“REVEGETATION TREATMENT TYPE C, PHASE 2 - YEAR 1”, “REVEGETATION TREATMENT TYPE C, PHASE 2 - YEAR 2” and “REVEGETATION TREATMENT TYPE C, PHASE 3”, shall be measured on a unit basis per each, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work.

The unit price paid for each “REVEGETATION TREATMENT TYPE C, PHASE 2 - YEAR 1”, “REVEGETATION TREATMENT TYPE C, PHASE 2 - YEAR 2” and “REVEGETATION TREATMENT TYPE C, PHASE 3”, shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in harvesting, storing and installing the willow/alder stakes, for a complete job in place to the lines, grades, and dimensions as shown on the Project Plans, and specified in the Contract Documents, Project Permits, SWPPP, Standard Specifications, these Special Technical Specifications, and as directed by the Engineer and/or the Revegetation Specialist, and no additional compensation will be allowed.

REVEGETATION TYPE D:

“REVEGETATION TREATMENT TYPE D, PHASE 1” and “REVEGETATION TREATMENT TYPE D, PHASE 3”, shall be measured on a unit basis per each, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work.

The unit price paid for each “REVEGETATION TREATMENT TYPE D, PHASE 1” and “REVEGETATION TREATMENT TYPE D, PHASE 3”, shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in harvesting, removing and disposing of the remainder of the willow/alder, storing and installing the willow/alder root wads, for a complete job in place to the lines, grades, and dimensions as shown on the Project Plans, and specified in the Contract Documents, Project Permits, SWPPP, Standard Specifications, these Special Technical Specifications, and as directed by the Engineer and/or the Revegetation Specialist, and no additional compensation will be allowed.

REVEGETATION TYPE E:

“REVEGETATION TREATMENT TYPE E, PHASE 1”, “REVEGETATION TREATMENT TYPE E, PHASE 2 - YEAR 1”, “REVEGETATION TREATMENT TYPE E, PHASE 2 - YEAR 2” and “REVEGETATION TREATMENT TYPE E, PHASE 3” shall be measured on a square foot basis parallel to the surface from the outside dimensions of the facility, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work.

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved for the installation and maintenance of the revegetation type, complete in place, including but not limited to submittals, material salvage and storage, seed bed preparation, salvaged topsoil, imported topsoil, amended fill, inoculants, seed mix, salvaged wood chips, salvaged duff and organic matter, recycled paper mulch, tackifier, stakes, replacement/application and incorporation of designated materials, excavation, grading, backfill, irrigation, disposal of materials, and any and other appurtenances and materials, as shown on the Project Plans, as specified in these Special Technical Specifications, the Standard Specifications, as directed by the Engineer and Revegetation Specialist for a full and complete job shall be at the contract unit price paid per each square foot of revegetation installed, maintained, and accepted by the Engineer and Revegetation Specialist under the bid items for “REVEGETATION TREATMENT TYPE E, PHASE 1”, “REVEGETATION TREATMENT TYPE E, PHASE 2 - YEAR 1”, “REVEGETATION TREATMENT TYPE E, PHASE 2 - YEAR 2” and “REVEGETATION TREATMENT TYPE E, PHASE 3”, and no additional compensation will be allowed.

REVEGETATION TYPE F:

“REVEGETATION TREATMENT TYPE F, PHASE 1”, “REVEGETATION TREATMENT TYPE F, PHASE 2 - YEAR 1”, “REVEGETATION TREATMENT TYPE F, PHASE 2 - YEAR 2” and “REVEGETATION TREATMENT TYPE F, PHASE 3” shall be measured on a square foot basis parallel to the surface from the outside dimensions of the facility, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work.

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved for the installation and maintenance of the revegetation type, complete in place, including but not limited to submittals, material salvage and storage, seed bed preparation, salvaged topsoil, imported topsoil, amended fill, inoculants, seed mix, salvaged wood chips, salvaged duff and organic matter, recycled paper mulch, tackifier, stakes, replacement/application and incorporation of designated materials, excavation, grading, backfill, irrigation, disposal of materials, and any and other appurtenances and materials, as shown on the Project Plans, as specified in these Special Technical Specifications, the Standard Specifications, as directed by the Engineer and Revegetation Specialist for a full and complete job shall be at the contract unit price paid per each square foot of revegetation installed, maintained, and accepted by the Engineer and Revegetation Specialist under the bid items for “REVEGETATION TREATMENT TYPE F, PHASE 1”, “REVEGETATION TREATMENT TYPE F, PHASE 2 - YEAR 1”, “REVEGETATION TREATMENT TYPE F, PHASE 2 - YEAR 2” and “REVEGETATION TREATMENT TYPE F, PHASE 3”, and no additional compensation will be allowed.

REVEGETATION TYPE G:

“REVEGETATION TREATMENT TYPE G, PHASE 1”, “REVEGETATION TREATMENT TYPE G, PHASE 2 - YEAR 1”, “REVEGETATION TREATMENT TYPE G, PHASE 2 - YEAR 2” and “REVEGETATION TREATMENT TYPE G, PHASE 3” shall be measured on a square foot basis parallel to the surface from the outside dimensions of the facility, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work.

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved for the installation and maintenance of the revegetation type, complete in place, including but not limited to submittals, material salvage and storage, seed bed preparation, salvaged topsoil, imported topsoil, amended fill, inoculants, seed mix, salvaged wood chips, salvaged duff and organic matter, recycled paper mulch, tackifier, stakes, replacement/application and incorporation of designated materials, excavation, grading, backfill, irrigation, disposal of materials, and any and other appurtenances and materials, as shown on the Project Plans, as specified in these Special Technical Specifications, the Standard Specifications, as directed by the Engineer and Revegetation Specialist for a full and complete job shall be at the contract unit price paid per each square foot of revegetation installed, maintained, and accepted by the Engineer and Revegetation Specialist under the bid items for “REVEGETATION TREATMENT TYPE G, PHASE 1”, “REVEGETATION TREATMENT TYPE G, PHASE 2 - YEAR 1”, “REVEGETATION TREATMENT TYPE G, PHASE 2 - YEAR 2” and “REVEGETATION TREATMENT TYPE G, PHASE 3”, and no additional compensation will be allowed.

REVEGETATION TYPE H:

“REVEGETATION TREATMENT TYPE H, PHASE 3” shall be measured on a square foot basis parallel to the surface from the outside dimensions of the facility, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work.

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved for the installation and maintenance of the revegetation type, complete in place, including but not limited to submittals, material salvage and storage, bed preparation, salvaged topsoil, imported topsoil, amended fill, attainment of erosion control blanket, delivery of erosion control blanket,

installation of erosion control blanket, stakes, replacement/application and incorporation of designated materials, excavation, grading, backfill, irrigation, disposal of materials, and any and other appurtenances and materials, as shown on the Project Plans, as specified in these Special Technical Specifications, the Standard Specifications, as directed by the Engineer and Revegetation Specialist for a full and complete job shall be at the contract unit price paid per each square foot of revegetation installed, maintained, and accepted by the Engineer and Revegetation Specialist under the bid items for “REVEGETATION TREATMENT TYPE H, PHASE 3”, and no additional compensation will be allowed.

REVEGETATION TYPE I:

“REVEGETATION TREATMENT TYPE I, PHASE 3” shall be measured on a square foot basis parallel to the surface from the outside dimensions of the facility, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work.

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved for the installation and maintenance of the revegetation type, complete in place, including but not limited to submittals, material salvage and storage, bed preparation, salvaged topsoil, imported topsoil, amended fill, inoculants, development of propagated wetland mat, delivery of propagated wetland mat, installation of propagated wetland mat, stakes, replacement/application and incorporation of designated materials, excavation, grading, backfill, irrigation, disposal of materials, and any and other appurtenances and materials, as shown on the Project Plans, as specified in these Special Technical Specifications, the Standard Specifications, as directed by the Engineer and Revegetation Specialist for a full and complete job shall be at the contract unit price paid per each square foot of revegetation installed, maintained, and accepted by the Engineer and Revegetation Specialist under the bid items for “REVEGETATION TREATMENT TYPE I, PHASE 3”, and no additional compensation will be allowed.

TEMPORARY IRRIGATION:

“TEMPORARY IRRIGATION, PHASE 1”, “TEMPORARY IRRIGATION, PHASE 2 – YEAR 1”, “TEMPORARY IRRIGATION, PHASE 2 – YEAR 2” and “TEMPORARY IRRIGATION, PHASE 3” shall be measured on a lump sum basis, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work.

Full compensation for furnishing all labor, materials, tools, equipment and incidentals necessary to provide for temporary irrigation for revegetation, complete in place, including but not limited to submittals, water, service connections, meters, backflow devices, valves, controllers, piping, spray heads, hardware, crossings and pipe sleeves, installation, operation, maintenance, winterization, excavation, backfill, disposal of materials, and any other appurtenances, as shown on the Project Plans, as specified in these Special Technical Specifications, the Standard Specifications, Project Permits, and as directed by the Engineer and Revegetation Specialist shall be at the contract unit price paid to provide for temporary irrigation for revegetation as accepted by the Engineer under the bid item for “TEMPORARY IRRIGATION, PHASE 1”, “TEMPORARY IRRIGATION, PHASE 2 – YEAR 1”, “TEMPORARY IRRIGATION, PHASE 2 – YEAR 2” and “TEMPORARY IRRIGATION, PHASE 3” and no additional compensation will be allowed.

Partial payments paid for each of “TEMPORARY IRRIGATION, PHASE 1”, “TEMPORARY IRRIGATION, PHASE 2 – YEAR 1”, “TEMPORARY IRRIGATION, PHASE 2 – YEAR 2” and “TEMPORARY IRRIGATION, PHASE 3” shall be made as follows:

- Upon installation, initial operation and acceptance of the irrigation system in Phase 1 and Phase 3, 50% of the amount bid for “TEMPORARY IRRIGATION, PHASE 1” and “TEMPORARY IRRIGATION, PHASE 3”, will be paid.

The remaining 50% of the bid amount of bid items “TEMPORARY IRRIGATION, PHASE 1” and “TEMPORARY IRRIGATION, PHASE 3”, will be paid based on the percentage of work completed for all other bid items, up to 90% of the total value for bid items “TEMPORARY IRRIGATION, PHASE 1” and “TEMPORARY IRRIGATION, PHASE 3”. The payment shall be in direct proportion to the percentage of work completed for the applicable phase of the work; i.e. if 60% of the project phase is completed, the Contractor may request payment for 60% of the lump sum total of the bid item for “TEMPORARY IRRIGATION, PHASE 1” and “TEMPORARY IRRIGATION, PHASE 3” (no payments will be made after the first 50% has been paid until greater than 50% of the phase work has been completed and accepted by the Engineer and the Contractor is requesting payment for said work). The final 10% of the value for bid items “TEMPORARY IRRIGATION, PHASE 1” and “TEMPORARY IRRIGATION, PHASE 3”, will be paid at the final payment for phase 1 and phase 3 work.

Partial payments paid for each of “TEMPORARY IRRIGATION, PHASE 2 – YEAR 1” and “TEMPORARY IRRIGATION, PHASE 2 – YEAR 2” shall be made as follows:

- Equally proportional to the amount of months the contractor will be required to irrigate the project area in each year of phase 2 work. For the purposes of these bid items it is determined that there will be five (5) payments per bid item, with each payment being 20% of the total bid amount of each item.
- The final payment (20% of the bid item) will not be paid to the contractor until the phase has been completed and accepted by the Engineer.

REVEGETATION MAINTENANCE AND BONDING:

“REVEGETATION MAINTENANCE AND BONDING (24 MONTHS) – PHASE 3” shall be measured on a lump sum basis, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work.

Full compensation for furnishing all labor, materials, tools, equipment and incidentals necessary to provide for revegetation maintenance and bonding, complete in place, including but not limited to supplemental revegetation treatments, additional irrigation, temporary erosion control measures, implementation of noxious weed plan, disposal of waste materials, and any other appurtenances, as shown on the Project Plans, as specified in these Special Technical Specifications, the Standard Specifications, Project Permits, and as directed by the Engineer and Revegetation Specialist shall be at the contract unit price paid to provide for revegetation maintenance and bonding as accepted by the Engineer under the bid item for “REVEGETATION MAINTENANCE AND BONDING (24 MONTHS) – PHASE 3” and no additional compensation will be allowed. There will be no separate payment allowed for the performance of and materials used for supplemental revegetation treatments, temporary erosion control measures and soil stabilization, or other required revegetation maintenance operations. Furthermore, the contract retention will not be released until the Contractor furnishes the required revegetation maintenance bond to the Owner for review and acceptance.

IMPORTED TOPSOIL:

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with performing all the work involved in provisions of this section, complete in place as shown on the Project Plans, as specified in the Contract Documents, Project Permits(s), Standard Specifications, these Special Technical Specifications, the SWPPP, and as directed by the Engineer, shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for.

SALVAGED TOPSOIL:

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with performing all the work involved in provisions of this section, complete in place as shown

on the Project Plans, as specified in the Contract Documents, Project Permits(s), Standard Specifications, these Special Technical Specifications, the SWPPP, and as directed by the Engineer, shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for.

AMENDED FILL:

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with performing all the work involved in provisions of this section, complete in place as shown on the Project Plans, as specified in the Contract Documents, Project Permits(s), Standard Specifications, these Special Technical Specifications, the SWPPP, and as directed by the Engineer, shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for.

SOIL INFILTRATION TREATMENT

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with performing all the work involved in provisions of this section, complete in place as shown on the Project Plans, as specified in the Contract Documents, Project Permits(s), Standard Specifications, these Special Technical Specifications, the SWPPP, and as directed by the Engineer, shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for.

SEEDBED PREPERATION

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with performing all the work involved in provisions of this section, complete in place as shown on the Project Plans, as specified in the Contract Documents, Project Permits(s), Standard Specifications, these Special Technical Specifications, the SWPPP, and as directed by the Engineer, shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for.

SOIL AMENDMENT

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with performing all the work involved in provisions of this section, complete in place as shown on the Project Plans, as specified in the Contract Documents, Project Permits(s), Standard Specifications, these Special Technical Specifications, the SWPPP, and as directed by the Engineer, shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for.

FERTILIZER

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with performing all the work involved in provisions of this section, complete in place as shown on the Project Plans, as specified in the Contract Documents, Project Permits(s), Standard Specifications, these Special Technical Specifications, the SWPPP, and as directed by the Engineer, shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for.

COMPOST

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with performing all the work involved in provisions of this section, complete in place as shown on the Project Plans, as specified in the Contract Documents, Project Permits(s), Standard Specifications, these Special Technical Specifications, the SWPPP, and as directed by the Engineer, shall be considered

as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for.

SEED

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with performing all the work involved in provisions of this section, complete in place as shown on the Project Plans, as specified in the Contract Documents, Project Permits(s), Standard Specifications, these Special Technical Specifications, the SWPPP, and as directed by the Engineer, shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for.

MULCH

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with performing all the work involved in provisions of this section, complete in place as shown on the Project Plans, as specified in the Contract Documents, Project Permits(s), Standard Specifications, these Special Technical Specifications, the SWPPP, and as directed by the Engineer, shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for.

TACKIFIER

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with performing all the work involved in provisions of this section, complete in place as shown on the Project Plans, as specified in the Contract Documents, Project Permits(s), Standard Specifications, these Special Technical Specifications, the SWPPP, and as directed by the Engineer, shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for.

PLANT ESTABLISHMENT SUCCESS, MONITORING AND REPORTING

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with performing all the work involved in provisions of this section, complete in place as shown on the Project Plans, as specified in the Contract Documents, Project Permits(s), Standard Specifications, these Special Technical Specifications, the SWPPP, and as directed by the Engineer, shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for.

APPENDIX A

Storm Water Pollution Prevention Plan

STORM WATER POLLUTION PREVENTION PLAN
Middle Rosewood Creek Restoration Project – Area A



SUBMITTED BY:

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PROJECT SITE ADDRESS:

Incline Village, Washoe County, NV 89451

PROJECT AREA APNs:

132-460-00, 132-061-01, 132-061-02, 11-110-02, 132-200-00 and 132-233-01



PREPARED BY:

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Tel. 530-542-0201**

June 2012

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- A Dewatering, Diversion, and Water Introduction Plan
- B Water Quality Sampling and Analysis Plan
- C Dust Control Plan
- D Spill Prevention and Control Plan
- E Permits
- F Project Plans

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AMENDMENT LOG

MIDDLE ROSEWOOD CREEK RESTORATION PROJECT STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

Amendment No.	Date	Brief Description of Amendment	Prepared By:

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NOTICE OF INTENT (NOI)

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SECTION 1: GENERAL

1.1 INTRODUCTION

The Nevada Tahoe Conservation District proposes to implement the Middle Rosewood Creek Restoration Project - Area A (Project) to restore stream habitat and water quality functions to the stream environment zone (SEZ) of Rosewood Creek, located between approximately Northwood Boulevard and State Route 28 in Incline Village, Washoe County, Nevada (Figures 1-1 and 1-2).

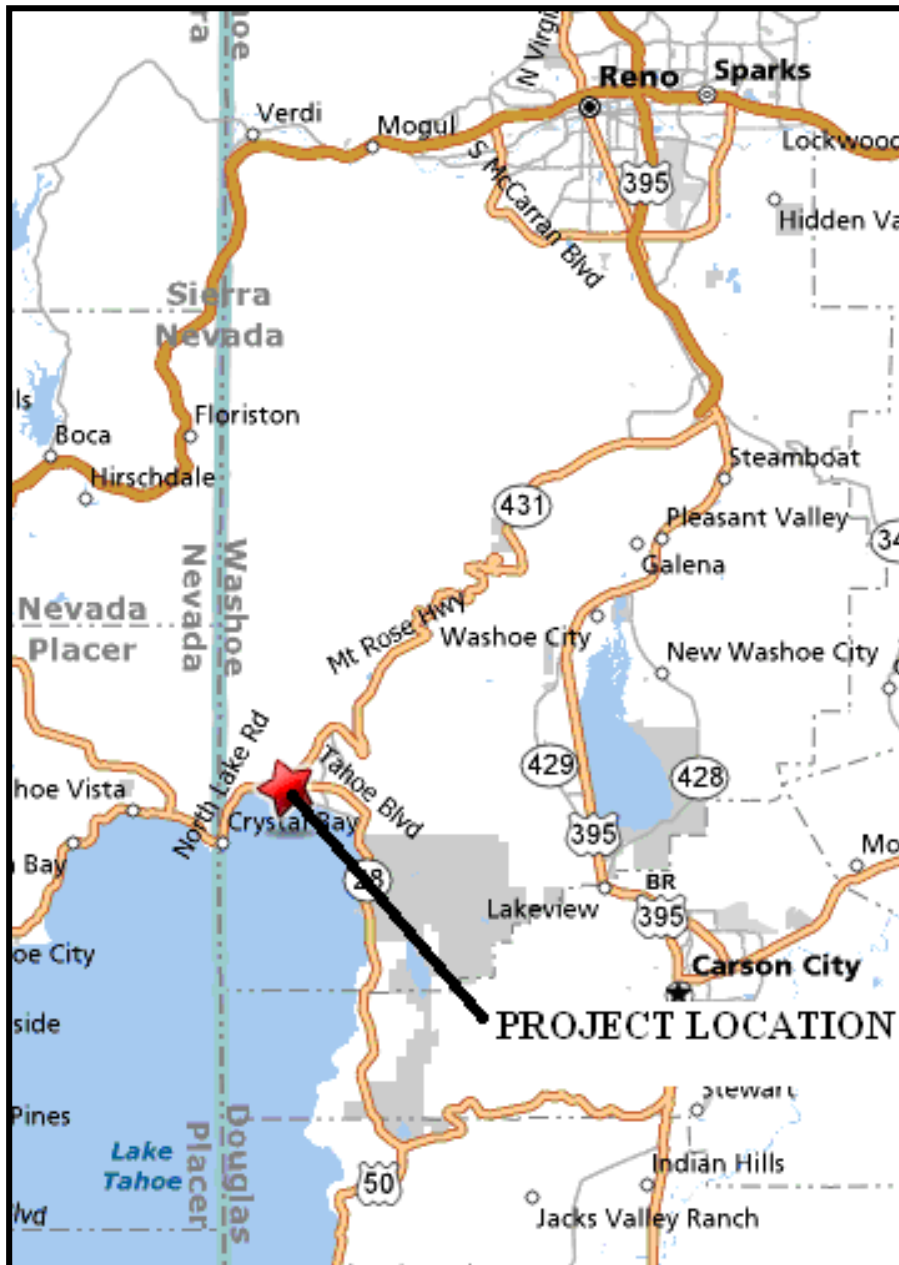


Figure 1-1 General Project Location

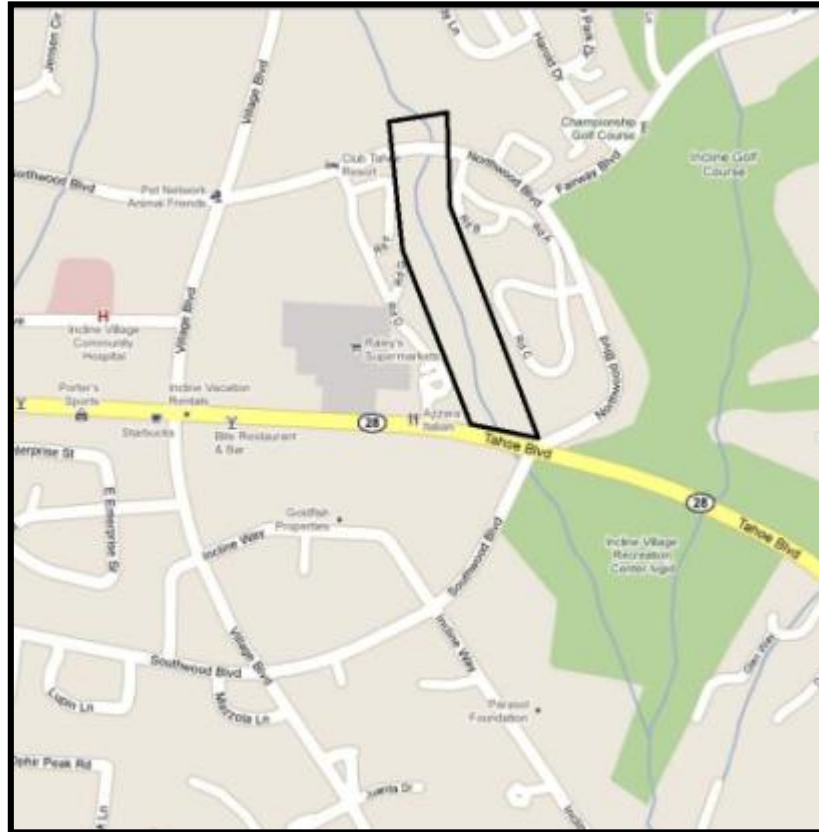


Figure 1-2 Specific Project Location Map

The Project is consistent with and was designated as a “high priority” by the Tahoe Regional Planning Agency’s (TRPA) Environmental Improvement Program (EIP), with SEZ functional restoration and sediment source reduction being the identified goals for this Project. In addition, the Project furthers the jurisdictional, regional and state goals of restoring aquatic habitat and riparian functions to improve water quality. In its existing condition, the watershed functions within Rosewood Creek have been compromised with respect to water quality, overbank flooding, groundwater recharge, sediment and nutrient retention, terrestrial wildlife habitat, aquatic habitat and potamodromous fisheries. The objectives of the Project are to improve the overall watershed function by restoring fluvial, aquatic and riparian habitats and functions. The restoration design calls for creating a new channel that hydrologically reconnects the floodplain by increasing the frequency of overbanking events. Achieving this functional restoration requires both bed and bank stabilization, floodplain excavation and grading and the installation of in-channel and floodplain grade controls. This proposed restoration strategy will serve to improve water quality and reduce the amount of fine sediment transported to Lake Tahoe. This Project also provides improvements to terrestrial and aquatic wildlife habitat by planting native riparian vegetation, improving fish migration and enhancing habitat complexity. The entire Project area identified for disturbance by excavation, grading, or other construction activities is approximately 6.5 acres.

1.2 RELATED DOCUMENTS

- A. The Contract Documents including but not limited to the Standard Plans, Standard Specifications, Project Plans, Project Permits, Project Design Report and the Special Technical Specifications.
- B. Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Best Management Practices, TRPA, 1988.
- C. Nevada Field Guide for Construction Site BMPs, 2008.
- D. Temporary Permit TNEV2009485, NDEP, 2009.
- E. Stormwater General Permit NVR 100000, NDEP, 2007

1.3 BASIN OBJECTIVES AND REGULATORY REQUIREMENTS

This Project is subject to the requirements of Stormwater General Permit NVR 100000, dated September 16, 2007, and the Temporary Permit TNEV2009485 issued by the Nevada Division of Environmental Protection (NDEP). The Project is also subject to TRPA standards specified in Chapters 25 and 81 – Best Management Practices and Water Quality Control of the TRPA Code of Ordinances. Chapter 81 of the TRPA Code of Ordinances requires that pollutant concentrations in surface runoff and discharge to groundwater shall not exceed the readings listed in Table 1 below.

State water quality standards are in place to protect waters from pollutant discharges. NAC 445A.1917 identifies the Nevada state standards to maintain higher quality waters within the tributaries draining directly to Lake Tahoe. The water quality of any tributary to Lake Tahoe which is higher than any applicable standard must be maintained at that higher quality as part of the State's non degradation water quality policy.

Table 1-1 Nevada State Standards of Water Quality for Lake Tahoe Tributaries

Constituent	Unit	Concentration Discharge Limit
pH		6.5-9.0
Dissolved Oxygen	mg/l	> 6.0
Total Phosphates (as P) -	mg/l	< 0.05 (annual average)
Nitrate (as N)	mg/l	< 10.0
Nitrite (as N) -	mg/l	< 0.06
Ammonia-unionized	mg/l	< 0.004
Total Suspended Solids	mg/l	< 25.0
Turbidity	NTU	< 10.0
Color	PCU	< 75.0
Total Dissolved Solids	mg/l	< 500.0 (annual average)
Chloride	mg/l	< 250.0
Sulfate	mg/l	< 250.0
Sodium	SAR	< 8.0
Escherichia Coli	No./100ml	< 126.0
Temperature (October 1 through May 31)	°C	< 10.0
Temperature (June 1 through September 30)	°C	< 20.0

Table 1-2 TRPA Surface Runoff Discharge Limits*

Constituent	Units	Surface Runoff Maximum Concentration
Total Nitrogen	mg/L as N	0.5
Total Phosphorus	mg/L as P	0.1
Total Iron	mg/L	0.5
Suspended Sediment	mg/l	250
Grease and Oil	mg/L	2.0

**Pollutant concentrations in surface runoff shall not exceed the numerical limits shown above at the 90th percentile. If the constituent levels of water entering a site from upstream areas are of a superior or equal quality to the above, those waters shall meet the quality level listed above prior to discharge from the site. If the constituent levels of waters entering a site do not meet the quality levels above, there shall be no increase in the concentrations of these constituents in water discharged from the site, based on a 24 hour average.*

Table 1-3 TRPA Groundwater Discharge Limits*

Constituent	Units	Discharge to Groundwater Maximum Concentration
Total Nitrogen	mg/L as N	5.0
Total Phosphorus	mg/L as P	1.0
Total Iron	mg/L	4.0
Turbidity	NTU	200
Grease and Oil	mg/L	40.0

**Waters infiltrated into soils shall not exceed the maximum constituent levels shown above. Where there is a direct hydrologic connection between ground and surface waters, discharges to groundwater shall meet the standards for surface runoff. A direct hydrologic connection is presumed to exist wherever, by virtue of proximity (vertical separation) to a surface water body, nature of soils, or slope or gradient, and the residences time of runoff water discharged into the ground is too short to remove pollutants from the runoff as determined by the TRPA.*

Furthermore, Section 303(d) of the Clean Water Act (CWA) requires that States develop a list of water bodies needing additional work beyond existing controls to achieve or maintain water quality standards. This list, referred to as the Section 303(d) List, provides a comprehensive inventory of water bodies impaired by both point and nonpoint sources of pollution. The 303(d) List is the basis for targeting water bodies for watershed-based solutions. Rosewood Creek confluences with Third Creek which drains to Lake Tahoe which is listed as impaired for clarity and transparency. Therefore, selected BMPs shall be incorporated into this Project in order to protect water clarity in Lake Tahoe and to meet water quality objectives in Rosewood Creek required by the NDEP and TRPA.

In the event the Contractor does not satisfy the NDEP or TRPA requirements, it will be the Contractor’s sole responsibility to pay all fines, whether issued to the Engineer, County, NTCD, Property Owner, or Contractor. No additional working days or additional compensation will be granted as a result of failure to satisfy the requirements of this Storm Water Pollution Prevention Plan (SWPPP), Project permits, standard plans, standard specifications, the Project plans, the special technical specifications, the NDEP and/or TRPA.

1.4 EXISTING SITE CONDITIONS AND HYDROLOGY

The Project area is currently undeveloped forest and Stream Environment Zone (SEZ) on private properties developed for residential and commercial use. The Project area will remain undeveloped SEZ upon Project completion.

Rosewood Creek does not have a long-term gaging record from which hydrological analysis can be performed (although there are a few years of streamflow data directly from Rosewood Creek). Thus, the hydrological analysis on Rosewood Creek focused on a comparison of regional flood-frequency curves from the nearby gaged watersheds of Incline, Third, First, and Wood Creeks. The Mainstream 2005 report presents the initial results of this analysis (Table 1-4). Mainstream calculated the unit discharge per watershed area from these four creeks with linear regressions relating watershed area and recurrence intervals. The Project design team updated the

Mainstream 2005 analysis by adding several more years of peak flow data available from the Third Creek and Incline Creek gages, and by adding additional recurrence interval flows. The new results are plotted in Figure 1-3, which shows the peak annual recurrence interval against the drainage area. A comparison of the last two rows in Table 1-4 shows that updating the data with additional flow years did not appreciably change the values when compared to the Mainstream 2005 report.

In addition, the Project design team compared the methodology and results of the peak flow data for this Project to those of the Third Creek Restoration Project. The Third Creek Restoration Project is located in Incline Village, Nevada, south of the Project site and downstream of the confluence of Rosewood Creek and Third Creek. The methodology and results for the Third Creek Restoration Project are comparable to the methodology and peak flow estimates for this Project, thus providing a greater level of certainty.

The final row in Table 1-4 lists the estimated recurrence interval flows for Rosewood Creek at State Route 28 based on the watershed comparison analysis. The estimated recurrence intervals range from 3.8 cubic feet per second (cfs) for the 1.5-year flow, 6 cfs for the 2-year flow, and approximately 49 cfs for the 100-year flow.

Table 1-4 Flood Frequency Estimates for Rosewood Creek at State Route 28

Gage Name	Gage Number / Source	Period of Record (water years)	Years of Data	Watershed Area (square miles)	1.5-year (cfs)	2-year (cfs)	5-year (cfs)	10-year (cfs)	25-year (cfs)	50-year (cfs)	100-year (cfs)
Incline Creek near Crystal Bay	USGS Gage 10336700	1970–1973, 1975, 1988–2009	22	6.74	22	31	61	88	131	170	215
Third Creek near Crystal Bay	USGS Gage 10336698	1970–1973, 1975, 1978–2009	32	6.05	41	56	99	130	174	208	244
Wood Creek at Mouth near Crystal Bay	USGS Gage 10336694	1970–1974, 1991–2000	10	1.97	7	10	19	27	38	47	57
First Creek near Crystal Bay	USGS Gage 10336688	1970–1974, 1991–2000	15	1.07	4	6	14	22	34	45	57
Rosewood Creek	MACTEC 2003	N/A	N/A	1.15	N/A	12	24	35	N/A	N/A	98
Rosewood Creek	Mainstream 2005	N/A	N/A	1.15	N/A	6	16	23	N/A	N/A	40–60
Rosewood Creek	This study	N/A	N/A	1.15	3.8	6	14	21	31	40	49

Notes:

cfs = cubic feet per second.

N/A = Not applicable.

USGS = U.S. Geological Survey.

Flood frequency estimates are based on a drainage basin area comparison of four adjacent watersheds with gage records, including previous (MACTEC 2003, Mainstream 2005) flood frequency estimates.

Source: Table 1 in Mainstream 2005.

The creek displays large annual and seasonal flow variation typical of an unregulated Sierra Nevada snowmelt streams. Seasonal snowmelt creates annual maximum mean daily flows generally witnessed in May or June. Seasonal low flows occur in the summer and fall, usually between July and November. The typical snowmelt season streamflow on Rosewood Creek is approximately 2.0 cfs, with fall low flows ranging from 0.6 cfs to 1 cfs. Climate-driven cycles can produce extreme highs and lows during a single year and from one year to the next. The extreme high flows are mostly, but not entirely, associated with winter rain-on-snow conditions. In addition to the longer duration snowmelt runoff typical of the spring, the summer season can generate higher intensity, short duration thunderstorms that produce runoff events with generally lower volumes lasting only a few hours.

Monthly exceedences have been calculated for the same mean daily streamflow period of record to describe the probability that a particular streamflow was equaled or exceeded on a monthly basis (Table 1-4). Statistically, September’s median flow is 1 cfs, while in May the median flow is 2.0 cfs.

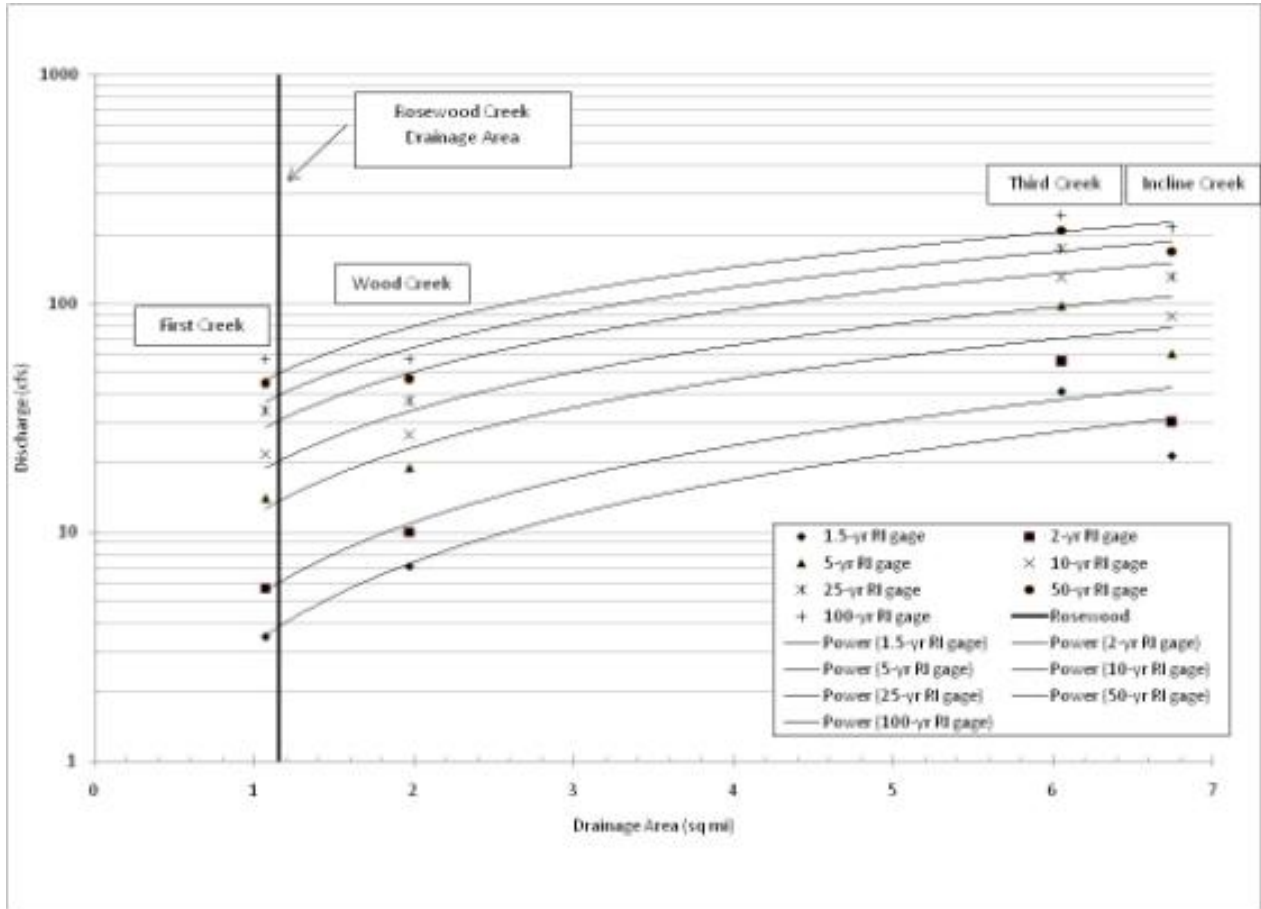


Figure 1-3 Comparison of Drainage Area and Peak Annual Recurrence Interval (RI) Flows for Gaged Streams near Rosewood Creek

The data presented in Table 1-4 indicates that the lowest flow (1.0 cfs on average) typically occurs during August and September. It is recommended that in channel construction tie-in efforts and creek diversions (and any other necessary in channel work efforts) take place during this time frame.

1.5 CONSTRUCTION SCHEDULE AND SEQUENCE

As part of this SWPPP the Engineer and Contractor are required to provide a proposed construction schedule; note that a Resident Engineer will oversee the work of a Contractor under contract with NTCDD to construct the proposed improvements. Thus, the following schedule is proposed and any changes will be addressed by the Contractor and shown in the first amendment to the SWPPP prior to construction and within 10-days of the start of construction. The following is the Engineer’s proposed construction schedule for the Project (this is a general schedule with a more detailed order of work included in the Special Technical Specifications for the Project – the schedule in the Special Technical Specifications shall over-ride the schedule below for contractual purposes):

Construction Activity

Pre-Construction Activities:

Construction Bid Period

Contractor Award

Pre-construction meeting/Contractor submittal of Amendment No. 1 (SWPPP Certification, Proposed Inspector and Proposed Schedule)

Start Construction; Pre-grade meeting

PHASE 1

Mobilization, access and haul road construction, de-watering equipment installation, BMP installation, water quality monitoring equipment installation, signage placement, control network establishment, Project area survey shall commence. Trees will be marked for removal.

Phase 1 of the Project requires the clearing and grubbing of large rocks, trees, and brush as needed in order to begin construction of the new channel and floodplain, including the areas where the existing and proposed channels cross or meet. Phase 1 will also construct a majority of the channel grade control structures, along with the portions of the valley-wide grade control structures within the Phase 1 work area. Phase 1 efforts will also include construction of the open-bottom concrete culvert, along with revegetation of all soil areas disturbed during Phase 1. These activities include the application of Project-specific BMPs that will provide temporary erosion and sediment control and afford a safe working environment for both the Contractor and the surrounding public.

Phase 1 construction activities require protection of the proposed channel from the existing channel flows at two channel tie-in and one channel crossing location. These settings are where temporary protection of the new channel and floodplain will be installed to shield it from the deleterious effects associated with the high flows that could potentially occur during Phase 2. The temporary buried protection will be installed during Phase 1 of the Project and will be removed during Phase 3 of the Project. These features involve installing buried protection (impermeable materials) in specific locations to a depth below the existing channel invert (thalweg) and up to the existing floodplain terrace ground surface. The areas to be protected are locations where the existing channel and existing channel forces have a potential to impact the new channel or floodplain (and revegetation efforts) during Phase 2.

Any summer rain event that results in significant observable amounts of runoff water entering and ponding in the Phase 1 work zone will be pumped, conveyed and dispersed for infiltration after passing through a dirt bag filter positioned near the limits of disturbance of the Phase 1 efforts, as far from the proposed and existing channel as possible.

The duration of Phase 1 will be one construction season. Work efforts will be initiated after vernal high flows have receded and will be primarily during periods of historical low channel flow (August 1st through October 15th). Phase 1 work will be completed prior to the deadline for completing grading (October 15).

PHASE 2

The schedule for this Project requires a minimum of one growing season and a maximum of two complete growing seasons for revegetation to establish and provide soil stability. Seasoning of the new channel will not be considered complete until revegetation establishment can provide suitable soil stability to accept in-channel and on-floodplain flow.

All areas disturbed in Phase 1 and Phase 2 work will be winterized with selected BMPs during Phase 2.

Phase 2 of the Project establishes a seasoning period to support the revegetation and stabilization work installed in the new channel and floodplain during Phase 1. The objective of the Phase 2 time period is to allow for a continued application of irrigation to help settle and sequester unconsolidated (loose) sediments which promotes the sealing of the new channel substrate and the allows for the successful establishment of vegetation, without introducing potentially disturbing flows to the channel or onto the floodplain surface.

The duration of Phase 2 will depend on the successful establishment of the riparian plant vegetation. This period is expected to require between one and two growing seasons after the completion of the Phase 1 activities.

The full flow of Rosewood Creek will be maintained in the existing channel for the duration of Phase 2. Any summer rain event that results in significant amounts of runoff water entering and ponding in the Phase 1 work zone during Phase 2 will be pumped, conveyed and dispersed for soil infiltration after passing through a dirt bag filter positioned near the limits of disturbance of Phase 1 efforts. This BMP system will be positioned as far from the proposed and existing channel as possible.

PHASE 3

Phase 3 of the Project consists of construction of the existing and new channel tie-ins; removal of roadway fill along Northwood Boulevard, abandonment of the existing culverts on Northwood Boulevard, installing minor Northwood Boulevard roadway BMPs and the introduction of natural flows into the new channel (see Section 10.3 of Project Design Report). Phase 3 work includes constructing the remainder of the valley-wide grade control structures (within the area of disturbance of Phase 3 work) and backfilling of the existing channel (the former channel of Rosewood creek), installation of permanent buried protection in and adjacent to the existing channel, along with revegetation of all remaining disturbed soil areas (DSA). These efforts also include establishment of Project-specific BMPs to provide temporary erosion and sediment control and afford a safe working environment for both the Contractor and the surrounding public.

The duration of Phase 3 is one construction season. Work efforts will be initiated after vernal high flows have receded and will be concentrated during periods of historical low channel flow (August 1st through October 15th). Phase 3 will be concluded prior to the deadline for completing grading (October 15).

During Phase 3, the flow will be diverted from the existing channel of Rosewood Creek and introduced into the Phase 1 work area (new channel) as described. Improvements (in-channel grade controls and the existing channel tie-in inlet and outlet) will be constructed within the dewatered work area. When work on the new bed and bank improvements are complete and have been properly seasoned (e.g. vegetation planted, irrigated, established and soil stabilized) the low flow in the existing channel of Rosewood Creek will be slowly diverted during Phase 3 and introduced into the new channel. This part of Phase 3 will require the newly constructed channel of Rosewood Creek to be thoroughly irrigated and gently flushed until water quality objectives (turbidity) have been met. However, before any in-channel work, or diversion of the existing creek flows, fish capture and relocation within the existing channel of Rosewood creek must be performed.

NOTE: The Phase 3 activities which involve introducing the natural stream flow into the new channel will require the approval of the Engineer, NTCD, TRPA, Nevada Division of State Lands, and the Nevada Department of Environmental Protection before it can be conducted.

When all Project work is complete, all disturbed soil areas shall be re-vegetated and irrigated. At the end of the construction season, the entire site shall be winterized to prevent erosion and all remaining equipment and materials shall be de-mobilized from the site.

Complete construction punch list and end construction

Contract Closure

1.6 SUBMITTALS

This SWPPP was prepared by Cardno ENTRIX for NTCD. The Contractor will be required to submit a revised SWPPP to the Engineer, (within 20-days of proposed construction activities commencing), which would detail any proposed changes to this SWPPP, as well as Contractor and sub-Contractor information. All submittals shall be in accordance with the Project plans, standard specifications, the special technical specifications and this plan.

In addition to completion of a revised SWPPP, the Contractor shall be responsible for final design, installation, maintenance, and removal of the dewatering, diversion, and watering systems as required for completion of the work. The plan sheets provided as part of these contract documents depict possible dewatering scenarios (Sheets DIV-1 through DIV-3). Additionally a further detailed dewatering and diversion plan is included with this SWPPP as Attachment A. While dewatering, diversion, and watering may occur at multiple times during construction, the Contractor is required to submit a complete dewatering, diversion, and watering plan as part of the SWPPP in accordance to the Contractor Submittal section of the Special Technical Specifications. It is the Contractor's responsibility to determine whether any independent testing and investigation needs to be performed, and if so, to perform the testing and investigation to supplement the information provided. Furthermore, the plan shall be signed and sealed by a Nevada registered Civil Engineer with experience of at least one dewatering and diversion operation of similar magnitude and complexity in a recently completed construction Project. The qualification of the dewatering system designer shall be submitted to the Engineer for approval. Specific requirements for the dewatering, diversion, and re-watering plan are summarized below, with additional information provided in Attachment A of this SWPPP:

- A. The dewatering plan shall include the Contractor's approach for dewatering including but not limited to: the dewatering location(s), number and size of pumping units (if

applicable), power source for pumping units (if applicable), size and materials for pipes, materials for damming, piping discharge point(s), fuel storage location (if applicable), location of emergency or back up detention system, stilling basin (if applicable), gravel bags, baker tank (if applicable), filter bag(s) (if applicable), and location of disposal of detained water. The Contractor shall include manufacture's specifications on impermeable and filter barriers in the submittal in accordance with the standard specifications and the special technical specifications.

- B. The diversion and water introduction plan shall include the Contractor's approach for diverting and wetting the work area of Rosewood Creek during construction, including but not limited to: the chosen diversion method and materials, number and size of pumping units, power source for pumping units, piping discharge point(s), access and installation methodologies, protection methods for discharge point(s), fuel storage (if applicable), design flow rates, and final method for watering the channel to meet the applicable regulatory water quality standards for surface water discharge. The Contractor shall include manufacture's specifications on impermeable and filter barriers in the submittal in accordance with the standard specifications and the special technical specifications.
- C. The diversion plan shall further include the Contractor's approach to protect resident fish within the Project area. This effort includes the installation, and maintenance of fish barriers (screens or equivalent) at both the upstream and downstream reaches of the Project area (outside of all disturbed work areas). Additionally the Contractor will be responsible for coordinating fish rescue operations (to be performed by Nevada Division of Wildlife [NDOW] staff or another entity under the direction of the Engineer) upon installation of the fish barriers, and prior to any other construction requiring existing in channel work. In the event fish are discovered within the Project area during construction of the Project, the Contractor shall cease operations of the in-channel work; contact the Engineer, who will arrange for rescue of the fish. The Contractor will not be allowed to commence work until such time that all fish are rescued from within the Project area and the Engineer notifies the Contractor that work may commence. This incident (no matter how many occurrences, or durations of the occurrences, during construction of the Project) will not entitle the Contractor to additional compensation, and/or, contract time.

Upon the award of the construction contract, the Contractor will provide a listing of all Contractors' suppliers and sub-Contractor's which will be on the Project site at any time during the construction Project. The Contractor will provide the names, Contractor's license number, address, phone number and fax number for each of these entities. Additionally, the Contractor will provide a listing of all training related to this SWPPP that all Contractors, suppliers and sub-contractors have received, and the dates of those training sessions.

The Engineer will review the material submitted and include this information in the first amendment to the SWPPP. The first amendment will be initiated with the NDEP and TRPA prior to the start of construction. No construction efforts related to the Project will be allowed to be performed until this first amendment, developed by the contractor, is accepted by the Engineer, NTCDD, NDEP and TRPA.

1.7 SWPPP AMENDMENTS

Whenever an amendment is required to this SWPPP, by the Contractor's request or any other entity, the amendment will be prepared by the Engineer. In the event the amendment is at the request of another entity other than the Engineer, the entity requesting the amendment will provide the necessary information so that the Engineer can amend the SWPPP properly.

Amendments to the SWPPP are required whenever there is a change in ownership, construction, or operations which may affect the discharge of pollutants. Additionally, amendments are required whenever a condition of the permit or SWPPP has not been complied with. In the event that any potential changes are to occur, the Contractor will notify the Engineer immediately and the Engineer will determine if an amendment is required; coordination with NTCD, NDEP and/or TRPA staff may be required at this time. If an amendment is required, information will be supplied by the Contractor to the Engineer, and the Engineer will prepare and submit the amendment to the NDEP, TRPA, and NTCD for review and acceptance.

Amendments will be submitted to NDEP, TRPA, and NTCD for approval 30 days prior to the date when the change is to occur.

All amendments will include the following items:

- Cover page, similar to that of the original SWPPP with the amendment number and date reflecting the amendment
- Initial SWPPP certification form (modified to reflect the amendment number)
- SWPPP Approval (modified to reflect the amendment number)
- Introduction which includes a brief description of the nature and reason for the amendment to the SWPPP
- An amendment log listing previous amendments to the SWPPP, including the one for which the current amendment is for, including the dates of the amendments
- Detailed description of the amendment and the section of the original, or previously amended, sections to be amended.

The Contractor will be required to follow the most recent SWPPP version until the amended SWPPP is reviewed and accepted by the Engineer, NDEP, TRPA, and NTCD.

1.8 SWPPP AND PERMIT ACCESSIBILITY

The Contractor will be required to keep one copy (minimum) of the final approved SWPPP, the General Permit, Site Permit, TRPA stamped Project Plans and all other Project Permits on site at all times. Members of NDEP, TRPA, NTCD and the Engineer may request to see this at any time the Contractor is on site and the Contractor is responsible to provide it immediately.

SECTION 2: BMP IMPLEMENTATION

2.1 INVENTORY OF MATERIALS AND ACTIVITIES THAT MAY POLLUTE STORM OR SURFACE WATER

The following materials and activities will be used during construction of the Project and have a possibility of polluting storm water. Each of these activities and materials presented below will employ the selected BMPs in accordance with the manufacturer’s recommendations, the Project Plans, Project Specifications and other sections of this SWPPP. In addition, the Contractor is expected to deploy practices sufficient to achieve compliance with the Temporary Permit TNEV2009485, the Stormwater General Permit NVR 100000, and the requirements of the TRPA.

Material/Activity	Best Management Practice (BMP)
Backfill Material	All backfill material is to be installed or removed from the site before the weekend. No extended term stockpiling shall be allowed on site. If materials are to be stored on site temporarily (over the weekend), the stockpile must be appropriately covered with a suitable material and the perimeter contained through application of a 12 inch diameter fiber roll. No backfill materials shall be stored on site if precipitation is anticipated in the 5 day forecast.
Rock	All rock will be stored in approved staging areas prior to installation with the staging area perimeter contained through application of 8 inch diameter fiber rolls. The Project will be constructed in phases, which requires the storage, staging and access areas to be phased also (with different storage, staging areas and access points employed during each phase).
Revegetation Materials	All revegetation materials will be stored in approved staging areas that have been prepared with fiber rolls installed as a sediment containing perimeter on the down gradient side. No materials shall be stored in the staging areas on the north side of Northwood Boulevard over the weekend.
Haul Roads and Access Points (Entrance / Exit to Public Right-of-Way)	Haul road and access point BMPs (e.g. stabilized entrance) will be installed along all temporary haul roads and at all access points. These control measures include the application of fiber rolls and filter fence on all down gradient sides and disturbance limit fencing installed as shown on the Project Plans or as directed by the TRPA or NDEP at the pre-grade meeting. Upon completion of Project work, all temporary haul roads shall be decommissioned and restored as shown on the Project Plans or as directed by the TRPA or NDEP.
Temporary Steel Plate or Tracks	Steel plates or tracks will be employed as temporary mobile access or staging areas to provide soil protection. These measures will require supplemental BMPs to be installed, such as: fiber rolls and filter fence applied on all sides, geotextile filter fabric installed underneath, and disturbance limit fencing erected in place as directed by the Engineer, TRPA or NDEP at the pre-grade meeting.
Tree Removal: Clearing and Grubbing	Selected BMPs will be applied in all work areas including the application of fiber rolls installed on all down gradient sides, the installation of vegetation protection and the erection of disturbance limit fencing as depicted on the Project Plans or as directed by the TRPA or NDEP at the pre-grade meeting.

Material/Activity	Best Management Practice (BMP)
Channel and Floodplain Improvement Construction	In-Channel and Floodplain Improvement Construction requires the application of selected BMPs to be installed in all work areas including: the implementation of a sediment containing perimeter by installing a wire backed filter fence on all down gradient sides, applying soil protecting geotextile mats, building temporary coiffeur dams (and positioning water filled bladder-berms) to isolate and protect the Phase 1 work area, installing protection to shield existing and newly planted vegetation and; erecting disturbance limit fencing in all locations depicted on the Project Plans or as directed by the TRPA or NDEP at the pre-grade meeting.
Dewatering/Diversion/Water Introduction	See Dewatering, Diversion, and Water Introduction Plan in Attachment C of this SWPPP.
House Keeping Measures: Solid and Liquid Waste Management, Vehicle and Equipment Cleaning Street Sweeping	Materials, equipment, or vehicles must be located away from drainage facilities and watercourses. Wash waters will not be discharged to drainage facilities, SEZs, or watercourses without prior treatment to meet required state and regional discharge standards. All construction vehicles and/or equipment that enter and leave the construction site must be cleaned. When cleaning of materials must occur on-site, or the operation cannot be located within a facility not equipped with the appropriate disposal facilities, the Contractor will propose and make alternative arrangements with the Engineer. The Contractor will submit proposed locations and mechanisms for disposal of solid and liquid waste generated from construction related activities. Such proposed alternatives must also describe equipment storage, cleaning and maintenance areas and activities, points of ingress and egress to the construction site, material loading, unloading, and storage practices as well as locations for construction materials, building materials and waste materials. Daily street vacuuming/sweeping will be implemented to chase down and recover those tracked sediments that do extend onto the public right-of-way.

Upon the award of the construction contract, the Contractor will provide a listing of all materials and activities which will be used or employed in association with the Project that could pollute surface waters. The Contractor will review and affirm the proposed list of BMPs (provided in this section) selected to prevent pollution from reaching surface waters. The Contractor will develop and provide a BMP implementation plan, to be used for applying each of the BMPs through each of the construction phase’s associated with this Project. Should the Contractor wish to use a different BMP other than an item listed in this section, the Contractor will submit to the Engineer a revised BMP list with a written explanation for the revision. The Engineer will review the material submitted, add any additional information, and include this revision in the first amendment to the SWPPP, prior to the start of construction if acceptable to the Engineer, NTCD, NDEP and TRPA.

2.2 CONSTRUCTION ACCESS AND STAGING

The Engineer has identified locations within the Project area, which will be used for construction access and staging areas (e.g. the Third Creek Homeowners Association parking lot, the North side of Northwood Boulevard, the Club Tahoe parking area; and the Robinson parking area; including the temporary mobile staging areas). The staging and storage sites are shown on Sheet S-1 (with additional information on construction access shown on Sheets TC-1A through TC-3B and in the Special Technical Specifications) on the attached set of Project Plans (Attachment F). Should the Contractor require additional access and staging sites, it will require approval from the Engineer, property owner of the site/access area, NTCD, TRPA, NDEP and it will also

require an amendment to the SWPPP to indicate those locations. Any costs associated with additional storage and access areas shall be the full responsibility of the Contractor and no additional compensation or working time will be granted or allowed for.

The Contractor shall install temporary BMPs approved by TRPA, NTCD, the Engineer, and NDEP at all staging areas prior to use. The BMPs to be used are as shown on Sheets EC-1a through EC-2d3 of the attached Project Plans and described in Section 180 of the Special Technical Specifications, or as directed by the Engineer, NTCD, TRPA or NDEP in the field. Additionally, tree and vegetation protection will be installed at all sites in accordance with TRPA standards and/or as shown on the Project Plans and described in the Project Special Technical Specifications. Temporary BMPs are discussed further throughout the SWPPP.

Staging of construction materials and equipment will occur first at the primary staging area located at the Third Creek Homeowners Association parking lot and designated on Sheet S-1. The area located on the North side of Northwood Boulevard will be used as an additional staging area for construction materials and equipment. All staging areas will be available for use by the contractor for the construction period as shown on the Project Plans and as described in the Special Technical Specifications, unless an alternative arrangement is necessary and has been reviewed and approved by the Engineer, TRPA, NTCD, and NDEP. Additionally, the pavement associated with the public right-of-way shall be vacuumed and/or swept free of sediment and debris at the end of each workday. These staging areas are also designated to be used for placement of a Project trailer (operations office if necessary) and contractor vehicles. No equipment or materials will be staged, stored, or stockpiled outside of these demarcated areas at any time.

Access to the site by machinery and equipment will be from the east and north off Northwood Boulevard and from the south and west off Highway 28 (i.e. Craig Robinson property). The hauling of materials from the work areas to the staging areas will be via haul roads as shown on Sheets TC-1A, TC-1B and TC-1C of the Project Plans and described in Section 180 of the Special Technical Specifications. Access to and from the staging areas and haul roads will be via a temporary gravel construction access points (entrance and exit) as shown on Sheets TC-1A through TC-3B of the Project Plans and as described in Sections 180 and 160 of the Special Technical Specifications. Upon completion of construction activities, the haul roads in the Project area will be removed, the soil repaired (de-compaction and integrating organic matter) and revegetated in accordance with the Project Plans and Section 600 of the Special Technical Specifications.

Access to work areas within wetland areas shown on the Project Plans will be by temporary road only, as depicted in Sheet EC-1a of the Project Plans. When work is completed in these areas, the temporary road will be removed and the site will be restored to the approval of the Engineer, TRPA, NTCD, property owner, and NDEP.

All trucks accessing the site must remain on paved roads unless an approved construction access has been constructed. Haul trucks that are not leaving the Project area may leave the paved roadway or approved haul routes within areas disturbed by Project construction (i.e. within daylight lines of proposed grading locations). All haul routes within areas disturbed by Project construction shall be chiseled or ripped to a depth of 18 inches below ground surface upon road removal.

The Contractor will be responsible for protecting existing Incline Village General Improvement District (IVGID) sewer lines, IVGID water lines, Southwest Gas Corp. natural gas lines, Washoe County storm drain lines, NV Energy electric lines, Charter and AT & T communication lines and other above and below ground utilities in place. Existing utilities are depicted on the Project Plans or within the Project area. The locations of these utilities identified in the Plans are approximate and not necessarily complete. The Contractor will be fully responsible for any and all damages which might be occasioned by the failure to exactly locate and preserve any and all underground utilities. In the event that an underground utility line is breached, response and clean up will be in accordance with the Spill Response section of this SWPPP.

At the preconstruction meeting the Contractor will furnish, with the construction schedule, an access and staging plan/schedule for the entire length of the contract for review and approval by the Engineer.

2.3 AREAS OF DISTURBANCE WITHIN SEZ

The Contractor's attention is directed to work within SEZs. The majority of the contract work will occur in SEZ areas. The Contractor shall minimize, to the greatest extent possible, any avoidable ground disturbance in the SEZ throughout phases of the during construction operations.

SEZs are regionally designated as highly sensitive areas. SEZ areas function as a very important element in water conveyance and natural storm water treatment. Plant life stabilizes the soil surface and consumes phosphorous, nitrogen, and other nutrients and minerals that could otherwise flow into Lake Tahoe and reduce water transparency and clarity. Therefore, damage to the SEZ areas could directly affect water quality and lake clarity.

When working within the SEZ, the Contractor will be expected to diligently preserve vegetation by avoiding and minimizing construction impacts on plants and soil. Low ground pressure equipment shall be used at all times when working within the SEZ. Low ground pressure equipment shall be tracked or wheeled equipment equipped with dual, wide, or flotation tires on all axles, with ground bearing capacities as specified in Section 120 of the Special Technical Specifications. The limits of construction are clearly marked on the Project Plans. No work will be allowed beyond the designated disturbance limits unless previously approved by the Engineer. The Contractor is further advised that the level of inspection and regulatory review will be significantly greater when work is being conducted in a SEZ area.

The Contractor will fence off the required limits of construction with high visibility construction limit fencing as described in Section 180 of the Special Technical Specifications and as shown on Sheets EC-1a through EC-2d3 of the Project Plans. Work will only occur within the areas that are fenced off. SEZ areas adjacent to construction activity will be protected from construction pollutants by the Contractor through the use of BMPs, and all disturbed areas will be stabilized by the Contractor to the satisfaction of the Engineer, NDEP, NTCD, property owner, and TRPA. All filter fence and construction limit fencing shall be of neutral colors (not orange) as to blend into the surrounding area as stated in Section 180 of the Special Technical Specifications. Temporary BMPs are discussed further in other sections of this SWPPP.

2.4 BEST MANAGEMENT PRACTICES

During construction, the Contractor will implement pollution control practices and BMPs as required to prevent off site transport of turbid stormwater or sediment. A pre-grading conference will be conducted with the Engineer, TRPA, NTCD, and NDEP. The Engineer will be inspecting the construction Project to ensure compliance with the SWPPP and confirm that the selected BMPs are installed and functioning properly. The construction site and staging areas will receive a more critical level of review before, during, and after storm events. The Contractor will be directed to install BMPs to contain sediment and pollutants to within the Project limits of disturbance and within the designated staging areas (prior to pre-grade meeting and throughout construction). Pollution control and BMP applications will be consistent with the following list, and is further detailed on Sheets EC-1a through EC-2d3 of the Project Plans (Attachment F) and within Section 180 the Special Technical Specifications.

1. The Contractor shall properly install and maintain wire backed filter fence in those locations where storm water runoff could flow from the Project Site, as shown on Sheets EC-1a through EC-2d3 of the Project Plans or as directed by the Engineer, NTCD, NDEP, and/or the TRPA.
2. The Contractor shall install and maintain tree and vegetation protection, as shown on the Project Plans (Sheets EC-1a through EC-2d3).
3. The Contractor shall install and maintain both temporary coiffeur dams and water filled bladder berms to isolate sections of the channel and floodplain during construction from the direct flow of Rosewood Creek as shown on the Project Plans.
4. The Contractor shall diligently maintain all dewatering equipment and material identified to be used during the Project in accordance with the dewatering plan, and as described in other sections and Attachments of this SWPPP.
5. The Contractor shall store construction equipment at the staging areas described in the previous sections of this SWPPP at the end of each work day or in other locations as approved by the Engineer, NTCD, TRPA and NDEP. The Contractor will divert concentrated stormwater runoff around equipment, vehicles, and materials staging areas. Additionally, the Contractor will maintain undercarriage capture and containment under all machinery, mechanical equipment and vehicles parked at the staging areas.
6. The Contractor shall install and maintain tracking control devices from all work areas to paved areas (e.g. stabilized gravel pad and rumble strips). Tracking control at a minimum will consist of installation of a temporary gravel access pad (entrance and exit) as shown on Sheets TC-1A, TC-1B and TC-1C of the Project Plans and described in Section 180 of the Special Technical Specifications. All vehicular access from work areas to paved areas will utilize the tracking controls.
7. Paved areas within and adjacent to the Project area shall be swept daily with a PM 10 efficient vacuum street sweeper. In the event the Contractor's operations cause construction debris, sediment, dust, sand, etc. to accumulate on any street beyond what is acceptable to the Engineer, NTCD, Washoe County, NDOT, TRPA, or NDEP, the Contractor will sweep these streets as directed by the Engineer, TRPA, NTCD, Washoe County, NDOT or NDEP. Additionally, the Contractor will sweep streets prior to

potential storm events, at the direction of the Engineer, to prevent runoff of construction debris and sediment from reaching the public stormwater system.

8. The Contractor shall minimize the amount of construction materials stored on site. Soil materials shall not be stockpiled on site over a weekend (Saturday, Sunday and Holidays) unless they are completely covered (in accordance with TRPA and NDEP standards, regulations and permits) and tacked down or secured with a 12 inch diameter fiber roll installed around the entire perimeter. No soil shall be stockpiled if the National Weather Service forecasts a 30 percent or greater probability for a precipitation event within 24 hours. The Contractor shall submit as part of the BMP Implementation Plan a stockpile, staging, and storage section describing the locations, materials, and schedule for inclusion in this SWPPP.
9. The Contractor shall designate suitable areas of the construction site for the delivery, storage and removal of construction related materials. Construction materials will not be stored beyond the disturbance limit fencing protecting the perimeter of the staging areas.
10. The Contractor shall store materials in a manner that limits exposure to precipitation and controls stormwater runoff.
11. The Contractor shall provide pallets and secondary containment areas for chemicals, drums, or bagged materials that require special controls. All staging areas must have an appropriate spill response and cleanup kit available and visible at these locations. Should materials spills occur; materials and/or contaminants will be promptly cleaned from the Project site and recycled or disposed of to the satisfaction of NDEP. Further information regarding spills is available in the Spill Response section of this SWPPP. (Attachment D)
12. Solid waste dumpsters, if used, shall be covered during storm events and locked at the end of each work day. The dumpster cover will be carefully secured to withstand weather conditions and animal intrusion.
13. The Contractor shall train and instruct all onsite construction personnel in spill prevention practices and provide visibly available spill containment kits at all staging areas. All Contractors are responsible for instructing their personnel on how to effectively deploy and properly use the spill containment kits. Further information regarding spills is available in the Spill Response section of this SWPPP.
14. The Contractor shall separate wastes and recycle or dispose of them in compliance with local, regional and/or state regulation.
15. The Contractor shall apply adequate amounts of water on all soil, pulverized material, and disturbed surfaces as necessary to minimize wind-blown dust in accordance with the Dust Control Plan as described in Attachment C to this SWPPP. Water used for dust control may be obtained from treated water leaving the de-watering treatment devices that meets permit and regulatory requirements or from water supplied from an approved source. See the dewatering, diversion, and water introduction plan for more information regarding the potential use of treated waters for dust control (Attachment C).
16. When inclement weather is predicted within 24 hours (30% chance of precipitation or greater according to the NOAA forecast of Incline Village, Nevada), the Contractor shall plan and schedule the work day to minimize the amount of disturbance in the Project

area. Additionally, the Contractor must be able to stabilize the work site within 30 minutes notice from the engineer, NTCD, TRPA, or NDEP.

17. The Contractor shall store an adequate amount of extra BMP materials such as silt fence, fiber rolls, and gravel bags on site for use during major storm events or accidental water and sewer line utility breaks.
18. In the event of any accidental water and sewer line utility breaks the Contractor shall immediately contact NTCD, who will provide immediate notice to TRPA, NDEP, Washoe County, IVGID, and the Engineer. The contractor shall follow all emergency procedures required by NDEP, TRPA, Washoe County, IVGID, and NTCD. Further information regarding spills is available in the Spill Response section of this SWPPP. (Attachment B)

The following controls or BMPs will be implemented to minimize the potential for releases or spills of pollutants during the operation of construction equipment:

1. The Contractor shall maintain all construction equipment, to prevent oil and fluid leaks. The Contractor shall regularly inspect all equipment and vehicles for fluid leaks.
2. The Contractor shall apply adequate undercarriage containment or other secondary containment measures beneath all mechanical machinery and vehicles during storage.
3. Any heavy equipment to be used in the channel and floodplain areas must be steam cleaned at least once prior to work in these locations and adjacent areas.
4. The Contractor shall place liquid wastes (i.e. grease, oil, oil filters, antifreeze, cleaning solutions, batteries, hydraulic fluids, transmission fluids, etc.) in proper sealed containers, store the containers in designated storage areas, and ultimately properly dispose or recycle the materials.
5. All equipment fueling and storage of fuels shall be conducted off-site and at least 200 feet away from the any surface water.

2.5 BMP INSPECTION AND REPAIR PROGRAM

The Contractor or his qualified agent is required to routinely inspect all areas of disturbed and bare soil, areas used for storage of materials and equipment that are exposed to precipitation, onsite vehicle entrance and exit locations and all onsite erosion and sediment control BMPs. Inspectors must also observe discharge locations to receiving waters to ensure proper operation of sediment and erosion control measures. Furthermore, inspectors shall keep a record of each day's use of heavy equipment in the Project area. Inspections shall occur daily, prior to forecasted rain events, (i.e. 30 percent probability of a rain event within 24 hours) and within 24 hours after any rain event of 0.5 inches or greater. The engineer or NTCD inspector will also make inspections of the entire Project area and direct the Contractor to take the appropriate corrective actions. Sediments must be removed when the design capacity of a temporary BMP has been reduced to 50% or less of the manufactures design specifications. Construction materials, chemicals, wastes, litter and debris must be prevented from becoming a source of stormwater pollution. When sediment escapes the construction site, off-site accumulations of sediment must be identified and mitigated to ensure no adverse effects on water quality and public safety.

The following sources may be used to obtain weather forecasts:

- The National Weather Service: Telephone: (775) 673-8100
<http://www.wrh.noaa.gov/Reno/>

Once storms are imminent, a portable NOAA weather radio can provide useful information. NOAA weather radio broadcasts are made on one of seven high-band FM frequencies. These frequencies are typically available only on radios that provide a “weather band” as an added feature or portable weather radios that exclusively provide weather broadcasts. The local FM frequency for the Reno/Sparks area is 162.500 MHz. Taped weather messages are repeated every four to six minutes and are routinely revised at least once every one to three hours, 24 hours daily.

In the event the Contractor’s operations encounter down time and no work is performed on the Project, the Contractor will be responsible for biweekly inspections of all BMPs. Additionally; the engineer will make inspections of the Project site and direct the Contractor to take all necessary corrective actions. The Contractor shall make inspections biweekly, 24 hours prior to a forecasted rain event (30% or greater likelihood as forecasted by NOAA) and within 24 hours after all rain events generating 0.5 inch of rain in a 24 hour period or until the Contractor’s operations re-commence, at which time the inspections will occur as described above. All BMPs will be installed and maintained in good, proper working order. If it is determined that any BMPs are not in working order, the Contractor will not leave the Project site until all BMPs are repaired and inspected.

All trucks and heavy equipment utilized as part of this work will be restricted to paved areas only (refer to Section 120 of the Special Technical Specifications for loading requirements off of pavement and in SEZ areas). No equipment may enter upon or access the floodplain/SEZ or other sensitive areas during the “winter down time” or during Phase 2 unless approved by the Engineer prior to use. Hand tools and other small devices (i.e. wheel barrow or extremely small/light equipment with ground pressures less than 5 psi that will not disturb the soil or vegetation growth) shall be used to complete any maintenance, repair, modifications, etc. of any temporary erosion or sediment control BMPs, signage, revegetation treatments, and construction limit fencing, as described herein or elsewhere in these Special Technical Specifications.

The Contractor will assign a qualified member of the Contractor’s company as the Contractor’s on-site BMP inspector and maintenance coordinator. This person will inspect the Project site with the engineer as directed and coordinate the appropriate corrective actions. This person will be on-site during all construction activities and will be responsible for the inspection, maintenance and record keeping of the BMPs, in coordination with the engineer, NTCD, NDEP and TRPA staff. Additionally, the Contractor will assign a back-up to this BMP coordinator in the event that he/she is not on the Project site. At no time will the Contractor perform any construction activities if one of these two people, the Contractor’s BMP coordinator or their backup, is not on site. The Contractor will submit the following information of the proposed coordinators for this activity:

- Names
- Contact numbers
- Experience

- Training

This information will be reviewed and accepted by the engineer, NDEP and TRPA prior to commencing any work on the Project.

The Contractor's BMP coordinator will be responsible for providing daily BMP effectiveness logs for submittal to the engineer on a weekly basis (every Tuesday for the following week's activities). The logs will include the following information:

- Name, address, phone and fax number of the construction company
- Coordinator's name and title
- Date and time of inspection
- Areas inspected
- Weather
- Items in need of repair (inadequate BMPs)
- Description of visual observations of BMPs
- What was repaired and the method used for repair
- Record of each day's use of heavy equipment in Project areas
- Coordinator's signature and date

The Contractor will prepare a proposed log for review and acceptance by the Engineer prior to construction commencing on the Project.

Additionally, the Contractor is required to keep copies of all construction logs on the Project site at all times of construction operations. NDEP, TRPA, NTCD, or the engineer can request to view these logs at any time and the Contractor is required to provide them immediately.

2.6 SITE PREPARATION AND GRADING

Soil disturbance will be minimized and limited to those areas that require treatment. All existing vegetation within work areas not designated for removal, or outside of the work areas designated on the Project Plans, is to be protected per the requirements of Section 210 of the Special Technical Specifications. Any existing vegetation damaged by the Contractor, as described above, will be replaced by the Contractor at his/her sole expense and no additional compensation or working time will be allowed for.

During clearing and grubbing, the Contractor will salvage all topsoil, willows, alders, horsetail and salvageable wetland sod for reuse in the Project area as shown on the Project Plans or as directed by the Engineer. This salvaged and re-planted material will be irrigated immediately as described in the Special Technical Specifications. The Contractor shall prune willows to propagate cuttings for willow pole plantings and willow stakes as described in the Special Technical Specifications. Removed trees will be stockpiled to be used for habitat structures, or chipped and stockpiled for use in soil and revegetation treatments as shown on the Project Plans and described in the Special Technical Specifications. Furthermore, Contractor will contain stockpiled material within proper BMPs such as silt fence or fiber logs in accordance with other sections of this SWPPP and Attachments.

2.7 TREE REMOVAL

A maximum of 54 conifers (greater than 6” diameter at breast height [dbh], as shown on the Project Plans) within the Project's disturbance limits of the SEZ (i.e. Lodgepole Pine, Jeffrey Pine, White fir, etc.) are targeted to be marked for removal by the Engineer and the TRPA Registered Professional Forester (RPF) (not willows and alders which are being retrieved and maintained for salvage) as a part of the Project. The trees to be removed are identified on Sheets P-1 through P-4 in the Project Plans.

Trees to be removed will be marked in the field by the Engineer and the TRPA RPF. Timber will be harvested using manually operated chainsaws. Once felled, trees will be pruned and salvaged for use in the Project or chipped for use as soil protecting cover within the Project area as shown in the Project Plans and described in the Special Section 210 of the Special Technical Specifications. If trees and chips are in excess of what is needed for the project, the excess material shall become the property of the Contractor who shall remove and dispose of the excess in accordance with the Project Permits and TRPA/NDEP regulations. Felled trees will not be skidded or dragged across the ground. They will be lifted with tracked equipment and transported on approved roadways as approved by the engineer.

Proper BMPs will be installed within and around work areas as described in other sections of this SWPPP. Trees will be directionally felled in such a way as to prevent harm to other trees to remain degradation to soil or water quality in Rosewood Creek. Earthen materials including soil, silt, sand, clay, rock, and organic materials such as slash, sawdust, or bark shall not be allowed to enter Rosewood Creek. Water quality (turbidity) in Rosewood Creek will be monitored as described in Attachment B of this SWPPP. After trees have been removed, loose and/or disturbed soils will be covered with wood chips, slash, and/or wood product mulch to prevent erosion. No trees will be removed during the winter period from October 15 to May 1 or when saturated conditions exist without the prior approval of the Engineer, the TRPA and the NDEP.

2.8 DEWATERING

The dewatering plan can be found in Attachment A of this SWPPP.

2.9 DIVERSION AND WATER INTRODUCTION

The diversion and water introduction plan can be found in Attachment A of this SWPPP.

2.10 REVEGETATION AND STABILIZATION

All revegetation work will be conducted by a licensed Landscape Contractor (C-10) and overseen by the Engineer and a Revegetation Specialist (RS). Revegetation work will consist of all site preparation associated with the revegetation treatments and will include willow/alder salvage and replanting, installation of pole cuttings and stakes into rock structures, seedbed preparation, soil amending, application of soil inoculants, seeding, mulching, installation of erosion control blankets, and installation of an irrigation system. Irrigation water will be applied with a low-pressure impact system and regularly maintained (inspections once per month minimum) so that leakage is minimized. Irrigation watering will not produce rills, gullies or sheet flow. The RS will approve quantity and duration of applications. All revegetation and irrigation measures will be applied in accordance with the requirements shown on the Project Plans, as directed by the RS, and as described in Section 600 of the Special Technical Specifications. See Attachment A for more information regarding irrigating with treated water from the dewatering system.

Revegetation and materials will not be applied during windy conditions. Windy conditions are defined as a sustained wind of 8 mph or more; gusts where the difference between the ambient and the increased velocity is more than 4 mph; or any conditions that may make dispersal of revegetation and erosion control material difficult or inaccurate.

All revegetated areas are to be maintained according to Section 600 of the Special Technical Specifications to insure proper establishment of vegetation and to remove any evidence of erosion, such as rills or gullies. If at any time it is deemed by the engineer, NTCD, TRPA, or NDEP that proper maintenance is not being performed, the countdown for required maintenance period will be stopped and not resumed until the Project is brought up to the specifications and proper maintenance is resumed. During the maintenance period, seeded areas will be kept free from noxious and invasive weeds at all times. The RS will identify noxious and invasive weeds requiring immediate removal. Additional maintenance may include re-application of seed, mulches, and tackifiers. Supplemental maintenance treatments will be required if revegetation efforts are unsatisfactory following completion of work as determined by the RS. This re-application will be at the Contractor's expense. The Contractor must achieve a minimum of 70% of pre-disturbance native plant cover before the Notice of Completion (NOC) can be issued.

2.11 MONITORING, SAMPLING AND ANALYSIS

This Project will be implemented in Rosewood Creek, which confluences with Third Creek and ultimately discharges into Lake Tahoe. During the construction of the Project, the Engineer will assess and monitor the Project area to ensure compliance with all provisions cited in the applicable federal, regional, and state permits. At a minimum, monitoring of water quality associated with dewatering, diversion, watering, and precipitation runoff events will be conducted in order to determine BMP effectiveness and compliance (or discharge in excess) with applicable NDEP or TRPA standards. At completion of Phase 1 and Phase 3 of the Project, the engineer shall prepare for NDEP a concise narrative report describing the Project and as series of photos (with explanatory subtitle narratives) documenting the Project activities as presented to NDEP, including the implementation of BMPs and results of any analytical samples taken. The "before, during and after" photos, shall document the new channel creation, the application of BMPs, the installation of grade controls and bank stabilization features, the dewatering of the existing channel, establishing the new channel connections and introducing the flow to the newly constructed bed and bank. The photos shall be taken from established photo points. The photos, along with the narrative report of the Project activities, shall be submitted to the NDEP by the 28th day of the month following conclusion of the permit or the Project whichever is less.

For a detailed description of the sampling and analysis requirements and procedures see the Water Quality Sampling and Analysis Plan in Attachment B.

SECTION 3: (ADDITIONAL CONTROL MEASURES)

3.1 WASTE MANAGEMENT AND DISPOSAL

The Project requires the use of heavy mechanical equipment, machinery and materials which have the potential to generate solid and liquid wastes that requires proper disposal. All construction related material waste such as, excess sediment/soil, aggregate, decomposed granite, excess pipe, etc., will be disposed of at a site approved by the engineer, NTCD, NDEP and TRPA.

Materials related to equipment and machinery such as, motor oil, hydraulic fluid, gasoline, kerosene, propane, grease, etc., will be disposed of at Reno Drain Oil, or another site approved by the Engineer, NTCD, NDEP and TRPA.

Materials related to excess material and general trash such as, paper, plastic, organic material, excess plastic pipe, recyclable materials, etc., will be disposed of at a facility approved by the Engineer, NTCD, NDEP and TRPA.

3.2 DUST CONTROL AND SUPPRESSION

The Dust Control Plan can be found in Attachment C of this SWPPP.

3.3 MATERIALS STORAGE AND SPILL RESPONSE

The Spill Prevention and Contingency Plan can be found in Attachment D of this SWPPP.

SECTION 4: CERTIFICATIONS OF COMPLIANCE

This SWPPP must be certified that it is consistent with all applicable Federal, State and Local regulations, or other approved site plans or permits. It has been prepared in accordance with the latest version of the Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Best Management Practices (TRPA 1988), the Temporary Permit TNEV2009485 (NDEP 2009), the Storm water General Permit NVR 100000, (NDEP 2007), and the Project Documents.

All applicable Permits and Certificates of Compliance can be found in Attachment E of this SWPPP.

4.1 OWNER/OPERATOR CERTIFICATION STATEMENT

This SWPPP must be updated as necessary to remain consistent with changes in other site plans that effect soil disturbing activities, site drainage patterns or any other activity that may impact storm water runoff quality. It must also be re-certified annually by July 1 until the construction Project is complete and a Notice of Termination (NOT) has been submitted to NDEP and TRPA.

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 gather and evaluate the information submitted. I also confirm that a storm water pollution prevention plan (SWPPP) has been completed, will be maintained at the Project site from the start of construction activities, and that the SWPPP will be compliant with any applicable local sediment and erosion control plans. 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 fines for knowing violations.

<u>Initial Certification:</u>	
<i>Print Name: Meghan Kelley</i>	<i>Title: Project Engineer</i>
<i>Signature:</i>	<i>Date:</i>
<u>Annual Re-Certification</u>	
<i>Print Name:</i>	<i>Title:</i>
<i>Signature:</i>	<i>Date:</i>

4.2 CONTRACTOR’S CERTIFICATION STATEMENT

I certify under penalty of law that I understand the terms and conditions of the State’s General Permit (NVR100000) and Temporary Permit (TNEV2009485) that authorize storm water discharges associated with industrial activity from the construction site identified as part of this certification.

<u>Company 1</u>		
<u>Name:</u>		<u>Phone:</u>
<u>Address:</u>		
<u>City:</u>	<u>State:</u>	<u>Zip:</u>
<u>Print Name:</u>		<u>Title:</u>
<u>Signature:</u>		<u>Date:</u>
<u>Company 2</u>		
<u>Name:</u>		<u>Phone:</u>
<u>Address:</u>		
<u>City:</u>	<u>State:</u>	<u>Zip:</u>
<u>Print Name:</u>		<u>Title:</u>
<u>Signature:</u>		<u>Date:</u>
<u>Company 3</u>		
<u>Name:</u>		<u>Phone:</u>
<u>Address:</u>		
<u>City:</u>	<u>State:</u>	<u>Zip:</u>
<u>Print Name:</u>		<u>Title:</u>
<u>Signature:</u>		<u>Date:</u>

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Contractor:

To be determined in July 2012
Contact information to be forwarded to NDEP upon award and execution of contract, by
Contractor

Toxic Release:

Nevada Division of Environmental Protection
Spill Hotline
(888) 331-6337

Turbidity Release:

Nevada Division of Environmental Protection
Bureau of Water Pollution Control
Jeryl R. Gardner, P.E.
(775) 687-4670

Tahoe Regional Planning Agency
Brian Judge
(775) 589-5262

Sewage Release:

Incline Village General Improvement District
Mike Adams, Spills Coordinator
(775)832-1203

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ATTACHMENT A

Dewatering, Diversion, and Water Introduction Plan

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**MIDDLE ROSEWOOD CREEK
RESTORATION PROJECT – AREA A**

**DEWATERING, DIVERSION, AND WATER INTRODUCTION
PLAN**



Submitted By

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June 2012

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INTRODUCTION

This document is a necessary and important component of the Middle Rosewood Creek Restoration Project – Area A (Project), Storm Water Pollution and Prevention Plan (SWPPP). It is required as an attachment to the SWPPP by Nevada Division of Environmental Protection (NDEP) and the Tahoe Regional Planning Agency (TRPA). This document will be for joint use, in the permitting requirements, between the NDEP and TRPA for all dewatering, diversion and water introduction activities required by the Project. The Contractor shall be required to be completely familiar with all aspects of the proposed plan, revise the proposed plan for review and acceptance by the Engineer, NTCD, NDEP and TRPA and implement plan throughout the construction of the project.

All efforts associated with this plan relate to the dewatering of groundwater and/or creek flow, diversion of the creek flow and watering of the proposed channel. Any references to any aspect of this work (i.e. diversion of the creek; dewatering operations) shall reference all aspects required for the proper construction of the Project (i.e. dewatering of the creek, diversion of the creek and watering of the new channel).

SECTION 1: GENERAL

1.1 GENERAL

1.1.1 Related Documents

- A. The Contract Documents including but not limited to the Standard Plans, Standard Specifications, Project Plans, Project Permits, Project SWPPP and attachments, and Specifications including the Special Technical Specifications.
- B. Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Best Management Practices, TRPA, 1988.

1.1.2 Summary

- A. The Contractor shall be responsible for final design, installation, maintenance and removal of the dewatering and diversion systems as required for completion of the work. The plan sheets provided as a part of these contract documents show the proposed dewatering scenario (Sheet DIV-1 through DIV-3). The Contractor shall submit a detailed Dewatering, Diversion and Filtration (watering) Plan to the Engineer for acceptance by the Engineer, NTCD, NDEP and TRPA prior to commencement of any construction activities.
- B. The Contractor shall review the Plans, SWPPP and Special Technical Specifications in developing the dewatering/diversion system. It is the Contractor's responsibility to determine whether any independent testing and investigation needs to be performed, and if so, to perform the testing and investigation to supplement the information provided. Prior to beginning construction, a detailed plan and schedule, with descriptions, for dewatering/diversion activities, estimated dewatering/diversion rates, volume and equipment requirements shall be submitted with the dewatering plan. The plan shall be signed and sealed by a Nevada registered Civil Engineer with experience of at least one dewatering/diversion operation of similar magnitude and complexity in a recently completed

construction Project. The qualification of the dewatering system designer shall be submitted to the Engineer for acceptance.

- C. All submittal requirements of this plan shall be in accordance with the Plans and/or Special Technical Specifications

1.1.3 Project Objectives

The Project is located in Incline Village, Nevada from approximately 100 feet south of the culvert outlet of Highway 28 and approximately 200 feet north of Northwood Boulevard. The purpose of this Project is to correct the severe entrenchment of the Rosewood Creek channel in the Project area. The new channel will incorporate multiple in-channel and valley-wide grade control structures to prevent channel downcutting and migration of any formed head-cuts within the channel area after completion of construction and re-introduction of flows. Based on the Land Capability and preliminary geotechnical investigations within the Project area, dewatering of the site is determined to be necessary for the proper construction and vegetation establishment on the Project. Additionally, dewatering will be required for the proposed replacement of the upstream culvert under Northwood Boulevard. Further, dewatering, diversion and filtration (watering) operations will be positioned above the upstream channel tie-in north of Northwood Boulevard, where the new channel crosses the existing channel, and at the downstream channel tie-in on the north side of Highway 28 culvert. Finally, the diversion plans call for a water pollution control (WPC) location, positioned downstream of the Highway 28 culvert, to provide a supplemental opportunity to treat water from the work area should turbidity and/or water quality exceed regulatory discharge levels (permitted levels stated in the SWPPP). All of these efforts are designed to take the expected late summer seasonal average flow of Rosewood Creek (1 .0 cfs) and convey and pass it through a dirt bag filter to meet surface discharge effluent requirements.

The Phase 1 work area may receive groundwater seepage within the newly constructed channel and floodplain during Phase 1 and the channel seasoning period associated with Phase 2. During Phase 1 and Phase 2 the intercepted groundwater will be pumped out and conveyed to a dirt bag filter positioned up and away from the bank of the channel (position to be accepted by the Engineer prior to placement and use by the Contractor). The purpose of this dewatering is to allow for the proper construction of improvements in Phases 1 (no work will be performed when groundwater is present). During Phase 2 growing seasons, standing water present in the revegetated area would interfere with plant and revegetation establishment and therefore is to be similarly removed. Local growing seasons are from mid-April through the end of October, or as directed by the Revegetation Specialist and/or the Engineer. The effluent that discharges from any dirt bag filter on the Project site will meet groundwater quality discharge standards before being allowed to infiltrate into the soil in a location that can appropriately accommodate it (position to be accepted by the Engineer prior to placement and use by the Contractor).

The dewatering, diversion and filtration (watering) operations will be required to fully accommodate all in- channel flows and intercepted groundwater for entire duration of the Project to assure Project success and to protect the downstream reaches of Rosewood Creek and Lake Tahoe from any discharge exceeding 10 NTUs, or the baseline turbidity value established prior to construction, whichever is higher. The purpose of this plan is to specify construction, maintenance and operation of the dewatering, diversion and filtration (watering) activities as well as the introduction of natural flow into the newly constructed channel that will support

construction, along with the required Best Management Practices (BMPs) associated with said work.

1.1.4 Basin Objectives and Regulatory Requirements

All dewatering, diversion and filtration (watering) activities as well as the introduction of flow into the newly constructed channel are required to meet the permit requirements of Nevada Division of Environment Protection (NDEP), and the Tahoe Regional Planning Agency (TRPA). State water quality standards are in place to protect waters from pollutant discharges. The NDEP standards for tributaries in the Lake Tahoe Basin reference the Nevada Administrative Code - Chapter 445A – NAC 445A.1915. The TRPA standards are specified in Chapter 81 – Water Quality Control of the TRPA Code of Ordinances. Seeing that the NDEP standards are more stringent than those of TRPA, the NDEP standard for turbidity governs.

NDEP and TRPA require a surface water turbidity standard of 10 NTU, or baseline turbidity whichever is higher, as described in the Project SWPPP. A baseline turbidity reading will be performed prior to construction (by Engineer, TRPA, and/or NTCD). The higher of the 10 NTU or baseline turbidity reading will serve as the turbidity standard for this Project, as determined by the Engineer, TRPA and NDEP prior to any dewatering, diversion and filtration (watering) activities or the introduction of natural flow into the newly constructed channel commences.

1.2 SUBMITTALS

1.2.1 Contractor Submittals

All submittals shall be in accordance with the standard specifications, the special technical specifications, the Project SWPPP and this plan.

The Contractor shall submit a detailed Dewatering, Diversion and Water Introduction Plan to the Engineer for distribution to NTCD, NDEP and TRPA prior to the initiation of and construction activities, and in accordance with special technical specifications and standard specifications. These entities will review and comment on the Plan within twenty (20) working days and provide comments to the Engineer who will then provide the comments to the Contractor. The Contractor will update the plan based on the comments, if needed, and re-submit to the Engineer for review and acceptance. No work on the Project will be allowed to be performed until an accepted plan has been provided and certified. While dewatering, diversion and filtration will occur at multiple locations and times during construction, the Contractor is required to submit the Dewatering, Diversion and Water Introduction Plan (which includes the comprehensive design of all required dewatering, diversion and filtration operations) in accordance to the Contractor Submittal section of the Special Technical Specifications prior to any construction activities on the Project. No work will allowed to be performed on the Project until the Contractor has received an accepted Dewatering, Diversion and Water Introduction Plan from the Engineer.

The dewatering plan shall include the Contractors approach for dewatering including but not limited to: the dewatering location(s), number and size of pumping units (if applicable), power source for pumping units (if applicable), size and materials for pipes, materials for damming, piping discharge point(s), fuel storage location (if applicable), location of emergency or back up detention system, settling basin (if applicable), gravel bags, baker tank (if applicable), dirt bag filter (s) and location of filtration of diverted water. The Contractor shall include manufacture's

specifications on impermeable diversion dams, water filled bladder berms and fish screen barriers in the submittal in accordance with the standard specifications and the special technical specifications.

The diversion plan shall include the Contractors approach for diverting the natural flow of Rosewood Creek during construction of in channel work including but not limited to: diversion method and materials, number and size of pumping units, power source for pumping units, piping discharge point(s), access and installation methodologies, protection methods for discharge point(s), fuel storage (if applicable), design flow rates, and final method for introducing natural flow into the newly constructed channel while concurrently meeting all applicable regulatory water quality standards for discharge. The Contractor shall include manufacture's specifications on impermeable and filter barriers in the submittal in accordance with the standard specifications and the special technical specifications.

The diversion plan shall further include the Contractor's approach to protect resident fish within the Project area. This effort includes the installation, and maintenance of fish barriers (screens or equivalent) at both the upstream and downstream reaches of the Project area (outside of all disturbed work areas). Additionally the Contractor will be responsible for coordinating fish rescue operations (to be performed by the Nevada Division of Wildlife, Nevada Tahoe Conservation District, or other entity under the direction of the Engineer) upon installation of the fish barriers, and prior to any other flow diversion or introduction. Finally, in the event fish are discovered within the Project area during the construction of Phase 3 of the Project, the Contractor shall cease operations and contact the Engineer, who will arrange for rescue of fish within the Project area. The Contractor will not be allowed to commence work until such time that all fish are rescued from within the Project area and the Engineer notifies the Contractor that work may commence. This incident (no matter how many during construction of the Project) will not entitle the Contractor to additional compensation, and/or, contract time.

During Phase 1, upon construction of the new channel and after all channel grade and valley-wide grade control structures have been installed; the work area will be replanted with native vegetation as shown on the Project Plans (Sheets R-1 through R-4) and as described in the Project Special Technical Specifications, Section 600. After installation of revegetation and/or plantings within the Phase 1 construction, for the entirety of Phase 2 and portions of Phase 3 (until the Engineer and/or RS directs irrigation to cease) the surfaces and banks of the newly constructed channel and floodplain (along with all other revegetated areas) will be gently irrigated to encourage substrate sealing and the successful establishment of the planted vegetation. This work area irrigation will be applied in a manner that does not result in erosion, sedimentation or ponding. At the beginning of Phase 3 the Engineer, NTCD, NDEP and TRPA will determine if the work area has been appropriately seasoned and the new channel and vegetation have adequately stabilized so that the natural flow of Rosewood creek can be introduced. The seasonal low flow expected at the time of introduction (i.e., 1.0 cfs) limits the likelihood of significant sedimentation. The channel wetting and irrigation associated with the prior phases is expected to settle and sequester fine sediments into the interstices of the channel rock and cobble substrate. The low flow is expected to migrate slowly downstream as it wets the new channel without causing undue hydraulic scour or sediment entrainment. The diversion/dewatering and dirt bag filter at the outlet of the Highway 28 culvert will assure that water quality discharge requirements will be achieved for the entirety of this final Phase of natural flow introduction to the new channel of Rosewood Creek.

SECTION 2: DEWATERING

2.1 DEWATERING REQUIREMENTS

2.1.1 Summary

The Contractor is required to dewater the existing creek above the proposed channel tie-in locations with the newly constructed channel(s) as necessary to enable construction activities to be completed in a timely and proper manner (no work to be permitted in a “wet” condition/work area). Additionally, it is anticipated that dewatering will be necessary for many other work efforts associated with all phases and all the tie-in locations of the Project. The Contractor shall dewater, divert and appropriately filter and infiltrate all intercepted flows and groundwater water during all construction activities to support and assure a properly constructed and maintained Project, including the establishment of newly planted vegetation. In order to assure proper construction the Contractor shall completely dewater all work areas to the acceptance of the Engineer for the entire period work is required. Dewatering shall be performed for all revegetated areas during all growing seasons (mid April through the end of October of each year or as direct by the engineer or RS) commencing from installation of revegetation until the revegetation has been determined, by the Engineer and RS, to be established.

Dewatering will also be necessary for the installation of the Northwood Boulevard culvert, footings, wing walls, culvert channel section, and other construction aspects associated with the culvert construction (due to groundwater and/or creek water seepage and discharge). Water diverted from the existing creek, or groundwater encountered, may contain suspended sediments, dissolved solids, and/or other materials, which shall not be discharged directly back into Rosewood Creek without adequate filtration and treatment. Discharged waters shall conform to all applicable laws and permit requirements. Collected effluent may be used for irrigation or dust control, provided that the effluent waters meet the discharge requirements.

2.1.2 Dewatering Flow Rates

Groundwater Dewatering:

Groundwater has been logged and identified from 1.5 feet to 3.5 feet below ground surface (bgs) in the work area (as described in the Project Geotechnical Report which is an appendix of the Special Technical Specifications). No direct aquifer testing has been completed to accurately estimate the maximum rate of groundwater flow which will need to be pumped in order maintain a dewatered construction area of the new channel. The Contractor is responsible to appropriately dewater the construction site in order to construct the Project improvements as described in this plan, the SWPPP and the Special Technical Specifications. A copy of the Project Geotechnical Report is provided as an appendix to the Special Technical Specifications for the Contractor’s use and information on the geotechnical conditions within the Project area.

2.1.3 Dewatering Effluent Levels

Discharge limits for allowable discharge shall meet the NDEP standard turbidity value of 10 NTU, or the baseline turbidity value established prior to construction, whichever is higher, as determined by the Engineer (in accordance with TRPA and NDEP requirements) as described in the Project SWPPP. All effluent discharge shall be monitored and tested by the Engineer, NTCD

or approved representative prior to discharge. In-stream discharge of dewatering effluent in excess of surface water standards are not allowed for under this Project or the Project Permits.

2.1.4 Dewatering Soil Infiltration/Vertical Separation

For effective water quality treatment, it is essential that soil infiltration BMP systems include, among other things, provisions for an adequate vertical separation between the elevation at which the effluent is discharged and the ceiling of the subsurface groundwater table elevation. Vertical separation primarily affords water purification through the degradation of organic nutrients (i.e. BOD), the sorption of inorganic nutrients and the occlusion of fine sediments. As water passes down through the soil column it converts ammonia nitrogen (NH_4) to soluble nitrate (NO_3 ions) which can then readily migrate into the groundwater unless denitrifying conditions are present in the soil column. The recommendations cited in this section are based on the research findings related to vertical separation available to date.

The assumptions with this groundwater dewatering plan have been developed based on available hydrologic data and reasonable interpretations for vertical separation for cross sections where the dirtbag filters are proposed to be positioned (e.g. on the soil surface of the adjacent floodplain terrace). During the summer and fall, when construction activities and dewatering will be required, it has been projected that Rosewood Creek would carry approximately 0.6 to 1 cfs of flow in the existing channel. This volume of water would create an in-stream water surface elevation (WSE) approximately 6 inches above the thalweg flow line of the channel. This condition also assumes that the lateral relationship of the phreatic groundwater plane slopes elliptically as it descends to the hyporeac interface with the water surface elevation in the creek channel (USDA 1997). If these assumptions can be viewed as reasonably sound then there will be a vertical separation of between 7 and 10 feet for pumped groundwater to be discharged from the dirtbag filter on the floodplain soil surface and infiltrate through before interfacing with the ground water table.

The amount of vertical separation necessary between introducing a surface discharge and the infiltrating water's interface with groundwater is still being debated, as there is disagreement over the degree of treatment required. Research so far shows that 2 to 4 feet of vertical separation will adequately remove bacteria and most nutrients depending on soil type and conditions. In order to assure an unsaturated zone of 2 feet, it usually is necessary to construct an infiltration system with even greater vertical separation in order to account for groundwater mounding. However, scientific literature is strongly indicating a final (as constructed) vertical separation that is greater than 2 feet. It should also be noted that there is often loss of soil depth during grading, excavation and disturbance, making it reasonable to require additional vertical separation in the groundwater dewatering design to allow for such construction site adjustments.

2.2 TREATMENT AND DISPOSAL

2.2.1 Treatment and Disposal Power Options

Dewatering and sump pumps shall be electric motor driven. The Contractor shall submit, with the dewatering plan, power requirements for the dewatering system. The Contractor will coordinate with NV Energy to perform the necessary modification to the available power distribution system to provide a suitable breaker, receptacle and meter. The Contractor shall be responsible for costs associated with obtaining the necessary power. Any use of gasoline/diesel

engines/machinery on the Project site must be submitted to the Engineer for review and approval of the Engineer, NTCD, TRPA and NDEP and follow appropriate sections of the special technical specifications, standard specifications, and Project permits, regarding use, refueling, and storage of fuels.

2.2.2 Dewatering Methods (Sumps)

If a sump (submersible pump) is used, it shall be protected to provide the necessary dewatering and to prevent pumping of fine sands or silts from the subsurface. A continual check (four times daily) shall be performed by the Contractor to ensure that the subsurface soil is not being removed by the dewatering operation.

Water and debris shall be disposed of in a suitable manner in compliance with this plan, the Project SWPPP, the standard specifications and the special technical specifications and without damage to adjacent properties and/or SEZ areas. Diverted flow or captured groundwater from the existing channel of Rosewood Creek shall be allowed to drain into soils (in areas approved by TRPA, NDEP, NTCD and the Engineer) after passing through a dirt bag filter. Water shall be filtered through this device to meet groundwater discharge standards before being infiltrated into the soil. In order to attain this requirement the Contractor will be required to implement the use of a “dirt bag filter” (ACF Environmental, Inc.) or other approaches as described in section 2.2.3 of this plan, or equivalent treatment technology. The contractor’s proposed “dirt bag filter” shall be submitted (manufacturer’s information) for review and acceptance by the Engineer, NTCD, TRPA and NDEP in accordance with the standard specification and special technical specifications, for “submittals”.

The release of groundwater to the required effluent level shall be performed in such a manner as to not disturb natural foundation soils, prevent disturbance of compacted backfill, and prevent the movement of the new channel’s and in-channel and valley grade controls. The use of sumps, pumps and dirtbags, or equivalent, shall be used for all existing channel and groundwater dewatering and/or contained dewatering operations. Additionally, this methodology shall be applied in the event the dewatering operations for the creek diversion do not meet effluent standards required for the Project.

2.2.3 Temporary Storage and Filtration Methods

A. The following sections describe acceptable methods for temporary storage and filtering of dewatering effluent.

Dirt Bag Filter: Dirt bag filters may be used to provide suitable filtration of dewatering effluent to meet surface discharge requirements. The filter bags can also be used for retention, providing the means to gravity or pumping of captured, diverted or effluent waters. These flow based water quality treatment BMPs shall be placed on the soils that provide the best vertical separation from groundwater within the limits of the SEZ lands shown on the Project Plans. The dirt bag filters shall be inspected during use and replaced when they have reached the manufacturers recommended limit for use. The dirt bag filters shall be removed from the Project site and disposed of outside of the Lake Tahoe Basin in accordance with all local, regional, state and federal regulations. Under no circumstance can a dirt bag filter be emptied and/or cleaned on the Project site, or within the Lake Tahoe Basin. All dirt bags shall be inspected twice daily during use.

Portable Tanks: Baker Tanks or equivalent portable tanks may be utilized to capture and treat dirt bag filter failure and/or large storm and runoff events. The Baker Tanks shall be inspected twice daily during use and replaced when they have reached the manufacturers recommended limit for use. The Baker Tanks shall be removed from the Project site and disposed of outside of the Lake Tahoe Basin in accordance with all local, regional, state and federal regulations. Under no circumstance can a Baker Tank be emptied and/or cleaned on the Project site, or within the Lake Tahoe Basin.

Water Trucks: Water Trucks may be utilized to collect and store dewatering effluent. Disposal of the collected effluent shall be disposed of outside of the Lake Tahoe Basin in accordance with all local, regional, state and federal regulations.

2.2.4 Disposal

Should dewatering disposal be warranted, approved methodology shall be proposed by the Contractor and reviewed and accepted by the Engineer, NTCD, NDEP and TRPA. Defined spraying of effluent for dust control shall be applied in accepted areas so not to cause runoff within the Project area at the acceptance of the Engineer, NTCD, NDEP and TRPA. All effluent to be disposed of must be monitored to meet numeric effluent turbidity limits. Alternatively, the effluent may be removed from the Project area and disposed of at an approved location. Release of untreated surface runoff to the creek shall not be permitted.

Application Area(s): The only acceptable application areas for effluent disposal will be for dust control on the Project's access roads. All effluent applied to the project's access roads shall be in accordance with all sections of the Project SWPPP, the Project Permits and this plan. The Contractor shall further provide a application plan for review and acceptance by the Engineer, NTCD, NDEP and TRPA In the event the Contractor chooses to dispose of effluent outside the Project area disturbance area, the Contractor will be required to attain the necessary property rights from the property owners where water is to be discharged prior to discharge of any effluent. The Contractor shall provide the Engineer with acceptance of the property owner, and acceptance by NTCD, TRPA and NDEP, to accept this discharge prior to discharge.

2.3 EXECUTION

2.3.1 Installation

The Contractor can construct access to the site without the dewatering system in place. However, the Dewatering, Diversion and Water Introduction Plan must be accepted by the Engineer, NTCD, NDEP and TRPA before any construction on the Project can commence, no work will be allowed until a Plan has been accepted as stated in this Plan and in the Project SWPPP. The dewatering system for construction must be installed by the Contractor and accepted by the Engineer, NTCD, TRPA, and NDEP prior to the commencement of any dewatering (three working days prior notice required for an inspection to occur).

2.4 OPERATION AND MONITORING

2.4.1 Operation

Once the dewatering and diversions system is in place and accepted by the Engineer, NTCD, TRPA, and NDEP, the Contractor shall commence dewatering and diversions in the specified

locations in the accepted plan. If applicable, groundwater encountered may have to be pumped out of and around the working area. The Contractor shall regularly inspect the system in place to ensure that it is functioning properly (inspection frequency described below). If any part of the system is not functioning adequately, the Contractor shall stop dewatering and construction and notify the Engineer. The problem will be assessed by the Engineer and Contractor and modified to incorporate the improvements to the system. The process will then resume and be reevaluated by the Engineer and Contractor. Should the Contractor not be able to address any issues with the system, the system, and all work shall cease, until the Contractor develops a plan, for submittal to the Engineer for review and acceptance by the Engineer, NTCD, NDEP and TRPA. The revisions to the system shall be documented and incorporated into a revised SWPPP and dewatering plan, no later than the following Monday after the revisions occurred and were accepted by the Engineer. The contractor shall not be entitled to additional compensation or working days for any revisions necessary to the proper function of the dewatering system.

When the system is functioning properly and meeting the turbidity standard and permit requirements, the Contractor must inspect the system hourly to ensure that it continues to function properly.

Treatment / Storage: Must be inspected hourly to ensure that no damaged sections of the dirt bag filters, baker tanks, or other devices have occurred and no soil erosion is occurring within the vicinity of the treatment device. Non functional or damaged dirt bag filters and other devices will be removed and repairs will be implemented immediately or the dirt bag and other devices will be replaced. If an additional filter material or liner is used in front of the dirt bag, daily inspections will determine when accumulated sediment will require removal.

Diversion Conveyance Piping and Filtration System: Inspect the dewatering, diversion, conveyance piping and filtration (including dirt bag filters, baker tanks, or other devices) system hourly for damage and/or leaking. If a problem is observed, the section shall be promptly repaired.

Application Area(s): If applications area(s) are used, inspection shall be required hourly to ensure that no surface runoff or ponding of water are occurring. If either of these conditions exists, the Contractor shall adjust the dewatering, diversion; conveyance piping and filtration system to another application area where more favorable conditions exist or stop the dewatering, diversion, conveyance piping and filtration operations until surface runoff standards are attained and/or ponding no longer exists. Application area wetting shall not resume until acceptable conditions at this location are achieved. Any receiving area shall be approved by the Engineer NTCD, TRPA, and NDEP as part of the SWPPP and plan acceptance process.

The Contractor is additionally required to monitor groundwater and surface water conditions, in accordance with this dewatering, diversion and Water introduction Plan, at the construction site and application area(s) (if applicable).

2.4.2 Security of Dewatering System

The Contractor shall be required to maintain a secured dewatering system, including treatment and disposal for the entire duration of the work (all phases and the revegetation maintenance and bonding period if necessary). The Project site is located within a residential area, on private

residential property, which means humans and animals may enter the work area and potentially disturb the system.

2.4.3 Dewatering Effluent Monitoring

The Engineer, NTCDD or approved representative will take turbidity samples at 2 points as specified in the NDEP permit, one upstream and one downstream of the construction work zone. Results will determine if effluent limitations meet the permit requirements (as stated in the SWPPP, this plan and/or the Project Permits). The Contractor shall provide the Engineer with suitable sample locations at the points of by-pass and points of disposal for the dewatering effluent (initially assumed to be directly upstream and directly downstream of the Project area).

2.5 DEMOBILIZATION

2.5.1 Demobilization

The Contractor will remove the dewatering, diversion, conveyance piping and filtration operations at the end of each work year as part of the winterization of the site and remove any sediment collected by the dewatering system and dispose of the material at a TRPA and NDEP approved dumpsite located outside of the Tahoe Basin. The Contractor will mobilize the dewatering, diversion, conveyance piping, and filtration operations at the beginning of each work year. In the event multiple storm events occur, or significant amounts of debris/sediment are collected during Phase 1 through Phase 3 activities (as determined by the Engineer), the Contractor will be required to remove all debris/sediment at the direction of the Engineer in accordance with this dewatering, diversion and water introduction plan and the Project SWPPP. The diversion system for the existing channel of Rosewood Creek (for the construction of the channel tie-ins) shall be disassembled and removed from the Project site commensurate with the successful introduction of water to the new channel and the commencement of backfilling begins to restore the surface grade to the abandoned channel, upon the approval of the Engineer. Under no circumstance shall the Contractor remove any of the diversion system until approved by the Engineer. As Phase 3 is completed and full flow of Rosewood Creek is conveyed by the newly constructed and properly seasoned channel all dewatering, diversion equipment and materials shall be removed and disposed of properly, Upon the approval of the Engineer. This shall only occur after the Engineer, TRPA, NDEP and NTCDD have accepted the new channel and floodplain (including all tie-in areas) and approved the removal of these devices. All of the diversion by-pass piping and application fixtures shall be removed from the Project site entirely. The Contractor is directed to coordinate with the Engineer to demobilize and decommission the dewatering and diversions systems from upstream to downstream in an appropriate order so as to not create risk to the newly constructed channel or effluent discharges downstream. The diversion dams that were installed at the inlet and outlet tie-in and the mid channel crossing shall be removed and the former channel and trenches associated with newly constructed grade controls backfilled, compacted with native materials and restored to native conditions. The element to be removed is downstream, below the Highway 28 – culvert, water pollution control (WPC-1). WPC-1 shall only be removed upon approval of the Engineer, NTCDD, NDEP and TRPA. The introduction of the natural flow into the newly constructed channel must meet effluent water quality criteria (turbidity) at this lowest section of the channel reach before WPC-1 are to be removed.

SECTION 3: DIVERSION

3.1 DIVERSION REQUIREMENTS

3.1.1 Summary

The Contractor will be required to divert flows in at least three locations along Rosewood Creek in order to construct the tie-ins between the existing and new channel. The Contractor will incorporate sediment controls to prevent additional sediment generation during diversion activities. Diverted flows will be filtered through a dirt bag and infiltrated into the soil and dissipated before seeping and day lighting into the existing creek. Upon completion of all channel tie-ins the creek channel will be brought back on-line slowly, so the discharge turbidity limits stated in the Project SWPPP and Project Permits are met. Conformance with all applicable laws and permit requirements shall be met at all times.

The creek diversion shall be in accordance with the Project plans, the special technical specifications, the Project SWPPP and this plan. Particular attention shall be paid to the figures on Sheets DIV-1 through DIV-3 and the corresponding details which provide a general overview of the diversion approach for the Project implementation.

3.1.2 Diversion Flows

A. Baseflow Diversion:

- Rosewood Creek flows have been monitored for several years in the vicinity of the Project area as described in this plan and in the Project SWPPP. This monitoring information has provided an estimated baseflow value within the creek area of approximately 0.6 cfs (90% of flow between July 1 and October 1 is anticipated to be at or below this flow level) based on creek monitoring during the summers of 2003 through 2007. Based on this monitoring information, the Contractor will be required to maintain a diversion capable of conveying a minimum of 1.0 cfs during all times of diversion. All Water Quality monitoring protocols can be reviewed in Attachment B of the SWPPP.

B. Peak Flow Diversion:

- The Rosewood Creek monitoring discussed in this plan and in the Project SWPPP has provided information on the possibility of thundershowers, or summer storm events, which could occur during the construction of the Project. Based on the available data (July 2003 through October 2007) the largest summer storm event generated flows of approximately 5 cfs (Dale Miller Memorandum, 9/29/03). Since this observed flow was located downstream of the Project area, and below Highway 28, the anticipated flows within the Project area should be lower than the 5 cfs estimate. Available flow data from the upper creek monitoring station (above the Project area) suggests that the anticipated peak flow within the Project area is on the order of 3.0 cfs (twice the highest known reading of these monitoring sites). Since the period of record of flow monitoring on Rosewood Creek is relatively short, this estimate attempts to accommodate uncertainty. However, summer thunderstorm events are by their nature varied in local intensity. The Contractor is required to have additional dewatering and conveyance and filtration system with adequately sized pumps, piping and enough dirt bag filters to accommodate a diversion of 3 cfs at each location. The Contractor is required to successfully manage a summer thunderstorm of this magnitude. The Contractor is required have a dewatering and conveyance and filtration system capable of addressing this scenario on site, and set up within a 4 hour verbal and/or written notice by the Engineer. As part of the Contractor's diversion plan, the contractor shall provide a plan, with appropriate elements (pipe, pumps, etc.) for review and acceptance by the Engineer, NTCD, NDEP and TRPA prior to any work on the Project commencing.

3.2 DIVERSION METHODS

3.2.1 Diversion Options

Proposed diversion locations are shown on Sheets DIV-1 through DIV-3 of the Project Plans. The diversion locations and drawings are general in nature and for representative purposes only. The Contractor will be required to provide detailed diversion plans as described in this plan and in the Project SWPPP prior to any work on the Project commencing. Diversion options are given below starting with the furthest upstream diversion (referred to as Diversion 3 – Sheet DIV-3 of the Project Plans) to the furthest downstream (referred to as Water Pollution Control 1 (WPC-1) – Sheet DIV-1 of the Project Plans). While proposed locations are listed, final design, installation, maintenance and removal of the diversion systems shall be the Contractor's sole responsibility. The Contractor shall prepare a diversion plan (signed and sealed by a Licensed Civil Engineer in the State of Nevada) for review and acceptance of the Engineer, NTCD, NDEP and TRPA. Each diversion dam shall be in place for the duration of the channel tie-in construction and removed of as described in this plan.

Prior to establishing any diversion within the Project area the Contractor shall review the long range weather forecast (10-day forecast or greater) for the Project area. The Contractor shall pay particular attention to the potential for storm events (i.e. probability for thundershowers or significant precipitation exceeding a 50% chance during the forecast period and proposed diversion period). In the event a storm event is forecasted during the anticipated channel tie-in construction period, the Contractor shall not commence work, and wait until the forecast potential for thundershowers or significant precipitation event drops below 50% probability. The

Contractor shall obtain written permission from the Engineer of the forecast, for acceptance prior to initiating the tie-in construction and diversion of existing channel flows.

Water Pollution Control 1: (downstream of Highway 28 dewatering location, see Sheet DIV-1 and referred to as WPC-1). This work effort includes a creek dewatering system at the downstream extents of the Project area. The water pollution control system shall be installed at a downstream location outside of the Contractor’s work area (downstream of Highway 28 and downstream of the Diversion 1 discharge location). The diversion shall include a diversion dam that will completely contain creek flows to be pumped out to entirely dewater the channel (no creek flow shall exist directly downstream of this diversion dam when installed and operating). Diversion dam(s) may be constructed from a variety of impermeable materials that may include: plastic sheeting, geotextile fabric, gravel bags, and water filled berms. Sand bags are not permitted for use on any aspect of the Project. The diversion dam shall effectively seal the channel from flows and allow the water to enter the temporary piping system. The creek will be dewatered at the diversion dam location and pumped into a dirtbag. The effluent (dewatered creek water) will pass through this dirt bag filter and infiltrate into the soil, after the energy of the effluent being discharged is minimized, before it infiltrates and daylight back into the lower channel. During the course of the entire operation and disassembly of the water pollution control system the creek turbidity will be monitored (hourly and at times when the creek “appears” to be turbid) by the Engineer and/or NTCDD to assure that turbidity standards of the SWPPP, this Plan and the Project Permits are met. In the event the turbidity standards are not met, the Contractor will be required to cease all construction efforts associated with in-channel work, and/or work that is creating turbid waters, until turbidity standards are met and confirmed by the Engineer to re-start work. This scenario (turbidity standards not being met) will additionally require the contractor to take protective measures to obtain turbidity standards. These measures may include additional dewatering, additional treatment of effluent, or other measures. These measures shall be proposed by the Contractor for review and acceptance of the Engineer, NTCDD, NDEP and TRPA during the development of the dewatering plan and SWPPP amendment prior to the commencement of Construction of the Project.

WPC-1 shall be installed prior to any creek diversions and shall act as the “final defense” against any downstream effluent discharges. The diversion will only be put into operation (pumps turned on and the creek dewatered) in the event the effluent standards (as described in the SWPPP and/or Project Permits) have been exceeded. The dewatering will commence until directed to cease operations by the Engineer. The dewatering shall continue until such time that the turbidity at the WPC-1 impoundment is below the turbidity standards stated in the Project SWPPP and the Project Permits.

Diversion 1: (most downstream location positioned upstream of Highway 28, See Sheet DIV-1) This diversion involves installing a temporary dam and diversion pipe to divert flows to a dirt bag filter placed downstream of Highway 28 and upstream/up-gradient of water pollution control – 1 (WPC-1). The temporary piping system shall be installed by hand and anchored with hand crews to minimally disturb the area. A temporary diversion dam shall be installed the divert flows into the temporary pipe. Diversion dams may be constructed from a variety of impermeable materials that may include: plastic sheeting, geotextile fabric, gravel bags, and water filled berms. Sand bags are not permitted for use on any aspect of the Project. The outlet of the temporary bypass pipe shall be attached to a dirt filter bag which will allow

bypassed flow to infiltrate into the soil surface after the energy of the effluent being discharged is minimized. Upon completion of all channel tie-ins and the introduction of flows to the new channel, the diversion system and all associated materials shall be removed by hand and the area stabilized. These efforts (removal of the diversion system shall not occur until the new channel flows have been accepted by the Engineer, NTCD, NDEP and TRPA and the Engineer approves the removal of the diversion systems.

Diversion 1 will be operational during all aspects of the Channel Tie-in work (operating at same time as Diversion 2, Diversion 3 and Water Pollution Control 1) and installed after all work associated with Water Pollution Control 1 is complete and accepted by the Engineer.

Diversion 2: (Placed and installed to seal (protect) the new channel as it intersects and crosses the existing channel, see Sheet DIV-2) This diversion involves installing a temporary dam and diversion pipe to capture and convey flows from the existing channel, upstream of the channel tie-in/crossing location, and around the channel tie-in work area to the existing channel downstream of the tie-in area. Diversion dams may be constructed from a variety of impermeable materials that may include: plastic sheeting, geotextile fabric, gravel bags, and water filled berms. Sand bags are not permitted for use on any aspect of the Project. Water is not permitted to significantly pond upstream of the inlet diversion dam. The outlet of the temporary bypass pipe shall be attached to a dirt filter bag which will allow bypassed flow to infiltrate into the soil surface after the energy of the effluent being discharged is minimized. This filter device will be appropriately protected to reduce any potential for scour and prevent erosion. Upon completion of all channel tie-ins and the introduction of flows to the new channel, the diversion system and all associated materials shall be removed by hand and the area stabilized. These efforts (removal of the diversion system shall not occur until the new channel flows have been accepted by the Engineer, NTCD, NDEP and TRPA and the Engineer approves the removal of the diversion systems.

Diversion 2 will be operational during certain aspects of the Channel Tie-in work (operating at same time as Diversion 1, Diversion 2, Diversion 3 and Water Pollution Control 1) and will be installed after all work associated with Diversion 1 is complete and accepted by the Engineer.

Diversion 3: (The most upstream location positioned around Northwood Boulevard, see Sheet DIV-3) This diversion involves installing a temporary dam and diversion pipe to divert and convey creek flows around Northwood Boulevard (through the new culvert, through the existing culvert or other accepted method) and to a dirt bag filter positioned near the existing channel. Diversion dam(s) may be constructed from a variety of impermeable materials that may include: plastic sheeting, geotextile fabric, gravel bags, and water filled berms. Sand bags are not permitted for use on any aspect of the Project. Water is not permitted to significantly pond upstream of the inlet diversion dam. The diversion dam shall effectively seal the downstream channel from flows and allow the water to enter the temporary piping system. Since the creek is incised and located below the road surface, a pump may be required to divert the flows. During the diversion time period flows will be conveyed around the tie-in work area and to a dirtbag, or equivalent device, to the existing channel area. The diversion shall not hinder traffic flow on Northwood Boulevard. The outlet of the temporary bypass pipe shall be attached to a dirt filter bag which will be appropriately protected to reduce any potential for scour and prevent erosion. Effluent from the bypass pipe will

infiltrate into the soil until the soil saturates and sheet-flows into the existing creek channel. Upon completion of all channel tie-ins and the introduction of flows to the new channel, the diversions system and all associated materials shall be removed by hand and the area stabilized. Removal of the diversion system shall not occur until the new channel flows have been accepted by the Engineer or NTCD and the Engineer directs the removal of the diversion systems. The removal of the diversion systems shall commence with the most upstream system (DIV-3) and proceed to the channel crossing (DIV-2) and end with the downstream system (DIV-1) or as directed by the Engineer.

Diversion 3 will be operational during certain aspects of the Channel Tie-in work (operating at same time as Diversion 1, Diversion 2, and Water Pollution Control 1) and will be installed after all work associated with Diversion 2 is complete and accepted by the Engineer.

3.2.2 New Channel Water Introduction

The Contractor shall be responsible for the installation and maintenance of the newly constructed channel (s) as required for completion of the work as described in this plan, the SWPPP, the Special Technical Specifications, the Project Plans and the Project Permits. Containment structures (diversion dams) and dewatering systems (as described in this plan) and filtration BMPs are the primary methods for temporarily diverting the flow around all designated locations of newly constructed channel and connections to the existing channel. Containment structures may be constructed of a variety of materials, such as plastic sheeting, impermeable geotextile fabric, sand bags, and water filled berms. The containment structures shall effectively protect and seal the new channel from being disturbed by allowing existing surface flow to enter the channel before channel seasoning and vegetation establishment is complete. The introduction of the natural flow into the newly constructed channel must meet effluent water quality criteria (turbidity) at WPC-1 impoundment before WPC-1 is removed. Pumps shall be electric unless otherwise accepted by the Engineer.

The new channel water introduction plan shall be for the introduction of existing natural creek channel flow only and no pumping of water shall be allowed to increase the introduction of water to the creek without prior acceptance of the Engineer, NTCD, NDEP and TRPA. The water introduction shall commence by decommissioning the most upstream creek diversion dam (DIV-3). This decommissioning shall only be initiated after acceptance of the new channel and all channel tie-ins by the Engineer, NTCD, NDEP and TRPA. The decommissioning shall start with the shutdown of the diversion pump and then proceed with the slow and careful removal of portion(s) of the diversion dam. The portion(s) of the diversion dam to be removed shall only be the top layers of the dam in order to minimize the downstream forces of the water on the creek channel (so that no erosion or elevated turbidity exists at the downstream end of the diversion). The removal of the portion of the diversion dam shall not be too much and the existing dams remaining shall be of sufficient height to allow for the diversion pump and piping system to be re-started at any time in a functioning manner to dewater the entire creek flow. The diversion dam shall be removed in a manner as to not create turbidity within the creek and shall be done all by hand (no use of equipment). Once the portion of the diversion dam has been removed the natural creek flow will be introduced to the new channel. The creek flow will flow naturally through the new channel. As the creek flows reach WPC-1, the water will be monitored to assure effluent limits are met. Should effluent limits not be met, in accordance with the SWPPP

and Project Permits, the dewatering of the creek for treatment at WPC-1 will commence as described in this plan and in the SWPPP. Removal and decommissioning of the remainder of Diversion 1 and the entirety of Diversions 2, 3 and WPC-1 are described in other sections of this Plan.

3.1.3 Diversion, New Channel Irrigation Requirements and Effluent Discharge Levels

All water introductions into the newly constructed channel during Phase 3 require that applicable permit requirements established by NDEP and TRPA are met, as described in the Project SWPPP, this plan and the Project Permits. Seasoning the new creek channel will be needed in order to meet the turbidity standard at the designated monitoring station positioned in the channel of Rosewood Creek below Highway 28 (WPC-1). The Contractor will continually and gently irrigate and season the new channel and floodplain area during Phase 1, Phase 2 and the initial portion of Phase 3 (until creek flows have been introduced and accepted in the new channel and the decommissioning of the irrigation system has been accepted by the Engineer, TRPA, NDEP and NTCD) until the new channel substrate seals and all planted vegetation has successfully established. The criteria for when Phase 2 seasoning ends will be determined by the Engineer, NTCD, NDEP and TRPA as described in the Project SWPPP and Special Technical Specifications.

3.2.3 Treatment and Disposal Options

Channel flushing effluent shall be disposed of in accordance with this plan, the Project SWPPP, the Project Permits and the special technical specifications.

3.3 EXECUTION

3.3.1 Construction Sequence

As a first order of work for any in-creek activities, the Contractor shall install the upstream and downstream fish screens (as shown on Sheets DIV-1 and DIV-3, and as described in this plan). Upon installation the Contractor shall coordinate the required fish rescue. The Contractor will provide a twenty (20) working day notice of when the fish rescue needs to happen so that it can be coordinated with NDOW. Upon satisfactory fish rescue, as determined by the Engineer (in conjunction with TRPA, NDEP and NDOW) the Contractor will be allowed to commence construction of in creek activities.

Diversion sequencing shall be as shown on the plans, and/or as described the Technical Special Specifications, Project Permits, Project SWPPP and/or this plan. Revisions or modifications to this plan may be requested by the Contractor in consultation with the Engineer, with final acceptance of the Engineer, NTCD, NDEP and TRPA. Diversion activities shall commence prior to any work being performed in any portion of the creek (between top of banks) and will be conducted from the downstream diversion located below Highway 28 to the upstream diversion located northerly of North Boulevard.

Each diversion shall be designed, installed, and maintained by the Contractor and upon construction completion of all diversion/channel tie-in locations, all temporary materials associated with diversions shall be removed upon acceptance by the Engineer, NDEP, NTCD and TRPA and the disturbed areas shall be restored to native conditions.

3.3.2 Installation

The diversion system(s) for construction activities as outlined in this plan must be installed by the Contractor and accepted by the Engineer, NTCDD, NDEP and TRPA prior to commencement of any diversion activities (three working days prior notice required). Appropriate temporary BMP's shall be in place in order to reduce sediment transport.

3.4 OPERATION AND MONITORING

3.4.1 Operation

- A. Seasoning the new creek channel (Phases 1, 2 and 3) will be needed in order to meet the turbidity standard at the designated monitoring station positioned in the channel of Rosewood Creek below Highway 28. The Contractor will continually and gently irrigate work area until the new channel substrate seals and all planted riparian vegetation has successfully established. The criteria for when Phase 2 seasoning ends will be as stated in the Special Technical Specifications.
- B. Natural flow introduction operations into the newly constructed channel shall be designed and installed by the Contractor with the approval of the Engineer during Phase 3. The Contractor shall inspect the system to ensure that it is functioning properly and that no introduced water is allowed to exit the Project area and connect with the lower channel of Rosewood creek unless and until it meets water quality standards stated in the Project SWPPP and the Project Permits. If any portion of the system is not functioning properly, the Contractor shall stop the water introduction operations and notify the Engineer. The problem(s) shall be evaluated and necessary improvements incorporated into the system. The process will then recommence and the Contractor shall continually evaluate and inspect the system.
- C. Once the system is functioning properly and meeting the diversion requirements, the Contractor must inspect the system accordingly to ensure that it continues to function properly.

Diversion Barrier(s) or Equivalent: Inspect twice daily to ensure that damaged sections of the barrier material are repaired promptly and to determine when accumulated sediment will require removal.

Distribution Piping and System: Inspect the distribution piping and application systems twice a day for damaged or leaking sections and promptly repair.

Application Area(s): Inspect the application areas four times a day to ensure that diverted water is appropriately discharging and infiltrating to approved areas and that no scour or visible signs of erosion are present. If failures are evident, the Contractor shall make adjustments in the distribution system or stop the diversion operation until such time as the application site returns to an acceptable condition to resume distribution.

New Channel: Natural Flow Introduction System: Continually inspect new channel and flow introduction operation to ensure that turbid water is captured and treated in accordance with this plan and the Project SWPPP prior to discharging to surface waters or SEZ areas downstream of the Project area. Water quality sampling (turbidity readings) and analysis shall occur as necessary to determine when tributary flows may enter channel with acceptable water quality for discharge.

3.4.2 Diversion Effluent/Channel Irrigation Monitoring

The Engineer, NTCDD or an approved designee will monitor surface water quality conditions at the construction site during diversion operations and channel irrigation operations in accordance with the frequency outlined in the permits to confirm compliance with NDEP and TRPA permit effluent limitations.

3.5 DEMOBILIZATION

3.5.1 Demobilization

When diversion and new channel flow introduction activities are complete and the system is no longer required to assist with construction of the Project (in accordance with this plan, the Project SWPPP and the Special Technical Specifications), the Contractor shall remove all sediment collected by the diversion structures and dispose of the material at a TRPA and NDEP approved dumpsite located outside of the Tahoe Basin.

Impermeable barriers, diversions dams, pumps and piping shall be removed and disposed of properly, in accordance with the Special Technical Specifications, Project SWPPP and Project Permits.

All distribution piping and application fixtures shall be removed from the construction site and application area(s). Below grade piping shall be removed and trenches backfilled and compacted with native materials. All disturbed areas shall be restored to native conditions per the direction of the Engineer and in accordance with the Special Technical Specifications.

SECTION 4: FISHERIES

4.1 FISHERIES REQUIREMENTS

To minimize the construction impacts at Rosewood Creek, where in-stream construction will be required, the construction area will be isolated from the active stream using diversion dams or other such barriers. Sediment control BMPs shall be implemented to contain the sediments released by the construction activities. This would serve the secondary purpose of containing any spills of fuel or other hazardous materials that might occur from equipment working in the stream.

The Contractor shall additionally install fish screens at both the upstream and downstream limits of the Project (outside of the extent required to divert the creek). The screens will be such that they are creek spanning and not allow for passage of fish.

Upon installation of the fish screens the Contractor will coordinate a fish rescue within the Project area. The fish rescue will be performed by the Nevada Division of Wildlife (NDOW), Nevada Tahoe Conservation District (NTCD) or other entity as designated by the Engineer. No in-channel work will be allowed prior to rescue of all fish within the Project area. Upon rescue of all fish, the Engineer will allow the Contractor to commence in channel work.

Fish screens, acceptable to the TRPA and NDOW, shall be installed in locations shown on sheets DIV-1 and DIV-3 of the Project Plans and in accordance with TRPA and NDOW regulations, requirements and standards. Fish screens will be maintained during the duration of the construction and will not be allowed to be removed until the Engineer, NTCDD, NDEP and TRPA deem the Project complete.

SECTION 5: REFERENCES

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ATTACHMENT B

Water Quality Sampling and Analysis Plan

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CONSTRUCTION SITE STORM WATER QUALITY COMPLIANCE SAMPLING AND ANALYSIS PLAN

MIDDLE ROSEWOOD CREEK RESTORATION PROJECT – AREA A WASHOE COUNTY PUBLIC WORKS DEPARTMENT

PROJECT OVERVIEW/DESCRIPTION

In accordance with the reporting requirements of the *Temporary Permit TNEV2009485 (NDEP, 2009)*, the *Stormwater General Permit NVR 100000 (NDEP, 2009)*, and the requirements set forth by the *Tahoe Regional Planning Agency (TRPA)* this Sampling and Analysis Plan (SAP) describes the strategy that will be implemented for identifying, sampling and analyzing siltation/turbidity during construction of the Middle Rosewood Creek Restoration Project – Area A (Project).

Scope of Monitoring Activities

The Project area includes and discharges into Rosewood Creek and by via Third Creek ultimately into Lake Tahoe. This Sampling and Analysis Plan (SAP) describes the sampling and analysis strategy and schedule for monitoring siltation/turbidity discharges to the water way.

The location(s) of direct discharge from the construction site to the creek and locations of run-on to the construction site with the potential to combine with storm water discharging directly to Rosewood Creek are located throughout the Project area. It is the Contractor's responsibility to be completely familiar with all of these sites/locations prior to commencement of the Project construction. Direct discharge is defined as a point source or conveying directly to Rosewood Creek that does not first flow through a tributary or combine with storm water from off-site in a municipal storm sewer system.

MONITORING STRATEGY

Sampling Schedule

The Engineer will monitor the daily local weather forecast that may indicate the possibility of a precipitation event. Project inspectors and the Contractor will be notified if there is a 30 percent probability that a rainfall event is forecasted. If so, the Contractor will initiate the guidance identified in the Rain Event Action Plan (REAP) which is part of the Contractors BMP Implementation Plan. The REAP details all the necessary measures that are recommended to be taken to prevent siltation/turbidity discharges from leaving the construction site during a qualifying precipitation event.

Upstream, downstream and run-on samples shall be collected by the Engineer or designee for turbidity during the first two hours of discharge from rain events, which result in a direct discharge to Rosewood Creek. Samples shall be collected during daylight hours (8 AM to 6 PM) and shall be collected regardless of the time of the year, status of the construction site, or day of the week.

The General Permit requires a maximum of four rain events to be sampled within a 30-day period. The Environmental Protection Agency (EPA) defines a discreet rain event as one that is preceded by at least 72 hours of dry weather. For the purposes of sampling for NPDES, this definition will be used to distinguish between separate rain events.

Furthermore, upstream and downstream samples shall be collected by the Engineer or designee for turbidity during all de-watering, diversion, and re-watering construction activities. Upstream background samples shall be collected prior to dewatering, diversion, and water introducing activities. Downstream water samples shall be collected by the Engineer upon visual evidence of a turbidity increase and recorded at the peak time and location of the plume.

The Engineer shall also photo document Project activities before, during, and after Project construction. Photo records shall include photos of water quality sampling sites, samples being retrieved and any photos related to observed increases in turbidity.

Sampling Locations

Sampling locations for turbidity monitoring will be located at the project boundaries, directly upstream and downstream of the inlet and outlet diversion areas, and will be marked in the field by the Engineer. Sampling locations shall be based on proximity to identified discharge or run-on location(s), accessibility for sampling, personnel safety, and other factors. Additional sampling locations will be established during construction as the Contractor installs temporary BMP's and as conditions necessitate.

The following sample locations have been identified:

- WQ-1 located approximately 300 feet upstream of the existing Northwood Boulevard culverts in Rosewood Creek. This location will serve as a control sample to analyze the prevailing condition of the receiving water without the influence from the construction site. This sampling site will be used to determine the relative impacts (if any) of siltation or turbidity to Rosewood Creek from the Project.
- WQ-2 located approximately 100 feet downstream and south of the Highway 28 culvert outfall. This location would be expected to identify potential siltation or turbidity that originates from the Project site (and may incorporate the background effects demonstrated at WQ-1 site). Comparison of WQ-2 and WQ-1 location sampling data will permit identification of possible direct discharges from the construction site to downstream reaches of Rosewood Creek, Third Creek and/or Lake Tahoe.
- Sampling locations at intermediate points in the Project reach may be added by the Engineer, NTCD, TRPA, and/or NDEP as needed to assess water quality within the site.

MONITORING PREPARATION

The Engineer or designee will be collecting samples from the Project site and will obtain and maintain field-testing equipment for samples to be analyzed in the field.

SAMPLING COLLECTION AND HANDLING

Sample Collection Procedures

Samples collected upstream will be representative of the properties of water entering the site from the upstream watershed. Samples collected downstream will be representative of direct

flow from the construction site combined with the upstream watershed contributions. Run-on samples, if applicable, will be collected to identify potential sedimentation/siltation or turbidity that originates adjacent to the Project site and contributes to direct discharges from the construction site to Rosewood Creek.

A bailer or other clean collection device will be used to collect samples (or a turbidity meter placed in the flowline) in or near the main current, which will then be transferred to the appropriate sample bottles. Sampling equipment will be decontaminated properly prior to sample collection.

Collecting samples directly from ponded, sluggish, or stagnant water will be avoided.

Run-on samples will be collected by placing sample bottles (or a turbidity meter placed in the flowline) directly into a stream of water down gradient and within close proximity to the point of run-on to the project limit boundary line.

To reduce potential contamination, sample collection personnel will:

- Don a pair of surgical gloves prior to the collection and handling of each sample at each location.
- Prevent contamination of the inside of the sample bottle by preventing contact with any material other than the water sample.
- Discard sample bottles or sample lids that have been dropped on the ground.
- Preclude any falling or dripping rainwater from entering sample containers.
- Not eat, smoke, or drink during sample collection.

Sample Handling for Laboratory Analysis

Following collection, sample bottles for laboratory turbidity testing will be sealed immediately, labeled, with Project name, date, time, and location. In addition too, or separate from these samples, turbidity measurements will be measured for turbidity immediately in the field following sample collection. Turbidity will be measured with a portable Hach 2100p turbidimeter, or equivalent device.

Forms for Documenting Sample Collection

Sampling and field analysis will be documented using the following forms:

- Sample Identification Labels: Sampling personnel shall attach an identification label to each sample bottle. At a minimum, the following information will be recorded on the label, as appropriate:
 - Project Name
 - Project Number
 - Sample Identification Number and Location.
 - Collection Date/Time
 - Analysis Parameter: Turbidity
- Sample Log: A log of sampling events will identify:
 - Sampling Date
 - Separate times for sample collection upstream, downstream and run-on samples
 - Sample identification number and location
 - Analysis parameter: i.e. Turbidity

- Name(s) of sampling personnel
- Runoff/flow conditions
- Weather conditions (including precipitation amount)
- Other pertinent data
- Storm Water Quality Construction Inspection Checklist: When applicable, the inspector will document on the checklist that samples for turbidity were taken during a rain event.

Field Analysis

For samples analyzed in the field by sampling personnel, collection, analysis, and equipment calibration will be in accordance with manufacturer's specifications.

- The instruments will be maintained in accordance with manufacturer's instructions.
- The instrument(s) will be calibrated before each sampling and analysis event.
- Maintenance and calibration records will be maintained.

DATA MANAGEMENT AND REPORTING

Filing of Electronic and Hard Copy Data Reports

A copy of all sample results, photos, Sample Log, and Sample Location Map with all locations identified will be submitted by the Engineer or designee to NDEP and TRPA in a final report by the 28th day of the month following conclusion of the Project, and on a yearly basis on the 28th day of January of each year of construction.

A copy of all sample results, including Sample Log and Sample Location Map, shall be kept with the SWPPP, which is to remain at the construction site at all times until a Notice of Construction Completion has been submitted and approved.

If at any time, sampling results indicate that the Project is discharging water in exceedence of regulatory requirements, work shall cease and the Engineer, Washoe County, NTCD, NDEP and TRPA shall be contacted.

Data Evaluation

BMP's are required to be implemented on the construction site to prevent a net increase of sediment load in storm water discharges relative to pre-construction levels. The upstream sample, while not representative of pre-construction levels, provides a basis for comparison with the sample collected downstream of the construction site.

The downstream water quality sample analytical results will be evaluated to determine if the downstream sample(s) shows elevated levels of the tested parameter relative to the levels found in the upstream (control) sample. The run-on sample analytical results will be used as an aid in evaluating potential offsite influences on water quality results.

Should the downstream sample concentrations exceed the upstream sample concentrations in violation of regulatory requirements, work shall cease and the Engineer, NTCD, NDEP, and TRPA will evaluate the BMPs, site conditions, surrounding influences (as at least partially documented by the run-on sample results), and other site factors to determine the probable cause for the increase.

An evaluation of the water quality sample analytical results will be submitted to the Engineer with the results following each event. As determined by the data evaluation, appropriate BMPs will be repaired or modified to address increases in sediment concentrations in the water body. Any revisions to the BMPs will be recorded as an amendment to the SWPPP.

CHANGE OF CONDITIONS

Whenever the SWPPP or the Dewatering, Diversion and water Introduction Plan on-site water quality monitoring indicates a change in site conditions that might affect the appropriateness of sampling locations, then sampling locations and protocols will be reviewed and revised accordingly. All such revisions will be recorded as amendments to the SWPPP.

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Sample Activity Log

RAIN EVENT GENERAL INFORMATION				
Project Name				
Project Number				
Contractor				
Sampler's Name				
Signature				
Date of Sampling				
Storm Type	<input type="checkbox"/> Thunder Storm	<input type="checkbox"/> Heavy Rain	<input type="checkbox"/> Moderate Rain	<input type="checkbox"/> Light Rain
Storm Data	Storm Start Date & Time		Storm Duration (hrs):	
	Time elapsed since last storm		Approximate Rainfall amount (in)	

SAMPLE LOG						
Sample Identification	Time	Photo #	Sample Location	Flow Depth	Flow Area (WxD)	Flow Velocity

FIELD ANALYSIS		
	Yes	No
Sample Identification	Test	Result

Sample Activity Log

RAIN EVENT GENERAL INFORMATION				
Project Name				
Project Number				
Contractor				
Sampler's Name				
Signature				
Date of Sampling				
Storm Type	<input type="checkbox"/> Thunder Storm	<input type="checkbox"/> Heavy Rain	<input type="checkbox"/> Moderate Rain	<input type="checkbox"/> Light Rain
Storm Data	Storm Start Date & Time		Storm Duration (hrs):	
	Time elapsed since last storm		Approximate Rainfall amount (in)	

SAMPLE LOG						
Sample Identification	Time	Photo #	Sample Location	Flow Depth	Flow Area (WxD)	Flow Velocity

Photo Monitoring
Middle Rosewood Creek Restoration Project – Area A
Date:

Location
Sampling location from map or river stationing

Figure 1 Notes

Figure 2 Notes

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ATTACHMENT C
Dust Control Plan

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DUST CONTROL PLAN

MIDDLE ROSEWOOD CREEK RESTORATION PROJECT – AREA A NORTHWOOD BOULEVARD CULVERT REPLACEMENT WASHOE COUNTY, NEVADA

DUST CONTROL AND VEGETATION PROTECTION STANDARDS

At a minimum, dust control shall conform to the Standard Specifications, and Pages 23-24 (BMP No. 7) of the TRPA Handbook of Best Management Practices, Volume II, November 1988.

Furthermore the contractor shall provide the following efforts in association with dust control on the Project site:

- Paved areas within and immediately adjacent to the Project area will be swept daily (at a minimum at the end of the work day activities) with a PM 10 efficient vacuum street sweeper. In the event the Contractor's operations cause construction debris, sediment, dust, sand, etc. to track and accumulate on any public street beyond what is acceptable to the Engineer, TRPA, Washoe County, NTCD, NDPT or NDEP the Contractor will sweep these streets as directed by the Engineer, TRPA, Washoe County, NTCD, NDOT or NDEP. Additionally, the Contractor will sweep streets prior to any forecasted storm events, at the direction of the Engineer, to prevent runoff of construction debris and sediment.
- The Contractor will sprinkle water on earth, pulverized material, and disturbed ground surfaces as necessary to minimize wind-blown dust. Water used for dust control shall be domestic water supply provided by Incline Village General Improvement District (IVGID) or effluent from Project operations that meets NDEP and TRPA water quality discharge requirements. The Contractor will be required to attain and pay all permit and use fees associated with this use.
- During construction, to reduce wind erosion, the Contractor will be required to use a water truck whenever necessary. Dust control will be in accordance with this plan and that stated in the Project SWPPP and Special Technical Specifications.

DUST PALLIATIVE

Dust palliatives will not be allowed within the limits of the Project site.

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ATTACHMENT D
Spill Prevention and Contingency Plan

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CONSTRUCTION SITE SPILL PREVENTION AND CONTROL PLAN

MIDDLE ROSEWOOD CREEK RESTORATION PROJECT – AREA A WASHOE COUNTY PUBLIC WORKS DEPARTMENT

PROJECT OBJECTIVES

To prevent or reduce the discharge of pollutants to surface waters or drainage systems from leaks and spills by reducing the chance for spills, stopping the source of spills, containing and cleaning up spills and properly disposing of spill materials and training employees.

This Best Management Practice covers only spill prevention and control. Spill control procedures are implemented anytime chemicals and/or hazardous substances are stored on the construction site.

PROJECT OVERVIEW

Spill Response

Spill prevention and response techniques are outlined for various substances below. The Contractor is responsible for reporting all spills and releases to the NDEP, TRPA, NTCD, Washoe County and the Engineer immediately.

Hazardous Substances: There are no known Toxic materials to have been treated, stored, disposed, spilled or leaked in significant quantities onto the construction site. In the event toxic materials are encountered in site soils or water the Washoe County Public Works Department will be contacted immediately and the Contractor and Engineer will follow their direction.

The following controls or BMPs will be implemented to minimize the potential for releases or spills of pollutants during construction:

- The Contractor will maintain all construction equipment to prevent oil or fluid leaks.
- The Contractor will use drip pans or other secondary containment measures beneath vehicles during storage.
- The Contractor will regularly inspect all equipment and vehicles for fluid leaks.
- The Contractor will place wastes (i.e. grease, oil, oil filters, antifreeze, cleaning solutions, batteries, hydraulic fluids, transmission fluids, etc.) in proper containers, store the containers in designated storage areas, and ultimately recycle the materials.
- The Contractor will provide pallets or secondary containment areas for chemicals, drums, or bagged materials to be used in Project construction.

The Contractor will instruct and train all onsite construction personnel in spill prevention and response practices. The Contractor will provide and implement spill containment materials and install visibly available Spill Response and Clean up Kits in all storage areas. All Contractors,

and sub-contractors, on the Project site are responsible for instructing and training their personnel with the information contained in the Spill Response Kit and this attachment of the SWPPP. Should materials spills occur; materials and/or contaminants will be cleaned from the Project Site and recycled or disposed of to the satisfaction of the NDEP and TRPA. If hazardous materials are released onto the site soils or water Washoe County Public Works Department will be contacted immediately and the Contractor and Engineer will follow their direction. The Contractor will have oil absorbing pads and/or blockades onsite to temporarily contain and cleanup any spills or releases as described in the Standard Specifications.

Sewer Line Breakage: The Contractor will be responsible for protecting existing Incline Village General Improvement District (IVGID) sewer lines and other underground utilities in place. Existing utilities are depicted in the Project Plans. The locations of these utilities identified in the Plans are approximate and not necessarily complete. The Contractor will be fully responsible for any and all damages which might be occasioned by the failure to exactly locate and preserve any and all underground utilities. In the event that an underground utility line is breached, the Contractor will immediately contact IVGID and follow all emergency procedures required by IVGID. Furthermore, the Contractor will have a 5,000 gpm emergency bypass pump on site to temporarily divert and contain a spill while awaiting instruction from IVGID.

ATTACHMENT E
Permits

[INSERT Attachment E – Permits]

[Attachment E – BACK]

ATTACHMENT F
Project Plans

[INSERT Attachment F – Project Plans]

[Attachment F –BACK]

APPENDIX B

Project Permits

ATTACHMENT Q STANDARD CONDITIONS OF APPROVAL FOR GRADING PROJECTS

This handout on the standard conditions that must be met in all projects involving grading is divided into the following three sections:

- I. Pre-Grading Conditions (Pre-activity, where applicable)
- II. Construction/Grading Conditions
- III. General Conditions/Design Standards

Please read all of the conditions carefully to avoid any delays in construction of your project.

NOTE: Your plans have been reviewed and approved as required under Tahoe Regional Planning Agency (TRPA) Rules, Regulations and Ordinances only. TRPA has not reviewed and shall not be responsible for any elements contained in your plans, i.e., structural, electrical, mechanical, etc., which are not required for review under said Rules, Regulations and Ordinances.

I. PRE-GRADING/PRE-ACTIVITY CONDITIONS:

The following conditions must be completely complied with prior to any site disturbance or commencement of activity.

A. Final Construction Plans:

Final construction plans must be submitted to and reviewed by TRPA to determine conformance with the approval. Said plans shall clearly depict the following:

1. Slope stabilization methods to stabilize all existing and proposed cut and fill slopes.
2. Areas to be revegetated, including complete specifications for such revegetation.
3. Fencing for vegetation protection.
4. Temporary and permanent erosion control devices.
5. Utility trenches.
6. Dust control measures.
6. All water quality improvements (BMPs) required in the conditional approval. Drainage facilities shall be designed to be capable of retaining runoff water for a two (2) year, six (6) hour storm.
8. The final plans shall contain equipment specifications necessary to establish compliance with Standard Conditions III. A-F.

B. Securities:

A security shall be posted with the TRPA to insure compliance with all permit conditions. The security shall include an amount equal to 110 percent of the cost of the BMPs and other erosion control and water quality improvements required. For further information on the acceptable types of securities, see Attachment J.

C. Mitigation Fees:

All required air quality, water quality, and excess coverage and offsite coverage mitigation fees shall be paid to TRPA.

D. Temporary BMPs:

The following temporary BMPs are required to be installed onsite prior to any grading activity occurring:

1. Installation of temporary erosion controls.
2. Installation of vegetation protection measures.
3. Installation of construction site boundary fencing.

E. Required Inspection:

An onsite inspection by TRPA staff is required prior to any construction or grading activity occurring. TRPA staff shall determine if the onsite improvements required by Condition II (1), above, have been properly installed. No grading or construction shall be undertaken by the permittee until receipt of TRPA notification that the pre-grading/pre-activity conditions of approval have been satisfied.

F. Required Notices:

The following notices to the TRPA are required prior to any grading or construction occurring on the project site:

1. Notice for Pre-Grading Inspection: The permittee shall notify the TRPA when all onsite improvements required under Condition II(1), above, have been installed so that the required pre-grading inspection may be scheduled.
2. Notice of Commencement of Construction: The permittee shall notify the TRPA at least 48 hours prior to commencement of construction or grading on the project site. Said notice shall include the date when construction will commence.

II. CONSTRUCTION/GRADING CONDITIONS:

The following conditions shall be complied with during the grading and construction phase of the project.

- A. All construction shall be accomplished in strict compliance with the plans approved by TRPA.
- B. The TRPA permit and the final construction drawings bearing the TRPA stamp of approval shall be present on the construction site from the time construction commences to final TRPA site inspection. The permit and plans shall be available for inspection upon request by any TRPA employee. Failure to present the TRPA permit and approved plans may result in the issuance of a Cease and Desist Order by the TRPA.
- C. Whenever possible, utilities shall occupy common trenches to minimize site disturbance.
- D. There shall be no grading or land disturbance performed with respect to the project between October 15 and May 1, except as follows:
 1. The grading or land disturbance is for excavation and backfilling for a volume not in excess of three cubic yards.
 2. The activity is completed within a 48-hour period.
 3. The excavation site is stabilized to prevent erosion.
 4. The pregrade inspection is performed by TRPA staff, and the activity passes the inspection.

5. The grading/project does not represent or involve a series of excavations, which, when viewed as a whole, would exceed the provisions of this Standard Condition of Approval, and Subsection 2.3 of the TRPA Code of Ordinances.

Grading is prohibited any time of the year during periods of precipitation and for the resulting period of time when the site is covered with snow, or is in a saturated, muddy, or instable condition (pursuant to Subsection 33.3.1.A of the TRPA Code of Ordinances.)

- E. All material obtained from any excavation work that is not contained within foundations, retaining walls, or by other methods approved by TRPA shall be removed from the subject parcel and disposed of at a site approved by TRPA.
- F. Replanting of all exposed surfaces, in accordance with the revegetation and slope stabilization plan, shall be accomplished within the first growing season following disturbance, unless an approved construction/inspection schedule establishes otherwise.
- G. All trees and natural vegetation to remain on the site shall be fenced for protection. Scarring of trees shall be avoided and, if scarred, damaged areas shall be repaired with tree seal.
 1. Fencing specified shall be at least 48 inches high and shall be constructed of metal posts and either orange construction fencing or metal mesh fencing also at least 48 inches high (Section 33.6.1). Job sites with violations of the fencing standards will be required to re-fence the job site with a high gauge metal fencing.
 2. No material or equipment shall enter or be placed in the areas protected by fencing or outside the construction areas without prior approval from TRPA. Fences shall not be moved without prior approval (Section 33.6).
 3. To reduce soil disturbance and damage to vegetation, the area of disturbance during the construction of a structure shall be limited to the area between the footprint of the building and the public road. For the remainder of the site the disturbance areas shall not exceed 12 feet from the footprint of the structure, parking area or cut/fill slope. The approved plans should show the fencing and approved exceptions (Section 36.2).
- H. Soil and construction material shall not be tracked off the construction site. Grading operations shall cease in the event that a danger of violating this condition exists. The site shall be cleaned up and road right-of-way swept clean when necessary.
- I. During grading and construction, environmental protection devices such as erosion control devices, dust control, and vegetation protection barriers shall be maintained.
- J. Loose soil mounds or surfaces shall be protected from wind or water erosion by being appropriately covered when construction is not in active progress or when required by TRPA.
- K. Excavated material shall be stored up grade from the excavated areas to the extent possible. No material shall be stored in any stream zone or wet areas.
- L. Only equipment of a size and type that, under prevailing site conditions, and considering the nature of the work to be performed, will do the least amount of damage to the environment shall be used.
- M. No washing of vehicles or construction equipment, including cement mixers, shall be permitted anywhere on the subject property unless authorized by TRPA in writing.
- N. No vehicles or heavy equipment shall be allowed in any stream environment zone or wet areas, except as authorized by TRPA.
- O. All construction sites shall be winterized by October 15 to reduce the water quality impacts associated with winter weather as follows:
 1. For the sites that will be inactive between October 15 and May 1:

- (a) Temporary erosion controls shall be installed;
 - (b) Temporary vegetation protection fencing shall be installed;
 - (c) Disturbed areas shall be stabilized;
 - (d) Onsite construction slash and debris shall be cleaned up and removed;
 - (e) Where feasible, mechanical stabilization and drainage improvements shall be installed; and
 - (f) Spoil piles shall be removed from the site.
2. For sites that will be active between October 15 and May 1, in addition to the above requirements:
- (a) Permanent mechanical erosion control devices shall be installed, including paving of driveway and parking areas; and
 - (b) Parking of vehicles and storage of building materials shall be restricted to paved areas.

III. GENERAL CONDITIONS/DESIGN STANDARDS:

- A. Projects approved by TRPA shall be subject to inspections by TRPA at any reasonable time. The permittee shall be responsible for making the project area accessible for inspection purposes. TRPA shall not be liable for any expense incurred by the permittee as a result of TRPA inspections.
- B. Construction shall be completed in accordance with an approved construction schedule. An extension of a completion schedule for a project may be granted provided the request is made in writing prior to the expiration of the completion schedule, a security is posted to ensure completion or abatement of the project, and TRPA makes either of the following findings:
 - 1. The project was diligently pursued, as defined in Subparagraph 2.2.4.C of the Code of Ordinances, during each building season (May 1 - October 15) since commencement of construction.
 - 2. That events beyond the control of the permittee, which may include engineering problems, labor disputes, natural disasters, or weather problems, have prevented diligent pursuit of the project.
- C. Water conservation appliances and fixtures shall be installed in all new facilities or, when replaced, in existing facilities: low flow flush toilets; low flow showerheads (3 gpm rated maximum flow); faucet aerators; and water-efficient appliances (e.g., washing machines and dishwashers).
- D. Water heaters shall not emit nitrogen oxides greater than 40 nanograms of nitrogen oxide (NO₂) per joule of heat output.
- E. Space heaters shall not emit greater than 40 nanograms of nitrogen oxides (as NO₂) per joule of useful heat delivered to the heated space.
- F. Wood heaters to be installed in the Region shall meet the safety regulations established by applicable city, county, and state codes. Coal shall not be used as a fuel source.
 - 1. Emission Standards: Wood heaters installed in the Region shall not cause emissions of more than 7.5 grams of particulates per hour for noncatalytic wood heaters or 4.1 grams per hour for catalytically equipped wood heaters.

2. Limitations: Wood heaters shall be sized appropriately for the space they are designed to serve. Multi-residential projects of five or more units, tourist accommodations, commercial, recreation and public service projects shall be limited to one wood heater per project area.
 3. List of Approved Heaters: TRPA shall maintain a list of wood heaters which may be installed in the Region. The list shall include the brand names, model number, description of the model and the name and address of the manufacturer. Wood heaters certified for use in either Colorado or Oregon shall be considered in compliance with 6(a), above.
- G. Construction materials shall be secured to prevent them from rolling, washing, or blowing off the project site. Rehabilitation and clean-up of the site following construction must include removal of all construction waste and debris.
- H. Plant species on the TRPA Recommended Native and Adapted Plant List shall be used for lawns and landscaping.
- I. The following sizes and spacing shall be required for woody plant materials at time of planting:
1. Trees shall be a minimum six feet tall or 1-1/2 inch caliper size or diameter at breast height;
 2. Shrubs shall be a minimum three gallon pot size where upright shrubs have a minimum height of 18 inches and a minimum spread of 18 inches; and spreading shrubs have a minimum spread of 18-24 inches.
 3. Groundcovers shall be a minimum four inch pot size or one gallon container and shall be maximum 24 inches on center spacing.
- J. Plant species not found on the TRPA Recommended Native and Adapted Plant List may be used for landscaping as accent plantings but shall be limited to borders, entryways, flower-beds, and other similar locations to provide accent to the overall native or adapted landscape design.
- K. The following exterior lighting standards shall apply:
1. Exterior lights shall not blink, flash or change intensity. String lights, building or roofline tube lighting, reflective or luminescent wall surfaces are prohibited.
 2. Exterior lighting shall not be attached to trees except for Christmas season.
 3. Parking lot, walkway, and building lights shall be directed downward.
 4. Fixture mounting height shall be appropriate to the purpose. The height shall not exceed the limitations set forth in Chapter 37 of the Code.
 5. Outdoor lighting shall be used for purposes of illumination only, and shall not be designed for, or used as, an advertising display. Illumination for aesthetic or dramatic purposes of any building or surrounding landscape utilizing exterior light fixtures projected above the horizontal is prohibited.
 6. The commercial operation of searchlights for advertising or any other purpose is prohibited. Seasonal lighting displays and lighting for special events which conflict with other provisions of this section may be permitted on a temporary basis.
- L. Any normal construction activities creating noise in excess of the TRPA noise standards shall be considered exempt from said standards provided all such work is conducted between the hours of 8:00 a.m. and 6:30 p.m.
- M. Fertilizer use on this property shall be managed to include the appropriate type of fertilizer, rate, and frequency of application to avoid release of excess nutrients and minimize use of fertilizer.
- N. No trees shall be removed or trimmed without prior TRPA written approval unless otherwise specifically exempted under Chapter 2 of the Code of Ordinances.

- O. The architectural design of this project shall include elements that screen from public view all external mechanical equipment, including refuse enclosures, satellite receiving disks, communication equipment, and utility hardware on roofs, buildings or the ground. Roofs, including mechanical equipment and skylights, shall be constructed of nonglare finishes that minimize reflectivity.
- P. The permittee is responsible for insuring that the project, as built, does not exceed the approved land coverage figures shown on the site plan. The approved land coverage figures shall supersede scaled drawings when discrepancies occur.
- Q. The adequacy of all required BMPs as shown on the final construction plans shall be confirmed at the time of the TRPA pre-grading inspection. Any required modifications, as determined by TPRA, shall be incorporated into the project permit at that time.
- R. It is the permittee's obligation to locate all subsurface facilities and/or utilities prior to any grading, dredging or other subsurface activity. The permittee is responsible for contacting the Northern Underground Service Alert (USA, usually known as USA DIGS 1-800-227-2600) prior to commencement of any activity on the site.
- S. This approval is based on the permittee's representation that all plans and information contained in the subject application are true and correct. Should any information or representation submitted in connection with the project application be incorrect or untrue, TRPA may rescind this approval or take other appropriate action.

APPENDIX C

Geotechnical Report

Geotechnical Exploration
for
NTCD
Middle Rosewood Creek
Rehabilitation Project
Incline Village, Nevada

Prepared for:

**Ms. Virginia Mahacek
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1034 Emerald Bay Road, No. 434
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Project No. 8393.001

March 13, 2009



Chris Spandau, P.E.
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Appendix A

Laboratory Test Results

Distribution

1.0 INTRODUCTION AND SCOPE

This report presents the results of our geotechnical exploration for the proposed Middle Rosewood Creek Restoration Project – Area A. The proposed project is located along a branch of Third Creek, within Incline Village, Nevada. (Rosewood Creek was formerly known as the West Branch of Third Creek (Glancy, 1988).) The general project location is shown on the Vicinity Map (Figure 1).

For this project, the middle reach of Rosewood Creek is the channel section north of State Route 28 (SR28) extending roughly 1700 feet to a point about 100 feet north of Northwood Boulevard. The channel has been incised up to 8 feet deep with large head cuts. The incised sections are predominately located within the lower (extending northward about 450 feet from SR28) and upper portions (extending southward approximately 750 feet from Northwood Boulevard) of the middle reach.

The intent of this project is to minimize creek bed degradation and reduce sediment transfer into Lake Tahoe. The proposed approach involves constructing sections of new geomorphically functional channel, then deactivating and filling old incised channel sections. The completed project will dramatically reduce bank and bed erosion in the project area. Project-specific goals and objectives are currently being developed. The physical and hydraulic design of the restoration project will be determined in the future. The purpose of our geotechnical exploration is to provide subsurface information along the middle reach for use in developing mitigation/restoration alternatives and to provide preliminary guidelines for site grading operations including reuse of native and existing fill materials as a backfill source. For purposes of our study, we understand earthwork will be limited to the creation of the new channel and backfill of the old; incised channel. No permanent improvements, such as structures, utilities, etc will be supported or constructed in areas to be backfilled. The backfilled channel

area will be revegetated and returned to a natural condition.

We provided the following scope of services.

- Hand excavated and logged 15 explorations sites along the channel alignment. Exploration sites were advanced to a maximum depth of 5 feet below existing grade. Field activities were conducted by a Wood Rodgers' geologist; whom obtained soil samples at various depths.
- Performed laboratory testing to characterize the soils encountered at the exploration sites. Testing included measurements of moisture content, particle size distribution, Atterberg limit (plasticity), compaction, and permeability
- Prepared this report that summarizes the results of our exploration, including a summary of the subsurface conditions encountered at the exploration sites, and laboratory test results. This report also presents a site plan with exploration locations, exploration logs, and preliminary guidelines for site grading/earthworks.

2.0 FIELD EXPLORATION AND LABORATORY TESTING

2.1 Field Investigation

We conducted our subsurface soils exploration from November 21 to 22, 2008. Our efforts included hand excavating 15 exploration pits to a maximum depth of 5 feet. Exploration locations are presented on Figure 2. Exploration locations were located using a Trimble GeoExplorer 2005 series handheld GPS unit. (The accuracy of the GPS locations was influenced by the over-story vegetation canopy.)

During field activities, a Wood Rodgers' geologist logged the soil conditions exposed at each of the exploration sites and collected soil samples for further laboratory testing. The exposed soil conditions are presented on the Exploration Logs (Figures 3 through 17). Subsurface conditions were classified in accordance with the Unified Soil Classification System (ASTM D2487-00) presented on Figure 18.

2.2 Laboratory Testing

Soil samples were taken to our laboratory for further testing. Laboratory testing included: moisture content, particle size distribution, Atterberg limit (plasticity), compaction, and constant head permeability. A summary of laboratory index test results is provided in Table 1 below.

TABLE 1
Index Test Results

Site	Depth (ft)	MC (%)	%-200 Sieve	PI
B-2	1.3	19.2	22	-
B-2	2.1	26.6	48	-
B-2	3.0	22.7	16	-
B-3	1.0	-	55	39
B-3	2.5	46.1	35	-
B-3	2.7	41.7	-	-
B-3	3.8	-	32	14
B-4	1.7	41.6	-	32
B-4	2.0	18.8	25	-
B-4	4.0	-	19	-
B-5	2.1	7.3	7	-
B-5	3.7	31.2	-	-
B-6	1.3	44.4	5	-
B-7	1.5	18.0	12	-
B-7	2.8	19.8	10	-
B-8	2.2	5.4	18	-
B-8	2.7	-	21	-
B-9	0.7	-	33	10
B-9	1.7	-	-	12
B-9	2.8	7.2	14	-
B-10	0.5	7.9	33	-
B-10	2.3	7.2	14	-
B-10	3.4	5.5	18	-
B-11	2.2	9.1	15	-
B-11	3.3	5.5	18	-
B-12	2.3	7.6	25	-
B-12	3.0	14.1	34	-
B-13	3.0	31.4	36	-
B-13	4.1	9.5	7	-
B-14	2.0	4.6	14	-

(MC = moisture content; PI = Plastic Index (Atterberg limit))

Compaction curves were performed on two select samples collected at Sites B-4 (at 0.0 to 1.5 feet) and B-12 (at 0.0 to 1.5 feet).. The compaction curves were performed per ASTM D1557. The compaction curves yielded the following results.

TABLE 2
Compaction Test Results

Site	Depth (ft)	USCS Symbol	Maximum Density (pcf)	Optimum Moisture Content
B-4	0.0 to 1.5	SM	115.0	13.5
B-12	0.0 to 1.5	SM	101.0	18.5

Constant head permeability tests were performed on both remolded and relatively undisturbed (Shelby tube) samples. Permeability test for remolded samples were performed at relative compactions between 92 and 93% to simulate an average value for a compacted fill.

TABLE 3
Permeability Test Results

Site	Depth (ft)	USCS Symbol	Dry Density (pcf)	Initial Moisture Content	Final Moisture Content	Sample Condition	Permeability (cm/sec)
B-4	0.0 to 1.5	SM	106.7	13.6	19.4	Remolded	5.05E-06
B-7	0.0 to 1.6	ML	70.5	24.0	37.1	Undisturbed	8.75E-06
B-12	0.0 to 1.5	SM	93.2	18.6	24.9	Remolded	1.41E-05
B-13	0.3 to 1.1	SC	78.8	23.6	35.8	Undisturbed	5.97E-07

Additional laboratory results are presented in Appendix A.

3.0 SURFACE AND SUBSURFACE SOIL CONDITIONS

3.1 Surface Conditions

The study reach is undeveloped but has been modified from its natural state through past logging, grazing, fire exclusion, and urban development. Skeletal reminders (rotting stumps and fallen trees) of past logging and thunderstorm-related flash floods are present along the creek alignment and within the creek banks.

The study area is bordered by residential developments to the east and west, SR28 to the south, and Northwood Boulevard to the north. Sections of the reach have been modified (stream rerouting), channeled beneath SR28 and Northwood Boulevard. The creek channel is incised north of SR28 and south of Northwood Boulevard. Large head cuts and pitch points have evolved along the creek alignment.

Over-story vegetation adjacent to the creek consists of mountain alder and Scouler and Pacific willow. The over-story health, canopy cover, and age class are variable, with a lack of riparian vegetation recruitment, senescence (aging of vegetation stands) and conifer encroachment. The shrub layer is typically discontinuous. The herbaceous under-story varies from a moderate to dense cover of bulrush, sedge, nettle, thistle, and bedstraw (Mainstream Restoration, Inc., 2005). Photographs of site conditions at the time of our exploration are provided in Appendix B.

3.2 Subsurface Conditions

3.2.1 Geology and Soil Resources

A review of the *Marlette Lake Quadrangle Geologic Map* (Grose, 1986) indicates the study reach is underlain by: “*Qoa –older sandy gravel and gravely sand alluvium*” composed of granitic and volcanic clasts.”

The *Geologic Map of the Lake Tahoe Basin, California and Nevada* (Saucedo, 2005) indicates the creek bed is located on a broad glacial outwash sheet consisting of two large and contemporaneous alluvial fans. “The opposing flanks of these gently sloping glacial outwash fans confine the channel location to its geomorphic position. The eastern fan is composed of layers and lenses of alluvial sand and gravel derived from the late Pleistocene alpine glaciers in the Third Creek watershed to the northeast. The western fan is composed of similar alluvial deposits derived from Wood Creek (U.S. Department of the Interior, 2007).”

Soils in the subject reach are mapped as Inville Stony Coarse Sandy Loam. These soils are described as more than 50% sand, mostly coarse sand, 20% or granitic and volcanic rocks 10 inches or more in diameter, with lesser amounts of clay and silt. These soils are moderately well to well drained (ibid.).

3.2.2 Subsurface Conditions

Subsurface conditions consist predominately of interfingering layers of poorly graded sand, silty sand and clayey sand. These predominant types are interbedded with moderately to highly plastic silt and clay layers. These materials may be weathered remnants of volcanic ash deposits. The silt and clay layers appear to be more abundant in the central reach of the project, particularly in the area of Sites B-6, B-7 and B-8. More extensive deposits of similar highly plastic and fine-grained soils have been observed in the Dollar Point area on the north shore of Lake Tahoe.

Many of the soils contain substantial organic debris, especially near the existing ground surface. Several strata contain varying amounts of gravel, cobbles, and boulders (less than 4 feet in diameter).

A more detailed description of subsurface soil conditions is presented on the exploration logs (Figures 3 through 17).

**4.0 PRELIMINARY
RECOMMENDATIONS**

consideration or modification of the recommendations of this report.

4.1 Site Preparation

4.2.2 Channel Fill Criteria

We have developed initial earthwork guidelines for consideration in the project development. These guidelines assume that the project will not include any engineered structures that will be supported within the backfill areas of the old channel. In general, all materials excavated from the new channel may be reused to backfill and regrade the old stream bed. Some soil types encountered at the exploration sites may be more prone to erosion. Notably the poorly graded sands as well as the moderately plastic silts. These materials could be placed in the deeper fill areas and then capped with the silty sands and clayey sand materials.

Soils used as channel fill should be clean, native materials derived from the new channel area. These materials should be free of organics, other perishable material, and construction debris. We expect that almost all of the materials derived from the new channel may be reused as channel fill material. Some oversized cobbles and boulders may be encountered. These particles should be set aside and not placed in the channel fill. These materials could be reused in other applications on the project site. In addition, they should meet the following criteria.

Alternatively, the materials could be blended into a more homogeneous material which could be characterized as a very silty to clayey sand. In addition, the upper soils are rich in organic material. We suggest this material be stockpiled and reused as the final cover to facilitate the revegetation process.

<u>Sieve Size</u>	<u>Percent Passing (by dry weight)</u>
4"	100
¾"	70-100
No. 40	10-85
No. 200	8-45
Liquid Limit	60% max.
Plasticity Index	30% max.

4.1.1 Stripping and Grubbing

Any material that deviates from the above criteria should have written approval from the geotechnical engineer prior to use as engineered fill.

Prior to beginning backfilling, the old channel area should be stripped of the existing surface vegetation, stumps, fallen trees, roots, and organic soils. Stripping and clearing should be sufficient to allow access for earthmoving and compaction equipment. The estimated average depth of stripping is approximately 4 to 12 inches to remove most subsurface vegetative material. Deeper stripping or grubbing of stumps, buried logs, organic soils, roots, etc., will be required in localized areas.

The existing fill materials identified during our field investigation (Sites B-1 and B-15) are suitable for reuse as channel fill. The native silty and clayey sand soils which predominate most of the site are suitable as channel fill. Some portions of these soils may be saturated and will require drying prior to placement in the old channel area.

The stripped organic soil is unsuitable for backfill and should be limited to reuse as surface growth medium.

The native fine-grained plastic silts and clays are also acceptable as channel fill (Sites B-6, B-7 and B-8), but are anticipated to be moisture sensitive and may be difficult to uniformly place and compact. The plastic silts and clays are scattered in thin lenses at other locations as well. However, we expect that mixing of the various

soil types in the excavation and compaction process will reduce the impact of these thin layers.

accomplished under full-time observation and testing.

For the moisture sensitive soil areas (Sites B-6 through B-8) possible treatments include placement of these materials in the deeper fill sections and capping with silty and clayey sand materials. Alternatively, these materials could be blended with sandier materials.

As discussed above, organic rich soils should be segregated and stockpiled for reuse in areas to be revegetated. Organic rich soils should not be placed in deeper fills and areas subject to concentrated runoff.

Since support of future improvements are not a consideration on this project, we believe that all of the materials encountered in the exploration locations may be reused as channel fill.

4.2.3 Channel Fill Placement

Prior to the placement of fill materials, exposed subgrade soils should be scarified to a minimum depth of 8 inches, moisture conditioned to near optimum moisture content and recompact to between 85 and 90% relative compaction¹. Overcompaction should be avoided as this will reduce the effectiveness of the revegetation process.

Channel fill should be placed in lifts not exceeding 12 inches (loose thickness), moisture conditioned to near optimum moisture content, and compacted to between 85 and 90% relative compaction as well.

No frozen fill should be placed. No fill should be placed on frozen ground, in areas of standing water, or on soft, spongy ground. Placement and compaction of the channel fill should be

¹ Relative compaction refers to the in-place dry density of soil expressed as a percentage of the maximum dry density of the same material as determined by the ASTM D1557-00 laboratory test procedure. Optimum moisture content is the moisture content corresponding to the maximum dry density.

5.0 ADDITIONAL ENGINEERING SERVICES

It is important that during construction, the following operations be performed under our observation:

1. Site preparation and grading;
2. Suitability of onsite and imported fill materials; and
3. Engineered fill placement and Compaction.

Observation of these operations will allow us to check that soil conditions are consistent with this geotechnical investigation and to evaluate variations in soil conditions, which may require special consideration or modification of the recommendations.

In the Summer 2009, two soil samples locations require investigation in accordance with TRPA's Chapter 64 Soils/Hydrologic Investigation requirements. These two locations (B-1 and B-15) are comprised of non native fill material that may be subject to a maximum excavation of 5 feet below existing ground surface.

6.0 LIMITATIONS

Preliminary recommendations contained in this report are based on our field exploration, laboratory tests, and our understanding of the proposed project. The study was performed using a mutually agreed upon scope of work.

The soils data used in the preparation of this report were obtained from soil samples located for this investigation. It is possible that variations in soils exist between the points explored. The nature and extent of soil variations may not be evident until construction occurs. If any soil conditions are encountered at this site, which are different from those described in this report, our firm should be immediately notified so that we may make any necessary revisions to our recommendations.

This report has been prepared solely for design purposes specific to the proposed Middle Rosewood Creek Restoration Project Area A. The findings, recommendations and professional opinions presented in this report were prepared in accordance with generally accepted professional engineering practice at this time in Washoe County, Nevada. This report does not constitute a warranty, either expressed or implied.

Other standards or documents referenced in any given standard cited in this report, or otherwise relied upon by the authors of this report, are only mentioned in the given standard; they are not incorporated into it or "included by reference," as that latter term is used relative to contracts or other matters of law.

This report may be used only by the Client and only for the purposes stated within a reasonable time from its issuance, but in no event later than three years from the date of the report. Land or facility use, on and off-site conditions, regulations, or other factors may change over time, and additional work may be required with the passage of time.

It is the CLIENT'S responsibility to see that all parties to the project including the Contractor,

Subcontractors, etc., are made aware of this report in its entirety.

The use of information contained in this report for bidding purposes should be done at the Contractor's option and risk.

7.0 REFERENCES

EPA, 1980, *Design Manual, Onsite Wastewater Treatment and Disposal Systems*, United States Environmental Protection Agency, EPS 625/1-80-012.

Glancy, P.A., 1988, *Streamflow, Sediment Transport, and Nutrient Transport at Incline Village, Lake Tahoe, Nevada 1970-73*, United States Geological Survey Water-Supply, Paper 2313.

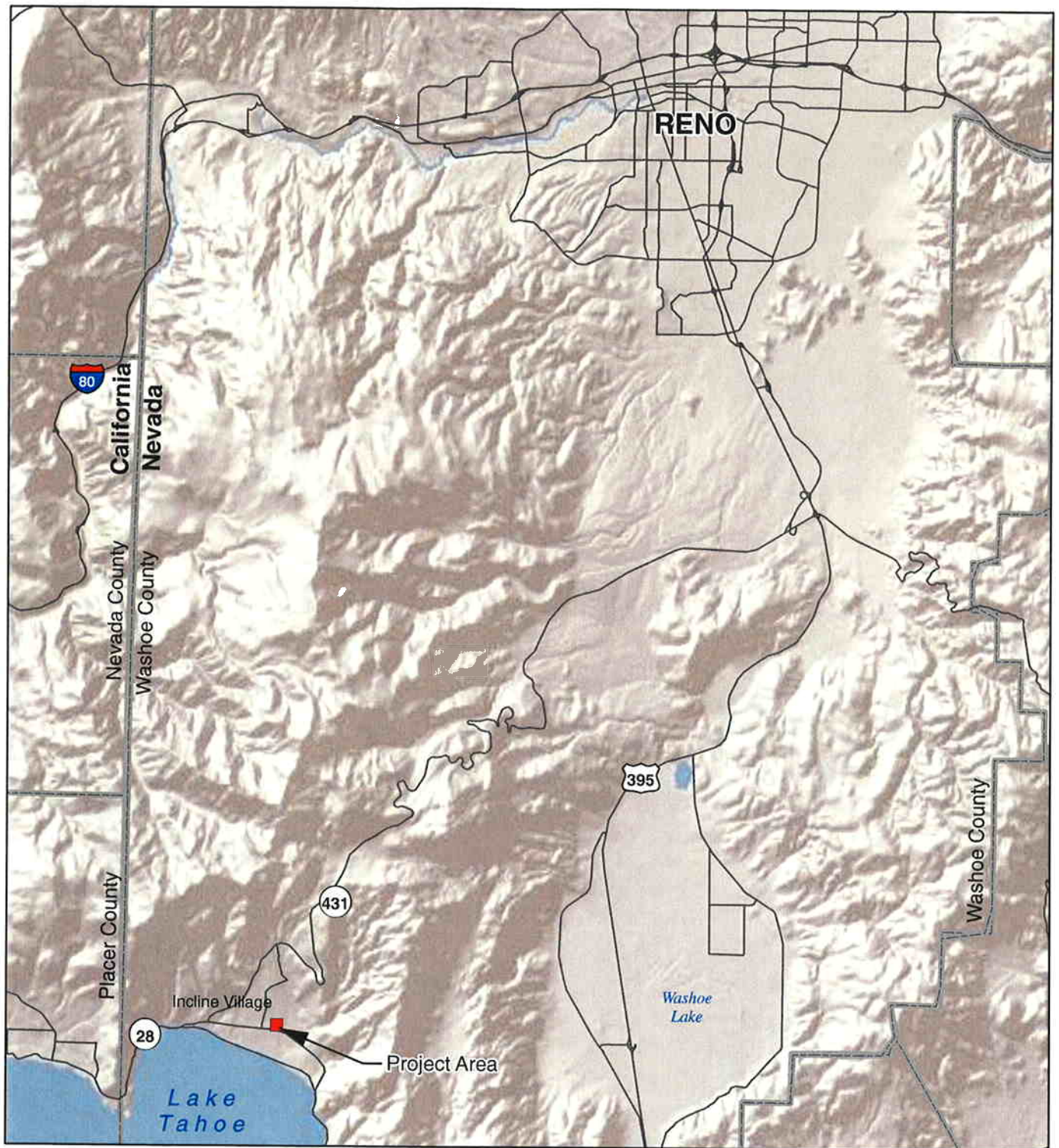
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Saucedo, G.J., 2005, *Geologic Map of the Lake Tahoe Basin, California and Nevada, California Geological Survey Regional Geologic Map Series*, Map No. 4.

U.S. Department of the Interior, 2007, *Draft Environmental Assessment, Middle Rosewood Creek Restoration, Implementation Area F*, Bureau of Reclamation, Mid-Pacific Region.

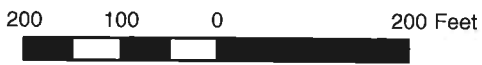
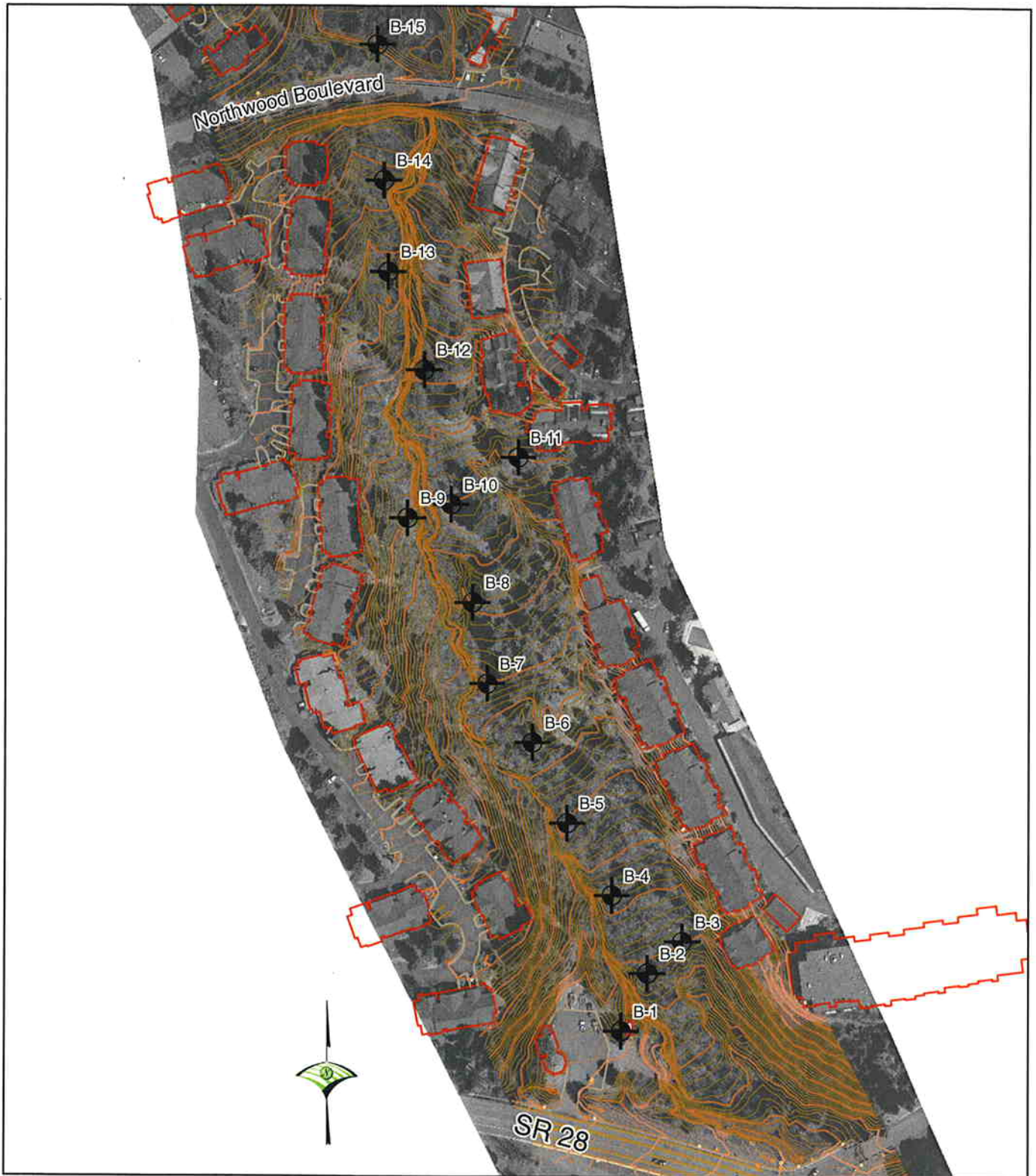
Wood Rodgers, Inc., 2006, *Preliminary Geotechnical Investigation, Middle of Rosewood Creek Restoration Project, Incline Village, Nevada*, File: 8122.001.



EXPLORATION LOCATIONS
 Nevada Tahoe Conservation District
 Middle Rosewood Creek Restoration Area A
 Incline Village, Nevada

FIGURE
1





 B-1 APPROXIMATE EXPLORATION LOCATIONS

EXPLORATION LOG

SURF. EL. :	WATER EL. :	DEPTH : 4.1 FEET	LOCATION : See Exploration Locations Figure 2
EQUIPMENT : Hand Auger			

DEPTH, Ft.	GRAPHIC LOG	SAMPLE	SOIL DESCRIPTION	LABORATORY TESTING
1	[Pattern]	X	0-24", 5YR 3/3, DARK REDDISH -BROWN SILTY SAND WITH SOME GRAVEL (SM); moist, low plastic fines, fine grained sand, gravel 1 1/4" in diameter rounded to subangular, 30% fines	
2	[Pattern]	X	24"-39", 5YR 6/4, LIGHT REDDISH-BROWN SILTY SAND WITH SOME GRAVEL (SM); moist, low plastic fines, 25% fines, fine grained sand, subangular gravels 1" in diameter	
3	[Pattern]	X	sand becoming coarser	
4	[Pattern]	X	39"-50", 5YR 4/6, YELLOWISH-RED SILTY SAND WITH SOME GRAVEL (SM); moist, low plastic fines, 30% fines, mica flakes, coarse grained sand, subangular gravel 3/4" in diameter	
5	[Pattern]		Boring terminated at 50" on large boulders or gravels.	
6				
7				
8				
9				
10				

REMARKS :

FIELD ENG. : CD	WATER DEPTH @ COMPL. : None	DATE : 12-02-08
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BORING LOG 8393.01_ROSEWOOD CREEK.GPJ WOOD RODGERS GDT 3/16/09



LOG AT SITE B-1
 Middle Rosewood Creek Restoration Area A
 Incline Village, Nevada

FIGURE
3

DRAWN ALH	JOB NUMBER 8393.001	APPROVED 	DATE	REVISED	DATE
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EXPLORATION LOG

SURF. EL. :	WATER EL. :	DEPTH : 4.2 FEET	LOCATION : See Exploration Locations Figure 2
EQUIPMENT : Hand Auger			

DEPTH, Ft.	GRAPHIC LOG	SAMPLE	SOIL DESCRIPTION	% PASSING #200 SIEVE	MOISTURE CONTENT (%)	LABORATORY TESTING
			0"-3", 5YR 3/3, DARK REDDISH BROWN ORGANICS (OL); leaves, roots, and low plastic fines			
			3"-12", 5YR 3/3, DARK REDDISH BROWN SILTY SAND (SM); moist, approximately 30% low plastic fines, fine grained sand, approximately 5% organic material			
1			12"-14", 5YR 3/4, DARK REDDISH-BROWN SANDY SILT (ML-MH); moist, approximately 80% moderately plastic fines, fine sand, trace mottling	22.0	19.2	
			14"-34", 5 YR 2.5/2, DARK REDDISH-BROWN CLAYEY SAND (SC); moist, approximately 40% low plastic fines, fine grained sand, frequent mica			
2			some medium to coarse grained sand, cut through a small root approximately 2.5" in dia.	48.0	26.6	
			practical refusal @ 34", moved over approximately 15" and started a second excavation			
3			34"-37" 5YR 3/1, VERY DARK GRAY SILTY SAND (SM); moist, approximately 25% non to low plastic fines, fine grained sand, frequent mica, approximately 5% organics, some mottling	16.7	22.7	
			37"-50" 5YR 4/2, DARK GREY SILTY SAND (SM); slightly moist to moist, approximately 20% non-plastic fines, fine to coarse grained sand, trace organics, frequent mottling			
4			predominately fine grained sand			
5						
6						
7						
8						
9						
10						

REMARKS :

FIELD ENG. : MD	WATER DEPTH @ COMPL. : None	DATE : 11-22-08
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BORING LOG 8393 01_ ROSEWOOD CREEK GPJ_WOOD RODGERS GDT 3/16/09



LOG AT SITE B-2
Middle Rosewood Creek Restoration Area A
Incline Village, Nevada

FIGURE
4

DRAWN ALH	JOB NUMBER 8393.001	APPROVED 	DATE	REVISED	DATE
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EXPLORATION LOG

SURF. EL. : WATER EL. : 3.4 FEET DEPTH : 5.1 FEET LOCATION : See Exploration Locations Figure 2

EQUIPMENT : Hand Auger

DEPTH, Ft.	GRAPHIC LOG	SAMPLE	SOIL DESCRIPTION	% PASSING #200 SIEVE	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	MOISTURE CONTENT (%)	LABORATORY TESTING
			0-2", 5YR 3/2, DARK REDDISH-BROWN ORGANICS (OL); moist, leaves and small roots					
1			2"-13", 5YR 3/2, DARK REDDISH-BROWN SANDY SILT (ML-MH); moist, approximately 60% moderately plastic fines, fine grained sand, approximately 5% organics					
	[Diagonal Hatching]		13"-20", 5YR 3/1, VERY DARK GREY SANDY SILTY CLAY (CH); moist, approximately 80% moderately to highly plastic fines, fine grained sand, frequent mica, approximately 5% organics (fine roots)	55.0	71	39		
2			20"-31", 5YR 4/1, DARK GREY CLAYEY SAND (SC); approximately 30% plastic fines, fine grained sand, mottling, less than 5% organics (fine roots), frequent mica	35.0			46.1	
	[Diagonal Hatching]		31"-41", 5YR 4/1, DARK GREY CLAYEY SAND (SC); moist to wet, approximately 30% low plastic fines, fine to coarse grained sand, frequent mica, less 5% organics (fine roots)				41.7	
3			41"-54", 5YR 4/1, DARK GREY CLAYEY SAND (SC); moist to wet, approximate 35% low plastic fines, fine to coarse sand, wet (free water), frequent mottling	32.0	35	14		
4			54"-61", GLEY 1/4, DARK GREY SILTY SAND (SM); wet, approximately 20% low plastic fines, fine to coarse grained sand, frequent mica					
5								
6								
7								
8								
9								
10								

REMARKS :
Free water at 41"

FIELD ENG. : MD WATER DEPTH @ COMPL. : 3.4 FEET DATE : 11-22-08

BORING LOG 8393.01_ROSEWOOD CREEK.GPJ WOOD RODGERS.GDT 3/16/09



LOG AT SITE B-3
Middle Rosewood Creek Restoration Area A
Incline Village, Nevada

FIGURE
5

DRAWN ALH	JOB NUMBER 8393.001	APPROVED <i>CS</i>	DATE	REVISED	DATE
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EXPLORATION LOG

SURF. EL. :

WATER EL. :

DEPTH : 4 FEET

LOCATION : See Exploration Locations Figure 2

EQUIPMENT : Hand Auger

DEPTH, Ft.	GRAPHIC LOG	SAMPLE	SOIL DESCRIPTION	% PASSING #200 SIEVE	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	MOISTURE CONTENT (%)	LABORATORY TESTING
0-1			0-2", 5YR 3/3, DARK REDDISH BROWN ORGANICS (OL); low plastic fines, fine roots and leaves					
1-2			2"-23", 5YR 3/3, DARK REDDISH-BROWN SANDY SILT (MH); moist, approximately 70% highly plastic fines, fine grained sand, frequent mica, less than 5% organics (fine roots)					
2-23			5YR 3/1 very dark grey, approximately 10% organics (root pieces)		90	32	41.6	
23-32			23"-32", 5YR 3/2, DARK REDDISH-BROWN CLAYEY SAND (SC); moist, approximately 30% low plastic fines, fine grained sand, frequent mottling, frequent mica	25.0			18.8	
32-40			32"-40", 5YR 4/3, REDDISH BROWN SILTY SAND (SM); approximately 20% non-plastic fines, fine grained sand, frequent mottling, less than 5% organics					
40-44			frequent lenses of organic matter					
44-49			40"-44", 5YR 3/1, VERY DARK GREY SILT (ML); moist, approximately 80% low plastic fines, some fine grained sand, approximately 10% organics					
49-54			44"-49", 5YR 3/2, DARK REDDISH BROWN VERY SILTY SAND (SM); moist, approximately 50% low plastic fines, fine grained sand, frequent mica, approximately 5% organics (fine roots)	19.0				
54-55			49"-54", 5YR 3/2, DARK REDDISH BROWN SILTY SAND (SM); moist, approximately 30% non-plastic fines, fine to coarse grained sand, trace fine subrounded gravel, less than 5% organics					
55-10								

REMARKS :

FIELD ENG. : MD

WATER DEPTH @ COMPL. : None

DATE : 11-22-08



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LOG AT SITE B-4
Middle Rosewood Creek Restoration Area A
Incline Village, Nevada

FIGURE

6

DRAWN
ALH

JOB NUMBER
8393.001

APPROVED

DATE

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DATE

BORING LOG 8393.01_ROSEWOOD CREEK.GPJ WOOD RODGERS GDT 3/16/09

EXPLORATION LOG

SURF. EL. :

WATER EL. :

DEPTH : 4 FEET

LOCATION : See Exploration Locations Figure 2

EQUIPMENT : Hand Auger

DEPTH, Ft.	GRAPHIC LOG	SAMPLE	SOIL DESCRIPTION	% PASSING #200 SIEVE	MOISTURE CONTENT (%)	LABORATORY TESTING
1	[Pattern]	[Symbol]	0-15", 5YR 3/2, DARK REDDISH BROWN SILTY SAND (SM); moist, approximately 30% non-plastic fines, fine grained sand, mica, less than 5% organics (fine roots) lenses of fine grained sand			
			roots up to 1" in diameter, mottling			
2	[Pattern]	[Symbol]	15"-23", 7.5YR, STRONG BROWN SILTY SAND (SM); moist, approximately 20% non-plastic fines, fine to coarse grained sand, frequent redox/mottling			
3	[Pattern]	[Symbol]	23"-37", 5YR 4/3, REDDISH-BROWN SLIGHTLY SILTY SAND (SM-SW); moist, approximately 25% non-plastic fines, fine sand, lenses of silt, frequent mica	7.0	7.3	
4	[Pattern]	[Symbol]	37"-44", 5YR 3/2, DARK REDDISH-BROWN SILTY SAND (SM); moist, low plastic fines, mica, approximately 5% organics approximately 20% organics (fine roots)			
4	[Pattern]	[Symbol]	44"-49", 5YR 2.5/1, BLACK SILT (ML-MH); moist to wet, moderately plastic fines, mica, approximately 10% organics		31.2	
4	[Pattern]	[Symbol]	49"-60", 3YR 2.5/1, BLACK SILTY SAND (SM); wet, approximately 20% low plastic fines, fine to coarse grained sand, frequent mica			
5						
6						
7						
8						
9						
10						

REMARKS :

Wet soil conditions below approximately 49 inches

FIELD ENG. : MD

WATER DEPTH @ COMPL. : None

DATE : 11-22-08



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LOG AT SITE B-5
Middle Rosewood Creek Restoration Area A
Incline Village, Nevada

FIGURE

7

DRAWN
ALH

JOB NUMBER
8393.001

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DATE

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DATE

BORING LOG 8393.01_ROSEWOOD CREEK.GPJ WOOD RODGERS GDT 3/16/09

EXPLORATION LOG

SURF. EL. :

WATER EL. : 1.6 FEET

DEPTH : 4 FEET

LOCATION : See Exploration Locations Figure 2

EQUIPMENT : Hand Auger

DEPTH, Ft.	GRAPHIC LOG	SAMPLE	SOIL DESCRIPTION	% PASSING #200 SIEVE	MOISTURE CONTENT (%)	LABORATORY TESTING
			0-6", 5YR 2.5/1, BLACK SANDY SILT (ML); wet, approximately 70% low plastic fines, fine grained sands, approximately 20% organics, fine roots	5.0	44.4	
1			6"-13", 5YR 3/3, DARK REDDISH BROWN SILTY SAND (SM); wet, approximately 30% low plastic fines, fine to coarse grained sand, approximate 20% organics, frequent mottling			
2			13"-40", 5YR 4/6, YELLOWISH-RED SLIGHTLY SILTY SAND (SP-SM); wet, free water approximately 10% non-plastic fines, fine to coarse grained sand, frequent mica, approximately 5% organics			
3			Gley 1 3/1- very dark greenish grey, approximately 10% organics, organics smell			
4			40"-48", 5YR 2.5/1, BLACK SILTY SAND (SM); wet, low plastic fines, high organics content, organic smell			
5						
6						
7						
8						
9						
10						

REMARKS :

Water level measured at 19 inches below existing grade

FIELD ENG. : MD

WATER DEPTH @ COMPL. : 1.6 FEET

DATE : 11-22-08



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LOG AT SITE B-6
Middle Rosewood Creek Restoration Area A
Incline Village, Nevada

FIGURE

8

DRAWN
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CS

DATE

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DATE

BORING LOG 8393.01_ROSEWOOD CREEK.GPJ WOOD RODGERS GDT 3/16/09

EXPLORATION LOG

SURF. EL. :	WATER EL. : 3 FEET	DEPTH : 4 FEET	LOCATION : See Exploration Locations Figure 2
EQUIPMENT : Hand Auger			

DEPTH, Ft.	GRAPHIC LOG	SOIL DESCRIPTION	% PASSING #200 SIEVE	MOISTURE CONTENT (%)	LABORATORY TESTING
0-2"	[Symbol]	0-2", 5YR 3/2, DARK REDDISH-BROWN ORGANICS (OL); non-plastic fines, fine roots and leaves			
2"-15"	[Symbol]	2"-15", 5YR 3/2, DARK REDDISH-BROWN SANDY SILT (ML); moist, approximately 60%, low plastic fines, fine grained sand, approximately 10% organics (fine roots)			
15"-31"	[Symbol]	15"-31", 5YR 3/2, DARK REDDISH BROWN SILTY SAND (SM); moist, approximately 10-15% non-plastic fines, fine to coarse grained sand, approximately 5% organics moist to wet, approximately 25% fines, frequent mica, frequent mottling	12.0	18.0	
31"-44"	[Symbol]	31"-44", Gley 1 3/1, VERY DARK GREY SLIGHTLY SILTY SAND (SW-SM); wet, approximately 10%, non-plastic fines, fine to coarse grained sand, frequent redox/mottling, frequent mica some subrounded gravels up to 1" in diameter	10.0	19.8	
no gravels below 42"		no gravels below 42", running sands			

REMARKS :
Water level measured at 3 feet below existing grade

FIELD ENG. : MD	WATER DEPTH @ COMPL. : 3 FEET	DATE : 11-22-08
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BORING LOG 8393.01, ROSEWOOD CREEK.GPJ WOOD RODGERS GDT 3/16/09



LOG AT SITE B-7
Middle Rosewood Creek Restoration Area A
Incline Village, Nevada

EXPLORATION LOG

SURF. EL. :	WATER EL. :	DEPTH : 4 FEET	LOCATION : See Exploration Locations Figure 2
EQUIPMENT : Hand Auger			

DEPTH, Ft.	GRAPHIC LOG	SAMPLE	SOIL DESCRIPTION	% PASSING #200 SIEVE	MOISTURE CONTENT (%)	LABORATORY TESTING
			0-4", 5YR 3/3, ORGANICS (OL); moist, non-plastic silt, pine needles			
-1			4"-14", 5YR 3/3, DARK REDDISH BROWN SANDY SILT (ML); moist, approximately 80% low plastic fines, fine grained sand, approximately 10% organics some coarse sand			
-2			14"-36", 5YR 3/3, DARK REDDISH BROWN SILTY SAND (SM); moist, approximately 40% non to low plastic fines, fine to coarse grained sand, trace subrounded gravel up to 1/2" dia, some mottling, approximately 5% organics (roots) 5YR 4/3 reddish brown frequent mica, predominately fine grained sand, frequently mottling some fine subrounded gravel up to 1/2" in dia.	18.0	5.4	
-3			heavy mottling, refusal on a boulder	21.0		
-4						
-5						
-6						
-7						
-8						
-9						
-10						

REMARKS :

FIELD ENG. : MD	WATER DEPTH @ COMPL. : None	DATE : 11-22-08
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BORING LOG 8393 01_ROSEWOOD CREEK.GPJ WOOD RODGERS.GDT 3/16/09



LOG AT SITE B-8
Middle Rosewood Creek Restoration Area A
Incline Village, Nevada

FIGURE

10

DRAWN ALH	JOB NUMBER 8393.001	APPROVED <i>CS</i>	DATE	REVISED	DATE
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EXPLORATION LOG

SURF. EL. :

WATER EL. :

DEPTH : 4 FEET

LOCATION : See Exploration Locations Figure 2

EQUIPMENT : Hand Auger

DEPTH, Ft.	GRAPHIC LOG	SAMPLE	SOIL DESCRIPTION	% PASSING #200 SIEVE	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	MOISTURE CONTENT (%)	LABORATORY TESTING
			0-4", ORGANICS (OL); moist, low plastic fines, pine needles					
1	[Pattern]		4"-18", 5YR 3/2, DARK REDDISH BROWN SILTY SAND (SM); slightly moist to moist, approximately 35%, low plastic fines, fine grained sand, approximately 5% organics (fine roots and pine needles) increasing sand content some subangular gravel up to 1/2" in dia.	33.0	40	10		
2	[Pattern]		18"-40", 5YR 4/3, REDDISH BROWN SANDY SILT (MH); approximately 60% highly plastic fines, fine to coarse grained sand, mottling, some subangular gravel up to 1/2" in dia. one gravel up to 1" dia frequent mottling		51	12		
3	[Pattern]		less than 5% organics (fine roots) slightly moist to moist, increasing sand content	14.0			7.2	
4	[Pattern]		40"-48", 5YR 5/2, REDDISH GRAY SILTY SAND (SM); slightly moist to moist approximately 25% non-plastic, fine to coarse grained sand, trace fine gravel, approximately 5% organics (fine roots) some silt balls, refusal on a boulder					
5								
6								
7								
8								
9								
10								

REMARKS :

FIELD ENG. : MD

WATER DEPTH @ COMPL. : None

DATE : 11-22-08



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LOG AT SITE B-9
Middle Rosewood Creek Restoration Area A
Incline Village, Nevada

FIGURE

11

DRAWN
ALH

JOB NUMBER
8393.001

APPROVED

DATE

REVISED

DATE

BORING LOG 8393.01_ROSEWOOD CREEK.GPJ WOOD RODGERS.GDT 3/16/09

EXPLORATION LOG

SURF. EL. :	WATER EL. :	DEPTH : 4 FEET	LOCATION : See Exploration Locations Figure 2
EQUIPMENT : Hand Auger			

DEPTH, Ft.	GRAPHIC LOG	SAMPLE	SOIL DESCRIPTION	% PASSING #200 SIEVE	MOISTURE CONTENT (%)	LABORATORY TESTING
	[Pattern]	[Symbol]	0-5", 5YR 3/2, DARK REDDISH BROWN VERY SILTY SAND (SM); moist, approximately 40% low plastic fines, fine grained sand, trace organics	33.0	7.9	
-1	[Pattern]	[Symbol]	5"-15", 5YR 4/4, REDDISH BROWN VERY SILTY SAND (SM); slightly moist to moist, approximately 50% low plastic fines, predominately fine grained sand, trace of coarse grained sand			
-2	[Pattern]	[Symbol]	15"-38", 5YR 3/3, DARK REDDISH BROWN VERY SILTY SAND (SM); moist, approximately 40% low plastic fines, fine grained sand, approximately 5% organics increasing sand content, mottling	14.0	7.2	
-3	[Pattern]	[Symbol]	some silt balls, mica, predominately fine grained sand			
-4	[Pattern]	[Symbol]	38"-44", 5YR 3/2, DARK REDDISH BROWN SILTY SAND (SM); moist, approximately 20% low plastic fines, fine sand, mica, less than 5% organics 44"-53", 5YR 3/2, DARK REDDISH BROWN SILT (ML); slightly moist to moist, low plastic fines, approximately 20% organic materials	18.0	5.5	
-5	[Pattern]	[Symbol]	some fine grained sand 53"-61", 5YR 3/3, REDDISH BROWN VERY SILTY SAND (SM); slightly moist to moist, approximately 40% low plastic fines, fine grained sand, approximately 5% organics, trace of subrounded gravel up to 1/2" in dia.			
-6						
-7						
-8						
-9						
-10						

REMARKS :

FIELD ENG. : MD	WATER DEPTH @ COMPL. : None	DATE : 11-22-08
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BORING LOG 8393 01_ ROSEWOOD CREEK.GPJ WOOD RODGERS GDT 3/16/09



LOG AT SITE B-10
Middle Rosewood Creek Restoration Area A
Incline Village, Nevada

FIGURE
12

DRAWN ALH	JOB NUMBER 8393.001	APPROVED 	DATE	REVISED	DATE
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EXPLORATION LOG

SURF. EL. :	WATER EL. :	DEPTH : 4.8 FEET	LOCATION : See Exploration Locations Figure 2
EQUIPMENT : Hand Auger			

DEPTH, Ft.	GRAPHIC LOG	SOIL DESCRIPTION	% PASSING #200 SIEVE	MOISTURE CONTENT (%)	LABORATORY TESTING
0-3"		0-3", 5YR 2.5/2, DARK REDDISH-BROWN ORGANICS (OL); low plastic fines, roots, plant material			
3"-13"		3"-13", 5YR 3/3, DARK REDDISH-BROWN SANDY SILT (MH); moist, approximately 70% highly plastic fines, approximately 5% organics roots at 11"			
13"-37"		13"-37", 5YR 4/4, REDDISH-BROWN SILTY SAND WITH SOME GRAVEL (SM); moist, approximately 15% low plastic fines, sand becoming coarser, gravel up to 1/2" in dia, approximately 5% organics increasing gravel content, no organics 1/2" diameter roots at 24" large rock at 26", executed new hole at approximately 18" to the southeast	15.0	9.1	
37"-58"		37"-58", 5YR 4/6, STRONG BROWN SILTY SAND WITH GRAVEL (SM); moist, approximately 25% low plastic fines, gravel to 1/2" in diameter minor mottling at 39"	18.0	5.5	
5					
6					
7					
8					
9					
10					

REMARKS :

FIELD ENG. : CD	WATER DEPTH @ COMPL. : None	DATE : 11-24-08
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BORING LOG 8993 01_ ROSEWOOD CREEK.GPJ WOOD RODGERS.GDT 3/16/09



LOG AT SITE B-11
Middle Rosewood Creek Restoration Area A
Incline Village, Nevada

FIGURE
13

DRAWN ALH	JOB NUMBER 8393.001	APPROVED <i>CS</i>	DATE	REVISED	DATE
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EXPLORATION LOG

SURF. EL. :	WATER EL. :	DEPTH : 5 FEET	LOCATION : See Exploration Locations Figure 2
EQUIPMENT : Hand Auger			

DEPTH, Ft.	GRAPHIC LOG	SOIL DESCRIPTION	% PASSING #200 SIEVE	MOISTURE CONTENT (%)	LABORATORY TESTING
		0-2", 5YR 4/4, REDDISH-BROWN ORGANICS (OL)			
		2"-7", 5YR 4/4, REDDISH-BROWN VERY SILTY SAND (SM); moist, approximately 40% low plastic fines, approximately 5% organics			
1	1	7"-17", 5YR 5/4, REDDISH-BROWN SILTY SAND (SM); moist, low plasticity fines, approximately 30% fines, approximately 5% organics including roots up to 1/4" in diameter, some mottling			
2	2	17"-32", 5YR 4/3, REDDISH-BROWN SILTY SAND (SM); approximately 20% low plastic fines, moist, less than 5% organics sand becoming coarser below 23"	25.0	7.6	
3	3	32"-40", 5YR 3/2, DARK REDDISH BROWN CLAYEY SAND (SC); moist, approximately 30% moderate plastic fines, approximately 5-10% organics including roots up to 1/4" in diameter	34.0	14.1	
4	4	40"-60", 5YR 5/2, REDDISH GREY SILTY SAND (SM); moist, approximately 20% low plastic fines, less than 1% organics			
5	5				
6	6				
7	7				
8	8				
9	9				
10	10				

REMARKS :

FIELD ENG. : CD	WATER DEPTH @ COMPL. : None	DATE : 11-24-08
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BORING LOG 8393.01_ROSEWOOD CREEK.GPJ WOOD RODGERS.GDT 3/16/09



LOG AT SITE B-12
Middle Rosewood Creek Restoration Area A
Incline Village, Nevada

FIGURE
14

DRAWN ALH	JOB NUMBER 8393.001	APPROVED 	DATE	REVISED	DATE
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EXPLORATION LOG

SURF. EL. :	WATER EL. :	DEPTH : 4.5 FEET	LOCATION : See Exploration Locations Figure 2
EQUIPMENT : Hand Auger			

DEPTH, Ft.	GRAPHIC LOG SAMPLE	SOIL DESCRIPTION	% PASSING #200 SIEVE	MOISTURE CONTENT (%)	LABORATORY TESTING
		0-3", 5YR 3/2, DARK REDDISH-BROWN ORGANICS (OL)			
		3"-9", 5YR 3/2, DARK REDDISH BROWN CLAYEY SAND (SC); moist, approximately 30% moderate plastic fines, approximately 5% organics			
1		9"-17", 5YR 3/2, DARK REDDISH BROWN CLAYEY SAND (SC); moist, approximately 30% moderate plastic fines, 5% organics			
2		17"-30", 5YR 5/4, REDDISH BROWN SILTY SAND (SM); moist, approximately 15% low plastic fines, no organics, coarse grained sand			
		root at 30"			
3		30"-34", 5YR 2.5/2, DARK REDDISH BROWN SANDY SILT (MH-ML); moist, approximately 60% moderate plastic fines, approximately 5% organic roots	36.0	31.4	
		34"-47", 5YR 3/3, DARK REDDISH BROWN SILTY SAND (SM); moist, approximately 30% low plastic fines, no organics			
4		47"-54", 5YR 3/3, DARK REDDISH BROWN GRAVELLY SILTY SAND (SW-SM); moist, coarse grained sand, gravel to 3/4" in diameter	7.0	9.5	
		refusal in gravel at 54"			
5					
6					
7					
8					
9					
10					

REMARKS :

FIELD ENG. : CD	WATER DEPTH @ COMPL. : None	DATE : 11-24-08
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BORING LOG 8393.01_ROSEWOOD CREEK.GPJ WOOD RODGERS GDT 3/16/09



LOG AT SITE B-13
Middle Rosewood Creek Restoration Area A
Incline Village, Nevada

FIGURE
15

DRAWN ALH	JOB NUMBER 8393.001	APPROVED 	DATE	REVISED	DATE
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EXPLORATION LOG

SURF. EL. : WATER EL. : DEPTH : 3 FEET LOCATION : See Exploration Locations Figure 2

EQUIPMENT : Hand Auger

DEPTH, Ft.	GRAPHIC LOG	SAMPLE	SOIL DESCRIPTION	% PASSING #200 SIEVE	MOISTURE CONTENT (%)	LABORATORY TESTING
	—		0-2", 5YR 4/4, REDDISH-BROWN ORGANICS (OL)			
	•••••		2"-13", 5YR 4/4, REDDISH BROWN SILTY SAND (SM); approximately 30% low to moderate plastic fines, approximately 2% organics			
1	•••••		13"-17", 5YR 4/6, YELLOWISH RED SILTY SAND (SM); moist, approximately 15% low plastic fines, no organics mottling at 17"			
	•••••		17"-25", 5YR 3/3, DARK REDDISH BROWN SILTY SAND (SM); moist, approximately 30% low plastic fines, no organics			
2	•••••		25"-36", 5YR 4/4, REDDISH BROWN SILTY SAND (SM); dry, low approximately 10-15% low plastic fines, no organics, coarse grained sand	14.0	4.6	
3	•••••		flowing sand prevented the excavation from being advanced below 36"			
4						
5						
6						
7						
8						
9						
10						

REMARKS :

FIELD ENG. : CD WATER DEPTH @ COMPL. : None DATE : 11-24-08

BORING LOG 8393.01_ROSEWOOD CREEK GP J WOOD RODGERS GDT 3/16/09



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LOG AT SITE B-14
Middle Rosewood Creek Restoration Area A
Incline Village, Nevada

FIGURE
16

DRAWN ALH JOB NUMBER 8393.001 APPROVED *CS* DATE REVISED DATE

EXPLORATION LOG

SURF. EL. :	WATER EL. :	DEPTH : 0.58 FEET	LOCATION : See Exploration Locations Figure 2
EQUIPMENT : Hand Auger			

DEPTH, Ft.	GRAPHIC LOG	SAMPLE	SOIL DESCRIPTION	LABORATORY TESTING
	[Pattern]		0-58", 1" OF RED VOLCANIC ROCK (FILL) 5YR 3/2, DARK REDDISH-BROWN SILTY SAND WITH SOME GRAVEL (SM); moist, low plasticity, approximately 30% fines, fine grained sand, subangular gravel up to 1"	
-1			Refusal on what is either lava rocks or pavement section. Tried seven different location up to 20' from original boring. Same result each time.	
-2				
-3				
-4				
-5				
-6				
-7				
-8				
-9				
-10				

REMARKS :

FIELD ENG. : CD	WATER DEPTH @ COMPL. : None	DATE : 12-02-08
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BORING LOG 8393.01_ ROSEWOOD CREEK GPJ WOOD RODGERS GDT 3/16/09



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LOG AT SITE B-15
Middle Rosewood Creek Restoration Area A
Incline Village, Nevada

FIGURE

17

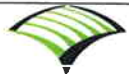
DRAWN ALH	JOB NUMBER 8393.001	APPROVED 	DATE	REVISED	DATE
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UNIFIED SOIL CLASSIFICATION - ASTM D2487 - 00

MAJOR DIVISIONS			TYPICAL NAMES		
COARSE-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES	
		GRAVELS WITH OVER 12% FINES	GP	POORLY GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES	
			GM	SILTY GRAVELS, SILTY GRAVELS WITH SAND	
		GC	CLAYEY GRAVELS, CLAYEY GRAVELS WITH SAND		
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES	
			SP	POORLY GRADED SANDS WITH OR WITHOUT GRAVELS, LITTLE OR NO FINES	
		SANDS WITH OVER 12% FINES	SM	SILTY SANDS WITH OR WITHOUT GRAVEL	
			SC	CLAYEY SANDS WITH OR WITHOUT GRAVEL	
		FINE-GRAINED SOILS MORE THAN HALF IS FINER THAN NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT 50% OR LESS	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTS WITH SANDS AND GRAVELS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, CLAYS WITH SANDS AND GRAVELS, LEAN CLAYS
OL	ORGANIC SILTS OR CLAYS OF LOW PLASTICITY				
SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%	MH		INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS, FINE SANDY OR SILTY SOILS, ELASTIC SILTS		
	CH		INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS		
	OH		ORGANIC CLAYS OR CLAYS OF MEDIUM TO HIGH PLASTICITY		
HIGHLY ORGANIC SOILS	PT	PEAT AND OTHER HIGHLY ORGANIC SOILS			

<p>M(80) — Moisture Content (%)</p> <p>DD(105) — Dry Density (pcf)</p> <p>Perm — Permeability</p> <p>Consol — Consolidation</p> <p>LL — Liquid Limit (%)</p> <p>PI — Plastic Index (%)</p> <p>G_s — Specific Gravity</p> <p>MA — Particle Size Analysis</p> <p>OC — Organic Content</p> <p>R-Value — Resistance Value</p> <p>CBR — California Bearing Ratio</p> <p>■ — "Undisturbed Sample"</p> <p>⊠ — Bulk or Classification Samples</p>	<p>TxUU (FM) or (S) 3200 (2600) — Unconsolidated Undrained Triaxial Shear (field moisture or saturated)</p> <p>TxCU (P) 3200 (2600) — Consolidated Undrained Triaxial Shear (with or without pore pressure measurement)</p> <p>TxCD (P) 3200 (2600) — Consolidated Drained Triaxial Shear</p> <p>SSCU (P) 3200 (2600) — Simple Shear Consolidated Undrained (with or without pore pressure measurement)</p> <p>SSCD 3200 (2600) — Simple Shear Consolidated Drained</p> <p>DSCD 2700 (2000) — Consolidated Drained Direct Shear</p> <p>DSCU 2000 (1000) — Consolidated Undrained Direct Shear</p> <p>UC 470 — Unconfined Compression</p> <p>LVS 700 — Laboratory Vane Shear</p> <p>DSUU — Unconsolidated Undrained Direct Shear</p>
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SOIL CLASSIFICATION 8393.01_ROSEWOOD CREEK.GPJ WOOD RODGERS GDT 3/16/09



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SOIL CLASSIFICATION CHART
AND TEST DATA KEY
MIDDLE ROSEWOOD CREEK
RESTORATION AREA A
INCLINE VILLAGE, NEVADA

FIGURE

18

DRAWN
ALH

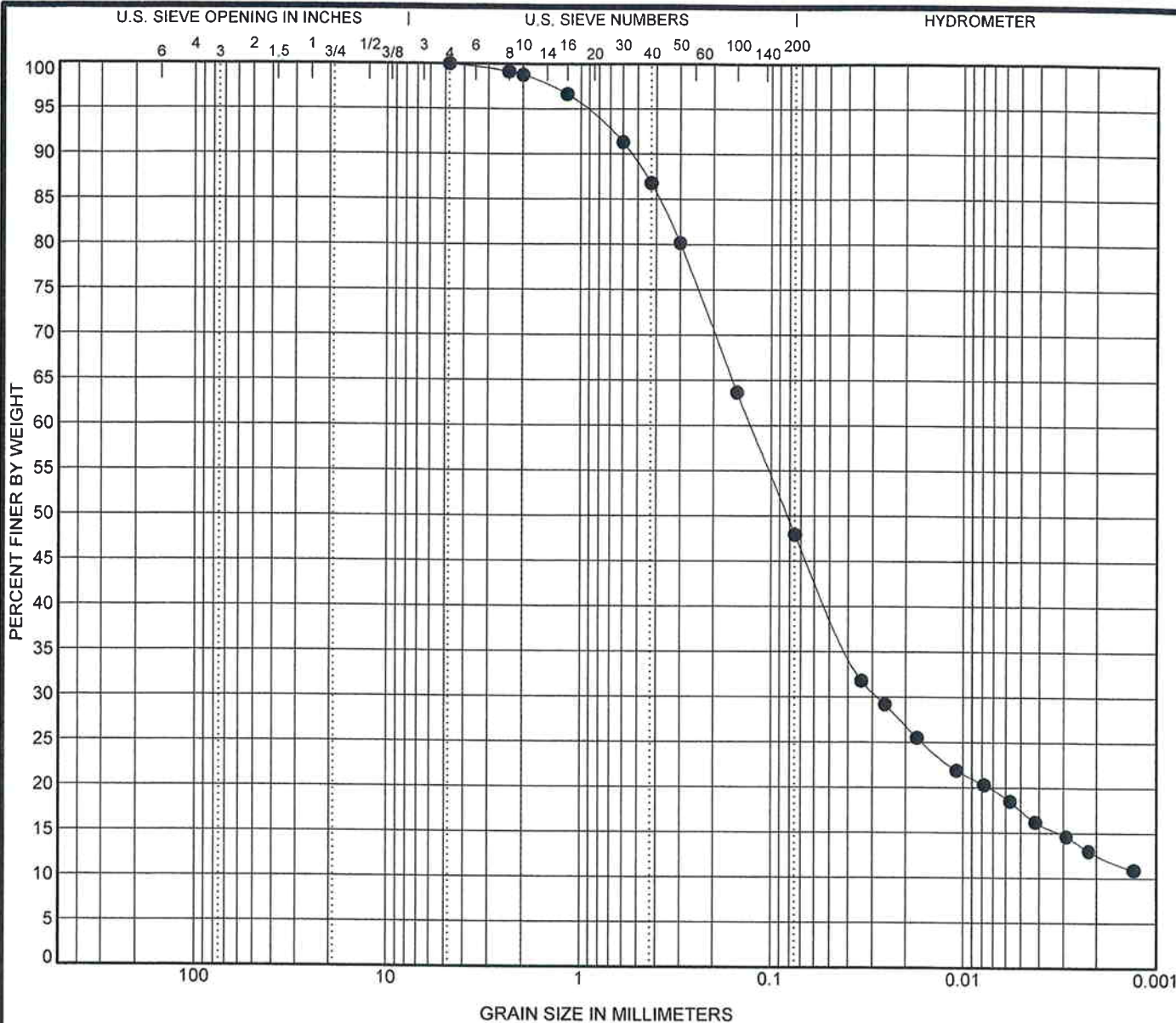
JOB NUMBER
8393.001

APPROVED

DATE
11-23-08

REVISED

DATE



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification (ft)	Classification	LL	PL	PI	Cc	Cu
● B-2 2.5	DARK REDDISH-BROWN CLAYEY SAND (SC)					

Specimen Identification (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-2 2.5	4.75	0.128	0.028		0.0	52.1	30.4	17.5

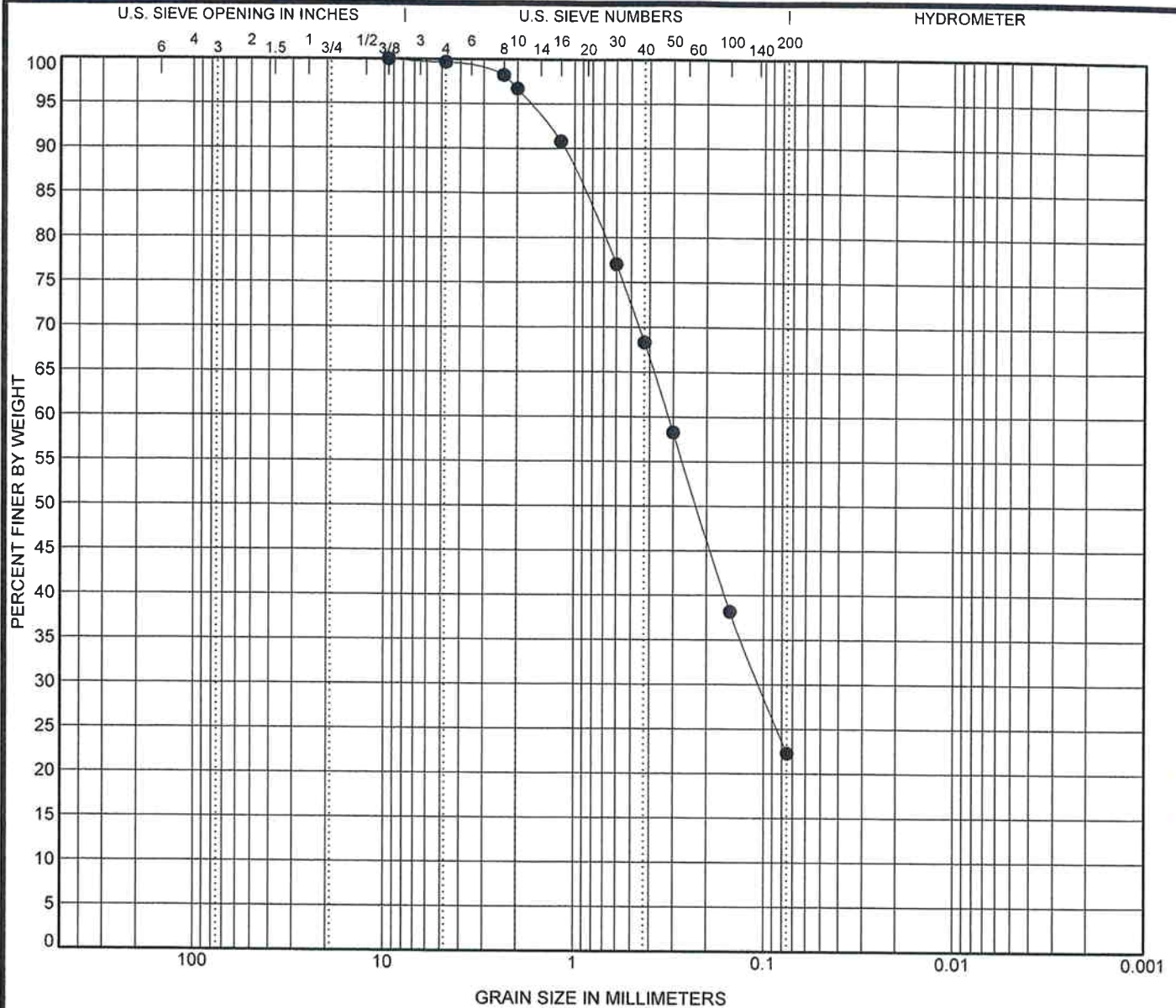


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GRAIN SIZE DISTRIBUTION

Project: Middle Rosewood Creek Restoration Area A
 Location: Incline Village, Nevada
 Number: 8393.001

US GRAIN SIZE 8393.001 MIDDLE ROSEWOOD.GPJ WOOD RODGERS.GDT 1/19/09



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification (ft)	Classification	LL	PL	PI	Cc	Cu
● B-2a 2.0	DARK REDDISH-BROWN SILTY SAND (SM)					

Specimen Identification (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-2a 2.0	9.5	0.318	0.105		0.3	77.4	22.3	

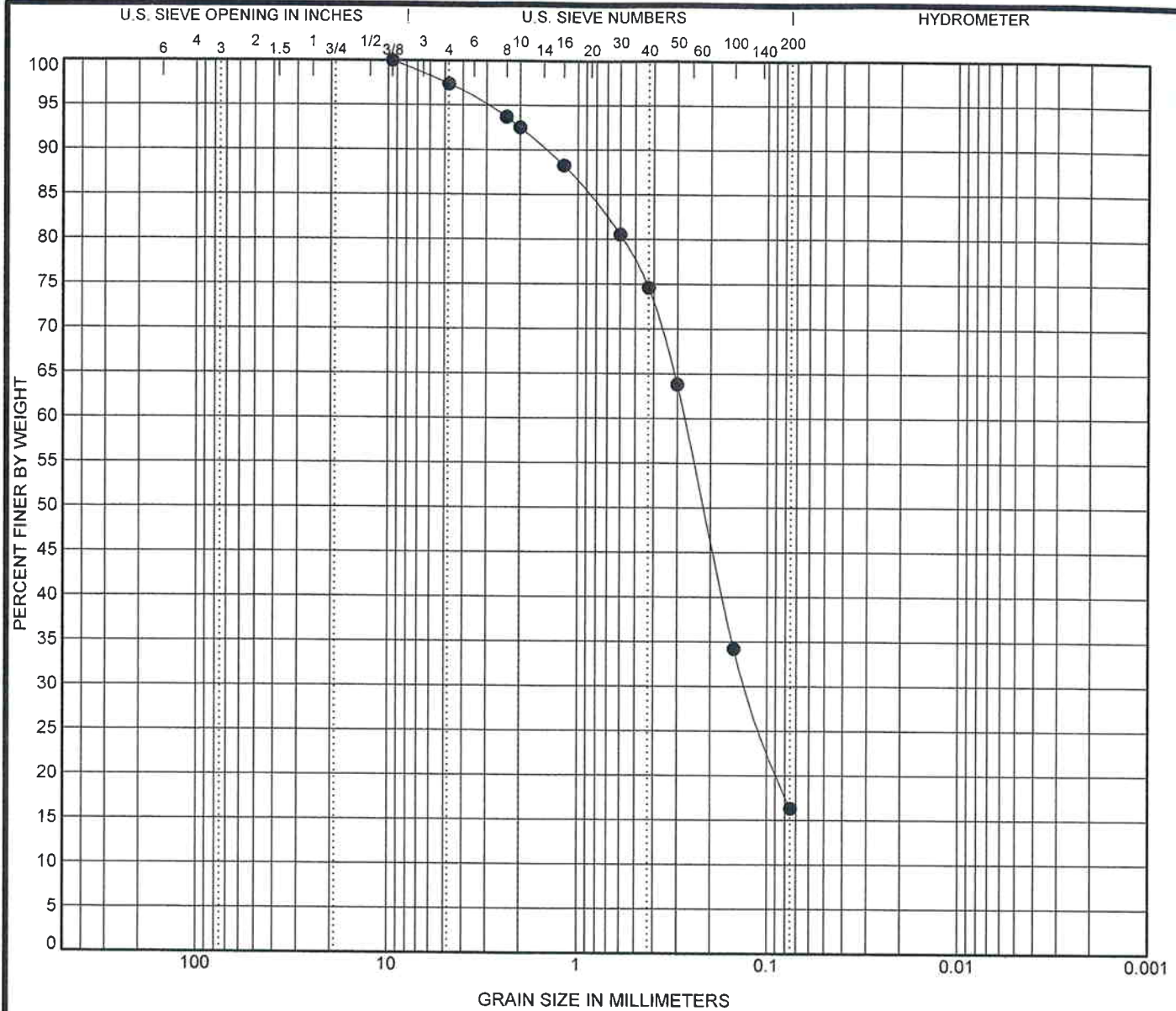


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GRAIN SIZE DISTRIBUTION

Project: Middle Rosewood Creek Restoration Area A
 Location: Incline Village, Nevada
 Number: 8393.001

U.S. GRAIN SIZE 8393.001 MIDDLE ROSEWOOD.CP.J. WOOD RODGERS.GDT 1/13/09



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification (ft)	Classification	LL	PL	PI	Cc	Cu
● B-2b 3.1	DARK GRAY SILTY SAND (SM)					

Specimen Identification (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-2b 3.1	9.5	0.274	0.127		2.6	81.1	16.3	

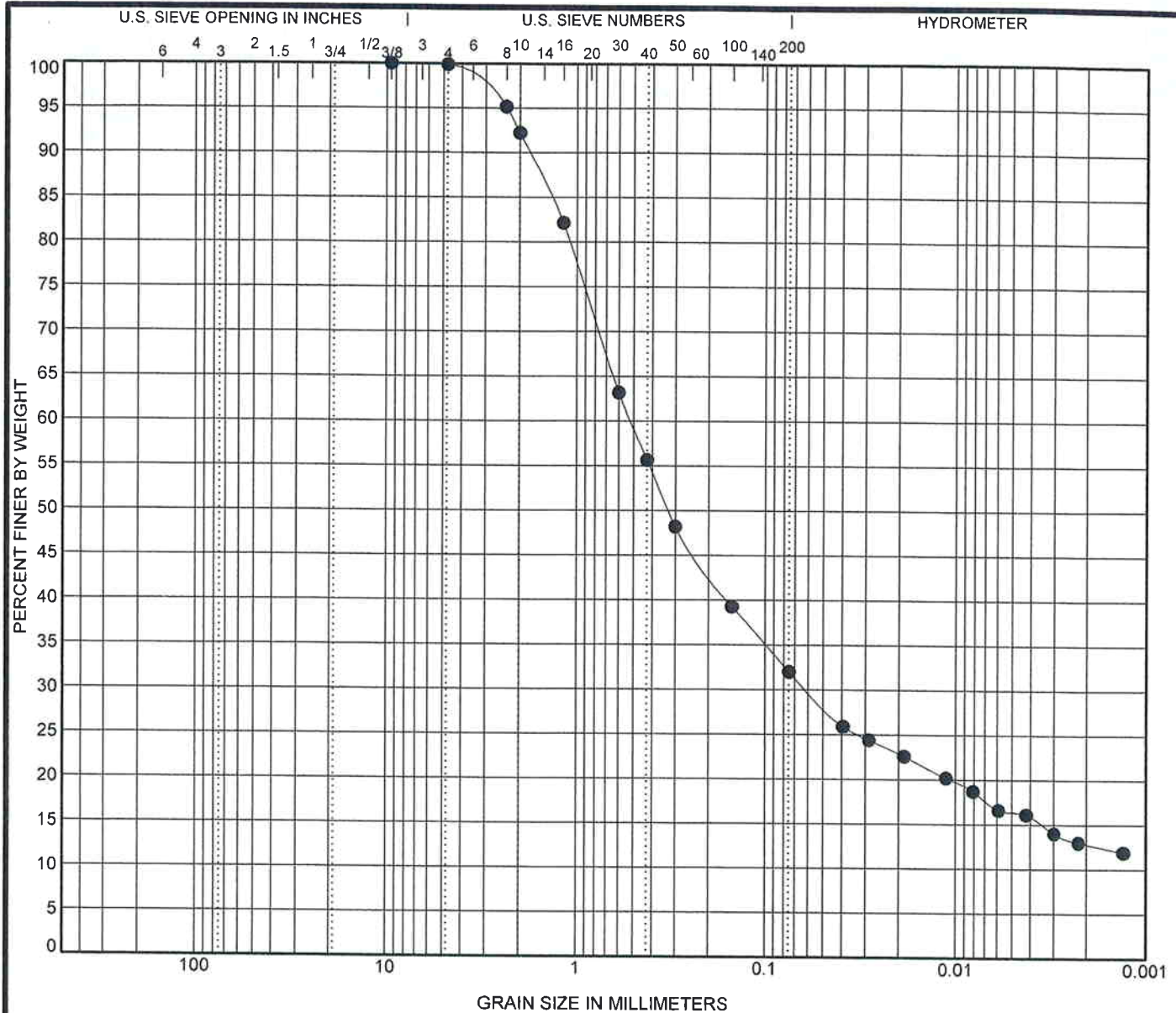


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Project: Middle Rosewood Creek Restoration Area A
 Location: Incline Village, Nevada
 Number: 8393.001

US GRAIN SIZE 8393.001 MIDDLE ROSEWOOD.GPJ WOOD RODGERS.GDT 1/13/09



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification (ft)	Classification	LL	PL	PI	Cc	Cu
● B-3 4.0	DARK GRAY CLAYEY SAND (SC)	35	21	14		

Specimen Identification (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-3 4.0	9.5	0.519	0.061		0.1	67.9	15.6	16.4

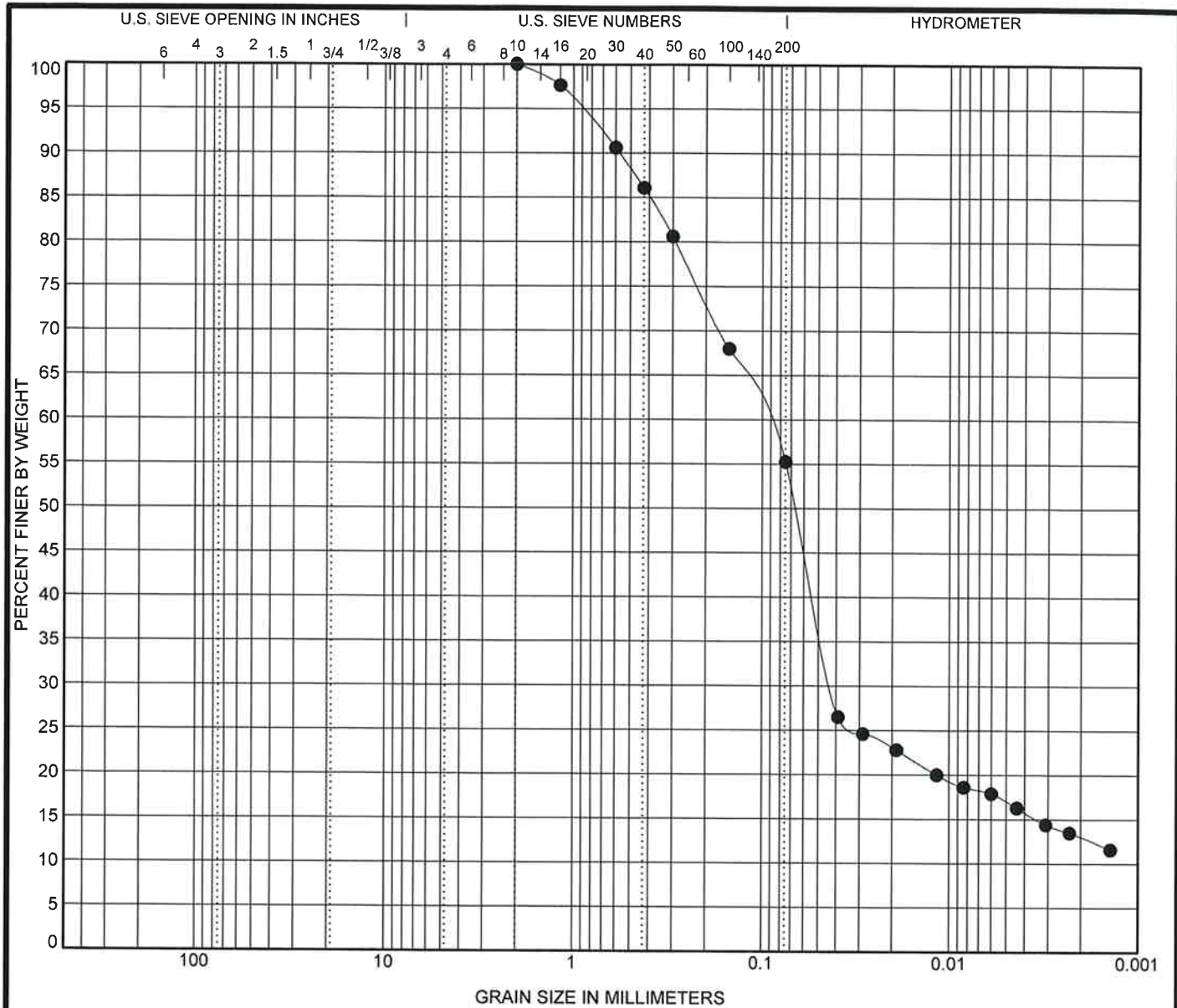


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GRAIN SIZE DISTRIBUTION

Project: Middle Rosewood Creek Restoration Area A
Location: Incline Village, Nevada
Number: 8393.001

U.S. GRAIN SIZE 8393.001 MIDDLE ROSEWOOD CRK. WOOD RODGERS.GDT 1/13/09



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification (ft)	Classification	LL	PL	PI	Cc	Cu
● B-3a 1.6	DARK GRAY SANDY SILTY CLAY (CH)	71	32	39		

Specimen Identification (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-3a 1.6	2	0.097	0.042		0.0	44.7	38.3	17.0

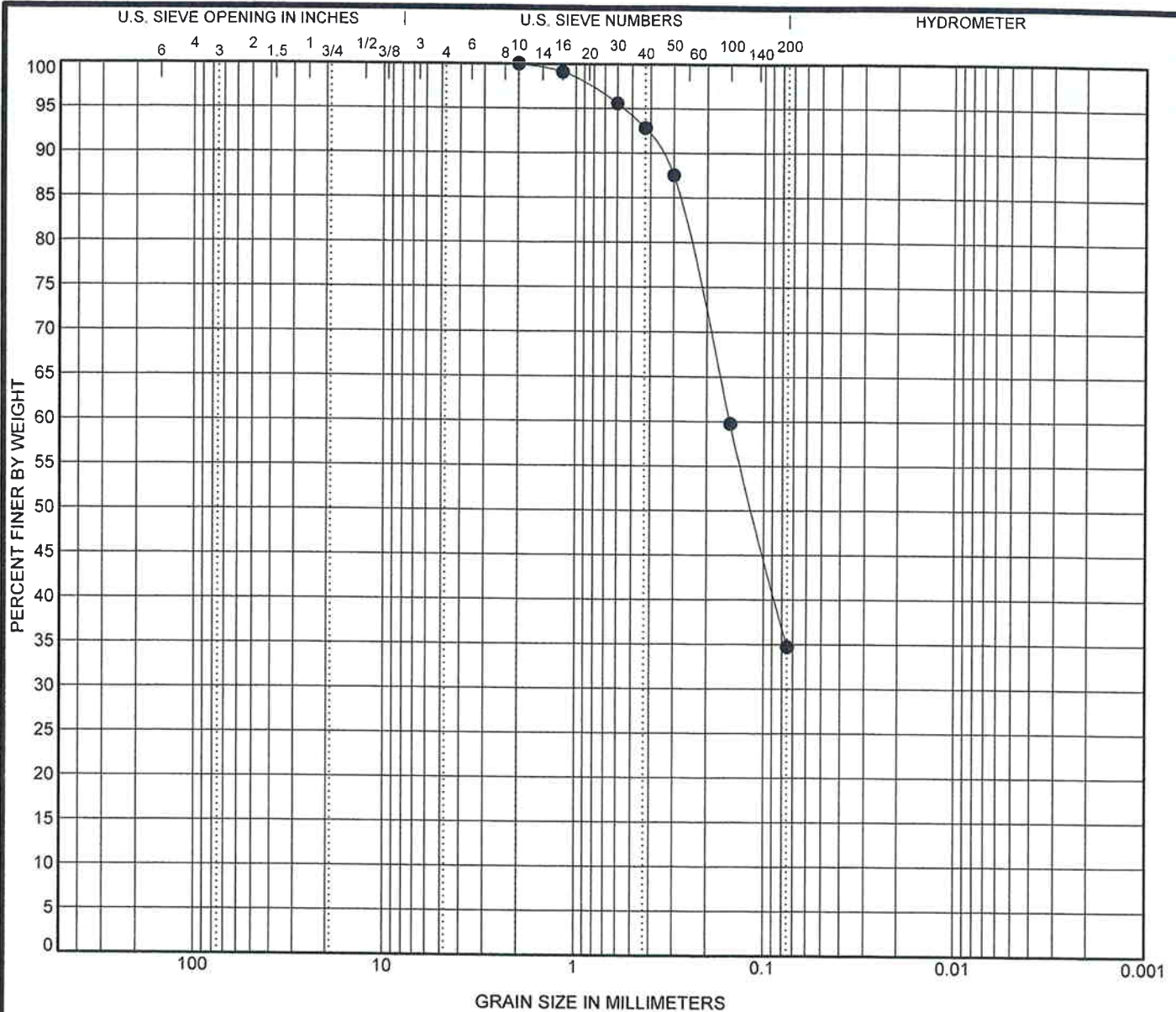
U.S. GRAIN SIZE 8393.001 MIDDLE ROSEWOOD.GPJ WOOD RODGERS.GDT 3/16/09



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GRAIN SIZE DISTRIBUTION

Project: Middle Rosewood Creek Restoration Area A
 Location: Incline Village, Nevada
 Number: 8393.001



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification (ft)	Classification	LL	PL	PI	Cc	Cu
● B-3b 2.6	DARK GRAY SILTY SAND (SM)					

Specimen Identification (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-3b 2.6	2	0.151			0.0	65.3	34.7	

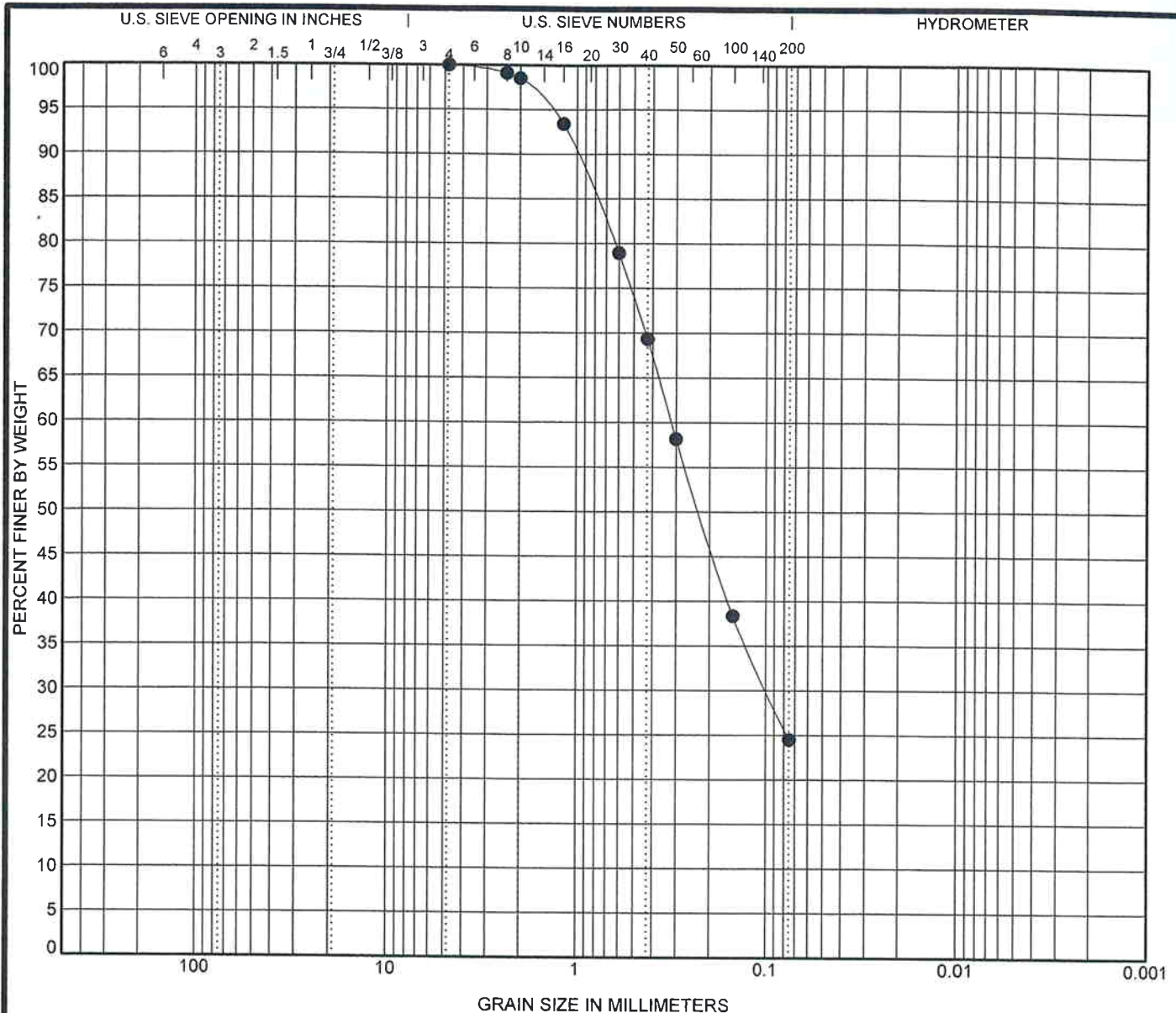
US GRAIN SIZE 8393.001 MIDDLE ROSEWOOD.GPJ.WOOD RODGERS.GDT 1/19/09



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GRAIN SIZE DISTRIBUTION

Project: Middle Rosewood Creek Restoration Area A
Location: Incline Village, Nevada
Number: 8393.001



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification (ft)	Classification	LL	PL	PI	Cc	Cu
● B-4 2.1	DARK REDDISH-BROWN CLAYEY SAND (SC)					

Specimen Identification (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-4 2.1	4.75	0.318	0.099		0.0	75.5	24.5	

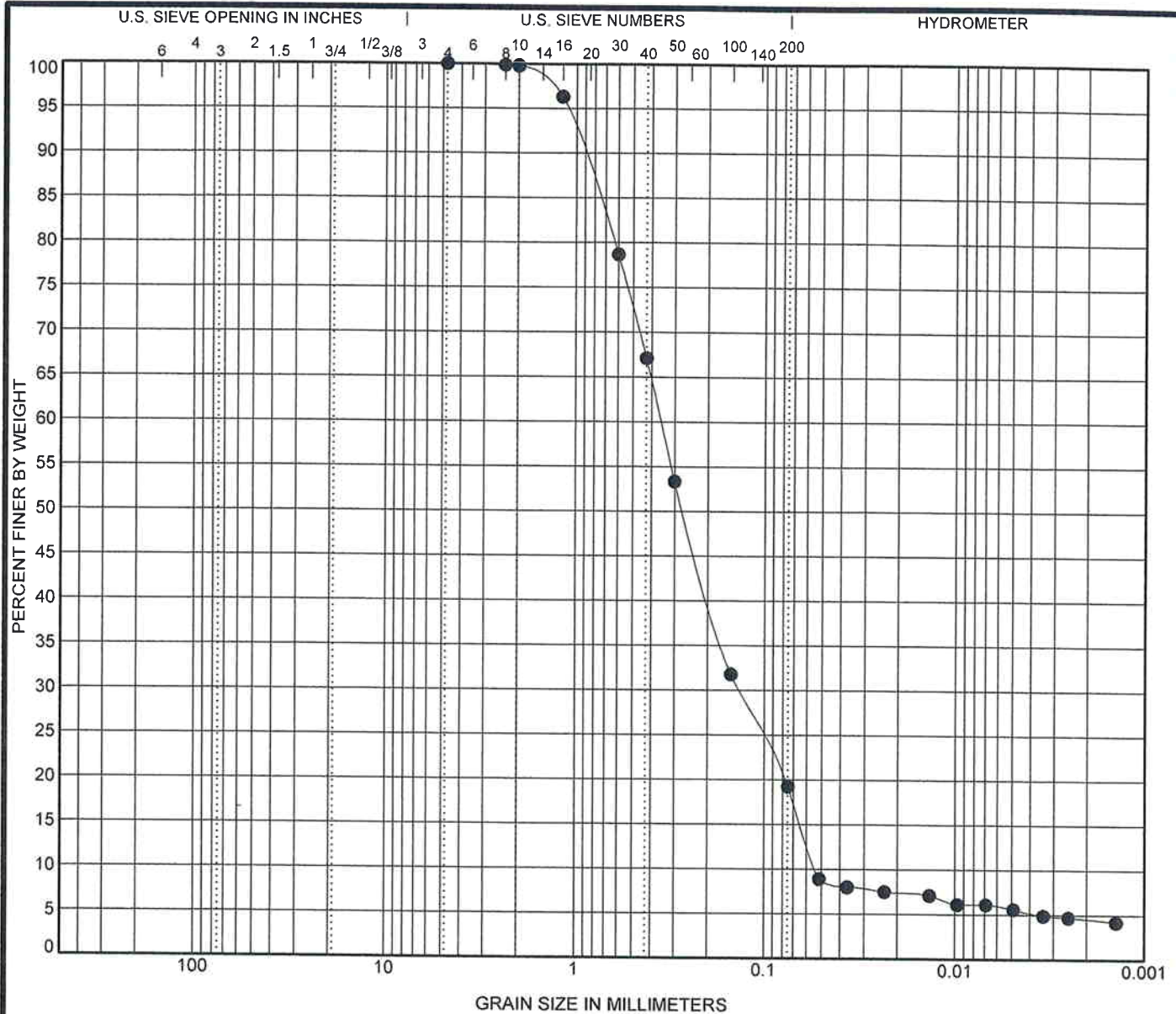


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GRAIN SIZE DISTRIBUTION

Project: Middle Rosewood Creek Restoration Area A
Location: Incline Village, Nevada
Number: 8393.001

US GRAIN SIZE 8393.001 MIDDLE ROSEWOOD CREEK RESTORATION AREA A WOOD RODGERS GDT 1/13/09



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification (ft)	Classification	LL	PL	PI	Cc	Cu
● B-4a 4.0	DARK REDDISH-BROWN SILTY SAND (SM)				0.97	6.65

Specimen Identification (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-4a 4.0	4.75	0.355	0.136	0.053	0.0	80.8	13.6	5.6

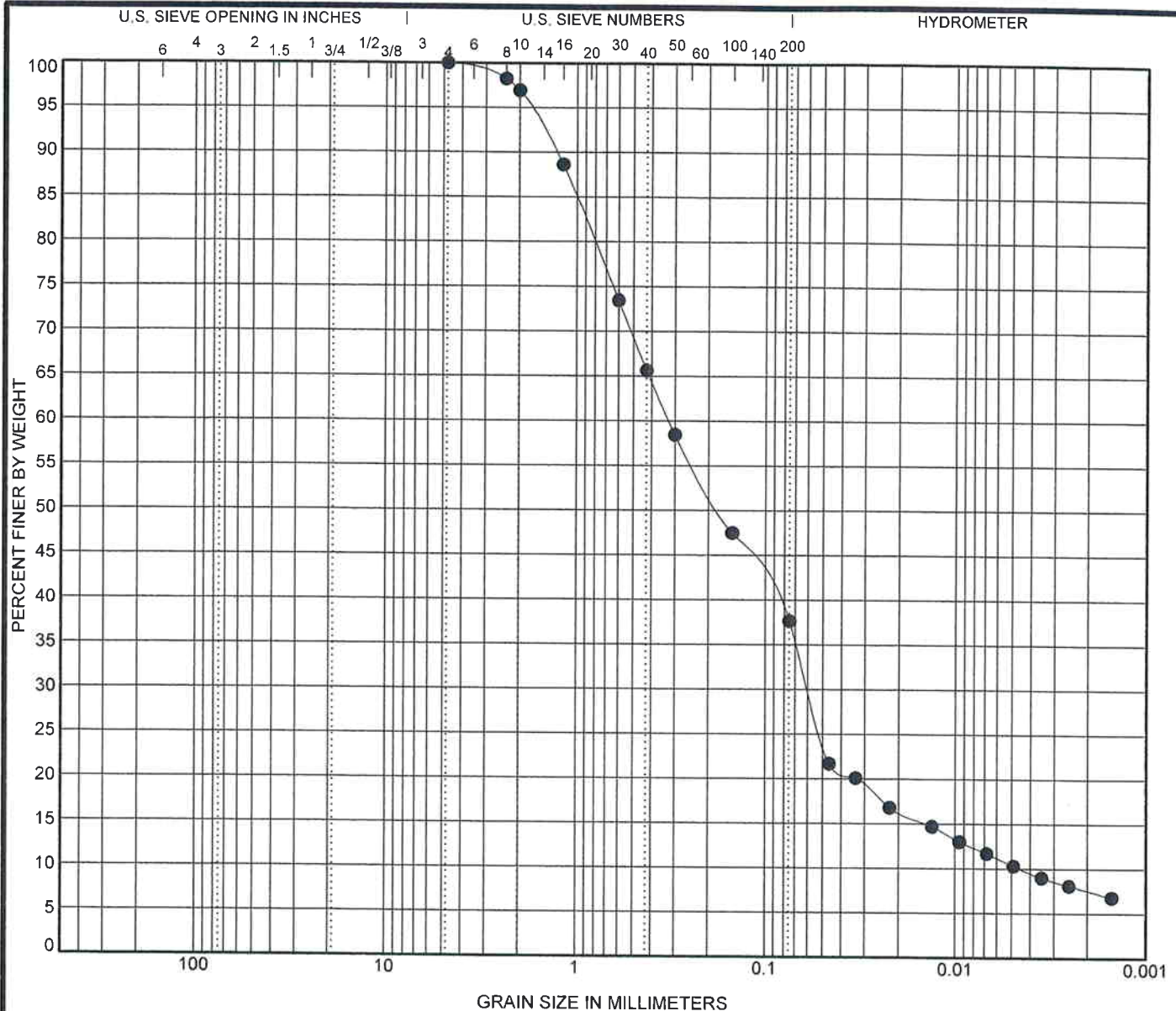
US GRAIN SIZE 8393.001 MIDDLE ROSEWOOD.GPJ WOOD RODGERS.GDT 1/13/09



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GRAIN SIZE DISTRIBUTION

Project: Middle Rosewood Creek Restoration Area A
 Location: Incline Village, Nevada
 Number: 8393.001



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification (ft)	Classification	LL	PL	PI	Cc	Cu
● B-5 3.6	DARK REDDISH-BROWN SILTY SAND (SM)				2.41	71.32

Specimen Identification (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-5 3.6	4.75	0.323	0.059	0.005	0.0	62.4	27.3	10.4

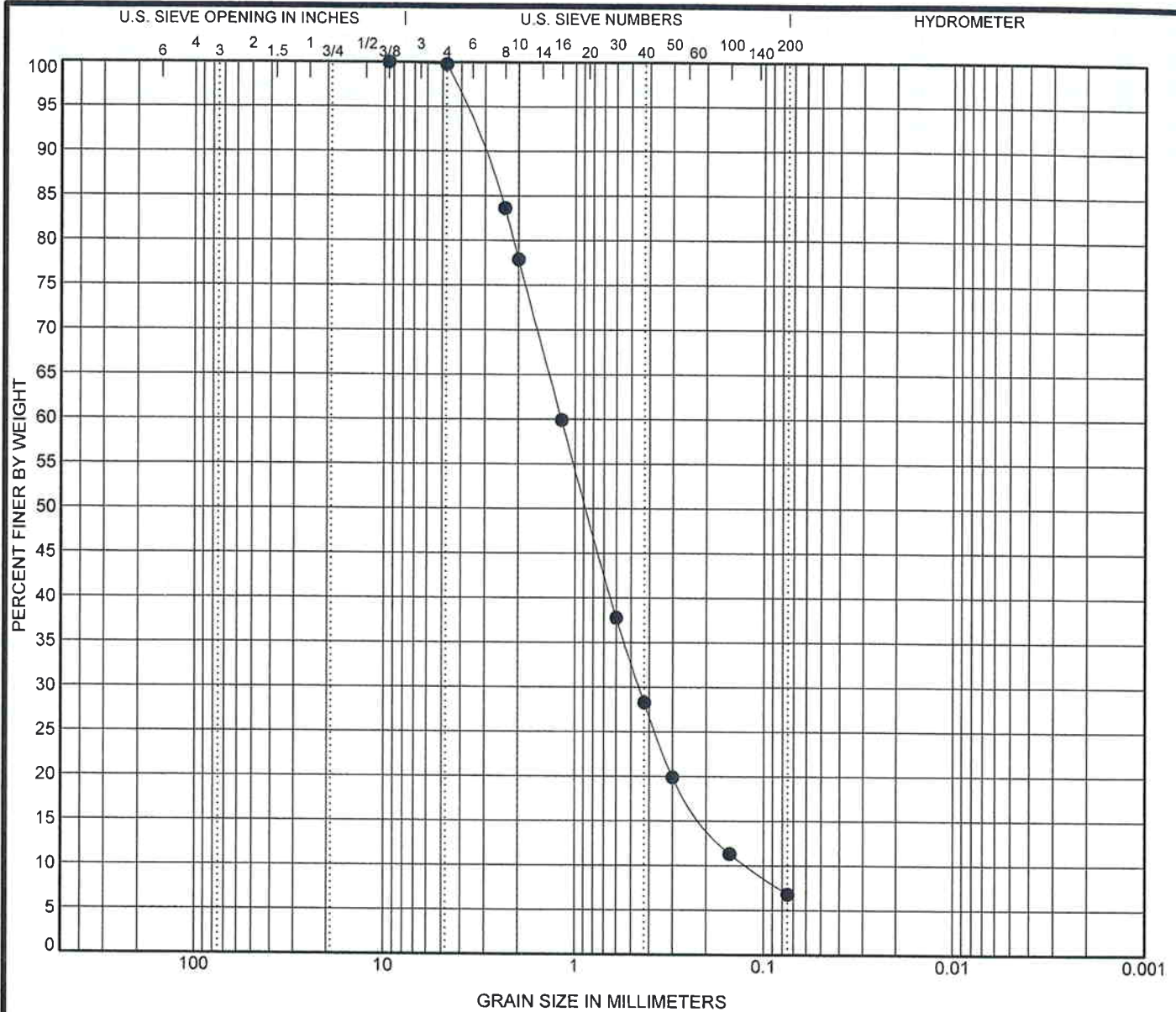


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GRAIN SIZE DISTRIBUTION

Project: Middle Rosewood Creek Restoration Area A
 Location: Incline Village, Nevada
 Number: 8393.001

U.S. GRAIN SIZE 8393.001 MIDDLE ROSEWOOD CREEK RESTORATION AREA A WOOD RODGERS GDT 1/13/09



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification (ft)	Classification	LL	PL	PI	Cc	Cu
● B-5a 2.6	REDDISH-BROWN SLIGHTLY SILTY SAND (SM-SW)				1.41	9.66

Specimen Identification (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-5a 2.6	9.5	1.183	0.452	0.122	0.2	93.0	6.8	

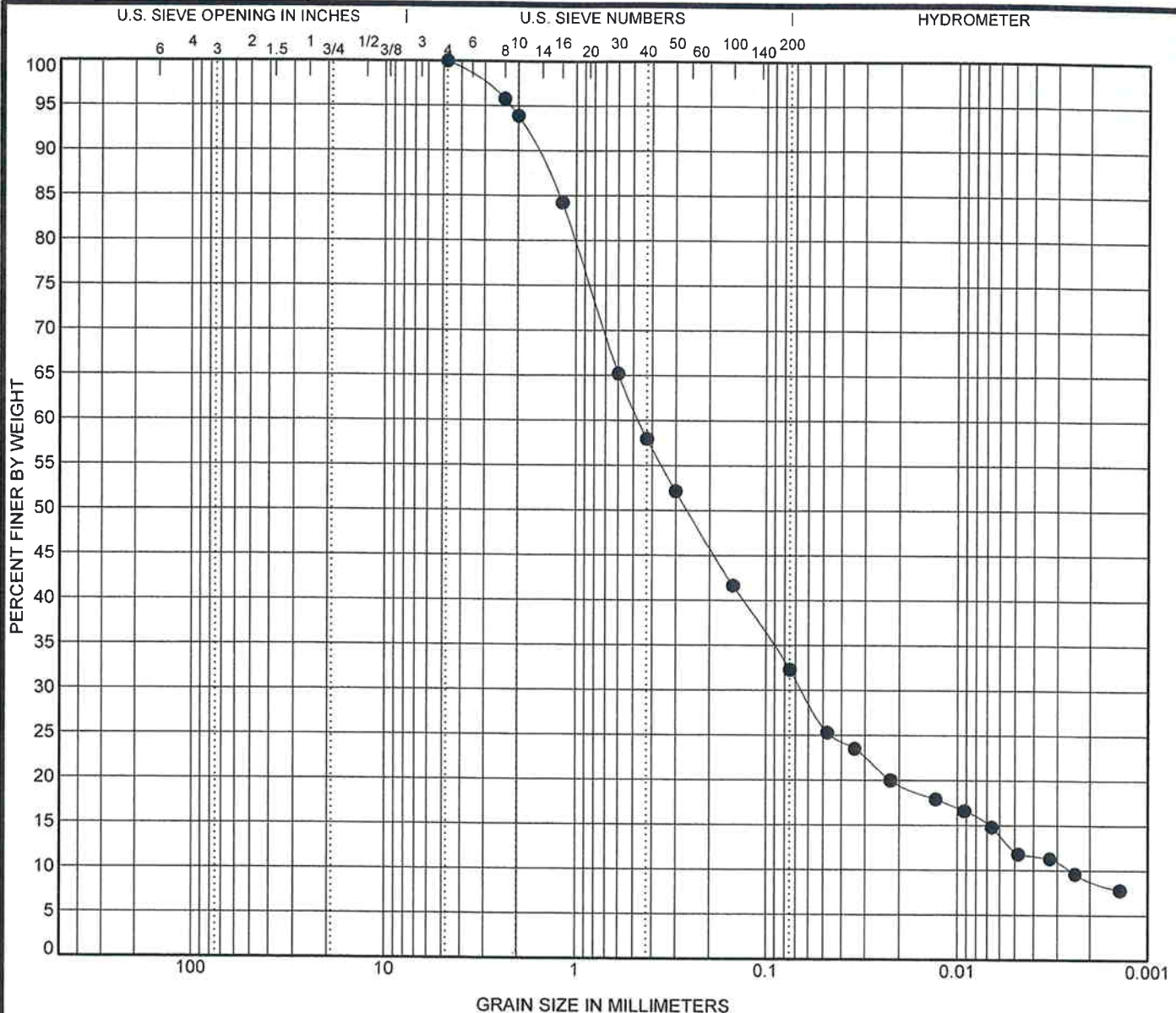


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GRAIN SIZE DISTRIBUTION

Project: Middle Rosewood Creek Restoration Area A
 Location: Incline Village, Nevada
 Number: 8393.001

U.S. GRAIN SIZE 8393.001 MIDDLE ROSEWOOD G.P.J. WOOD RODGERS.GDT 1/19/09



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

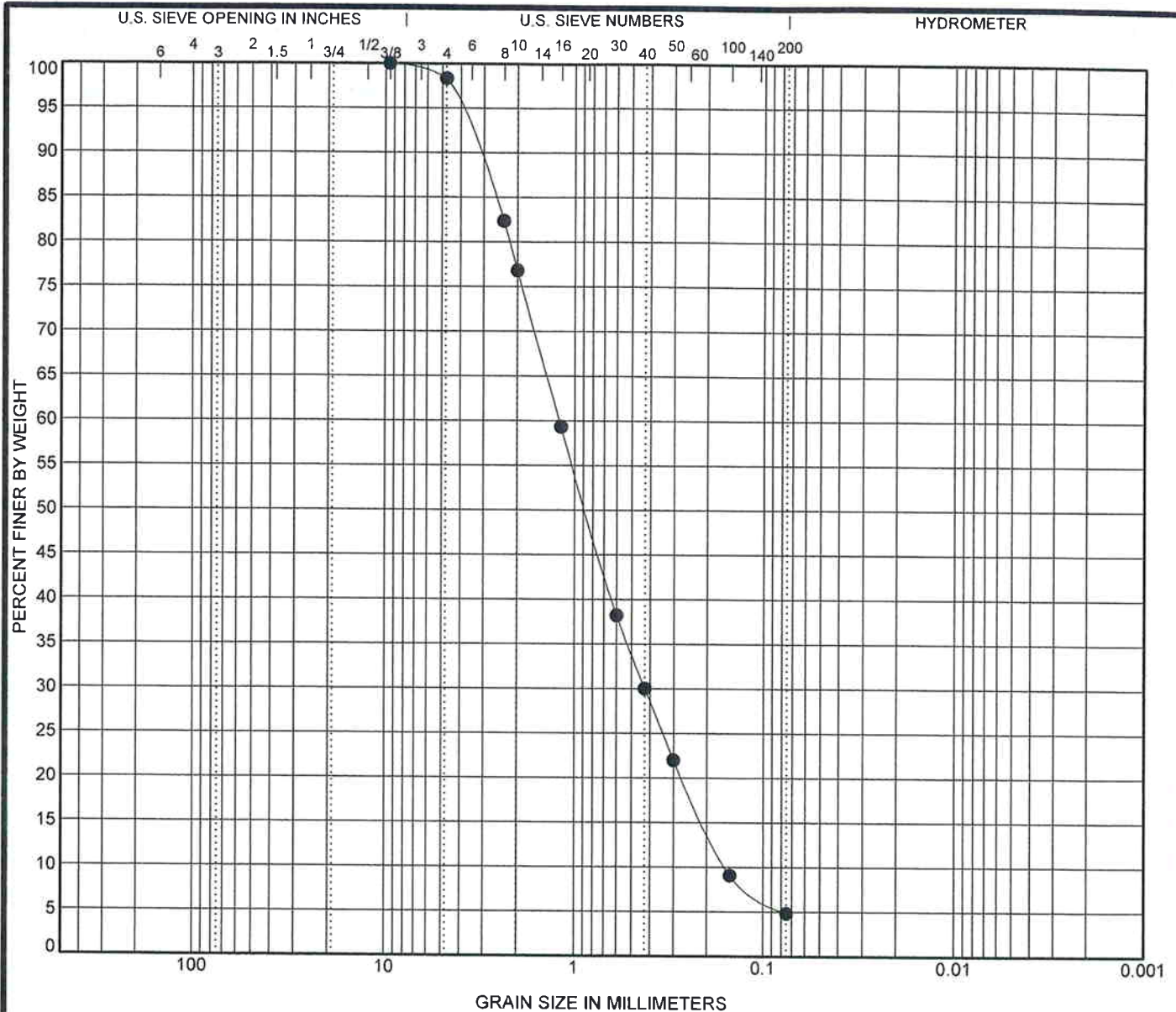
Specimen Identification (ft)	Classification	LL	PL	PI	Cc	Cu
● B-6 4.0	BLACK SILTY SAND (SM)				3.44	181.01

Specimen Identification (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-6 4.0	4.75	0.468	0.065	0.003	0.0	67.7	20.1	12.2

U.S. GRAIN SIZE 8393.001 MIDDLE ROSEWOOD.GPJ WOOD RODGERS.GDT 1/13/09



GRAIN SIZE DISTRIBUTION
 Project: Middle Rosewood Creek Restoration Area A
 Location: Incline Village, Nevada
 Number: 8393.001



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification (ft)	Classification	LL	PL	PI	Cc	Cu
● B-6a 2.3	YELLOW-RED SLIGHTLY SILTY SAND (SP-SM)				0.95	7.64

Specimen Identification (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-6a 2.3	9.5	1.204	0.425	0.158	1.6	93.5	4.8	

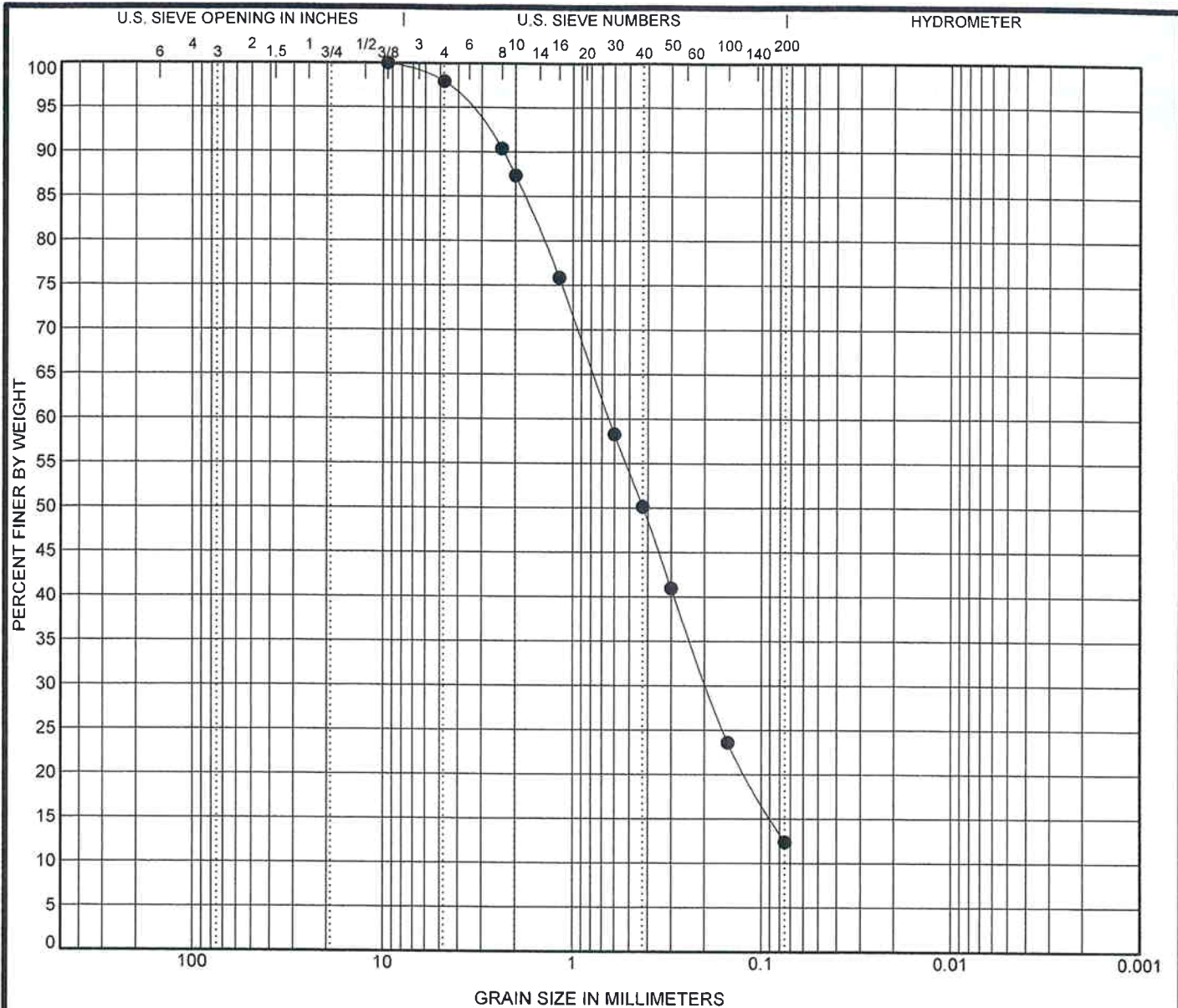


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GRAIN SIZE DISTRIBUTION

Project: Middle Rosewood Creek Restoration Area A
 Location: Incline Village, Nevada
 Number: 8393.001

US GRAIN SIZE 8393.001 MIDDLE ROSEWOOD CREEK WOOD RODGERS.GDT 1/13/09



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification (ft)	Classification	LL	PL	PI	Cc	Cu
● B-7 2.1	DARK REDDISH-BROWN SILTY SAND (SM)				0.90	9.91

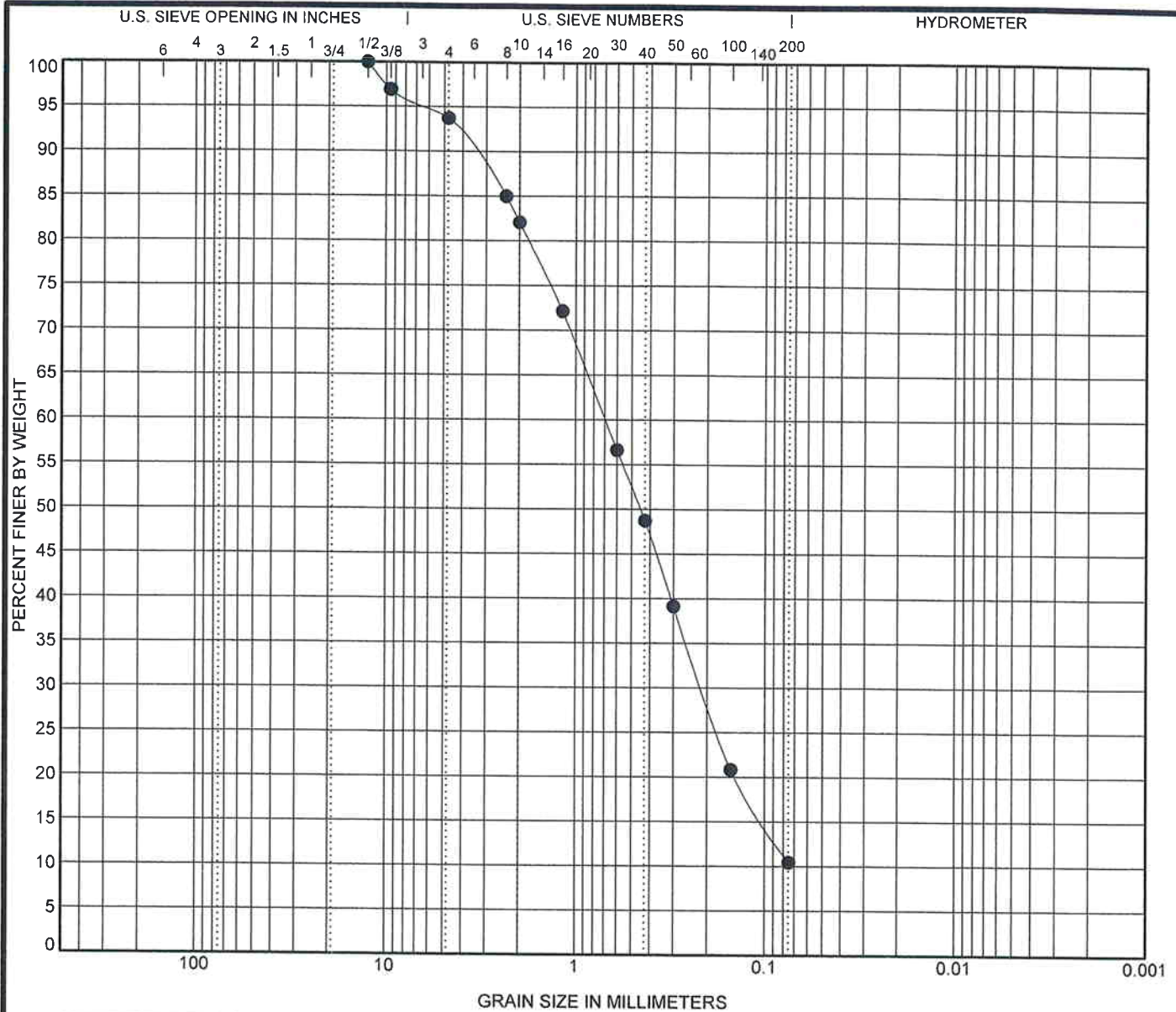
Specimen Identification (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-7 2.1	9.5	0.641	0.194		2.0	85.6	12.4	



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GRAIN SIZE DISTRIBUTION
Project: Middle Rosewood Creek Restoration Area A
Location: Incline Village, Nevada
Number: 8393.001

U.S. GRAIN SIZE 8393.001 MIDDLE ROSEWOOD CREEK WOOD RODGERS.GDT 11/13/09



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification (ft)	Classification	LL	PL	PI	Cc	Cu
● B-7a 3.0	DARK GRAY SLIGHTLY SILT SAND (SW-SM)				0.89	9.55

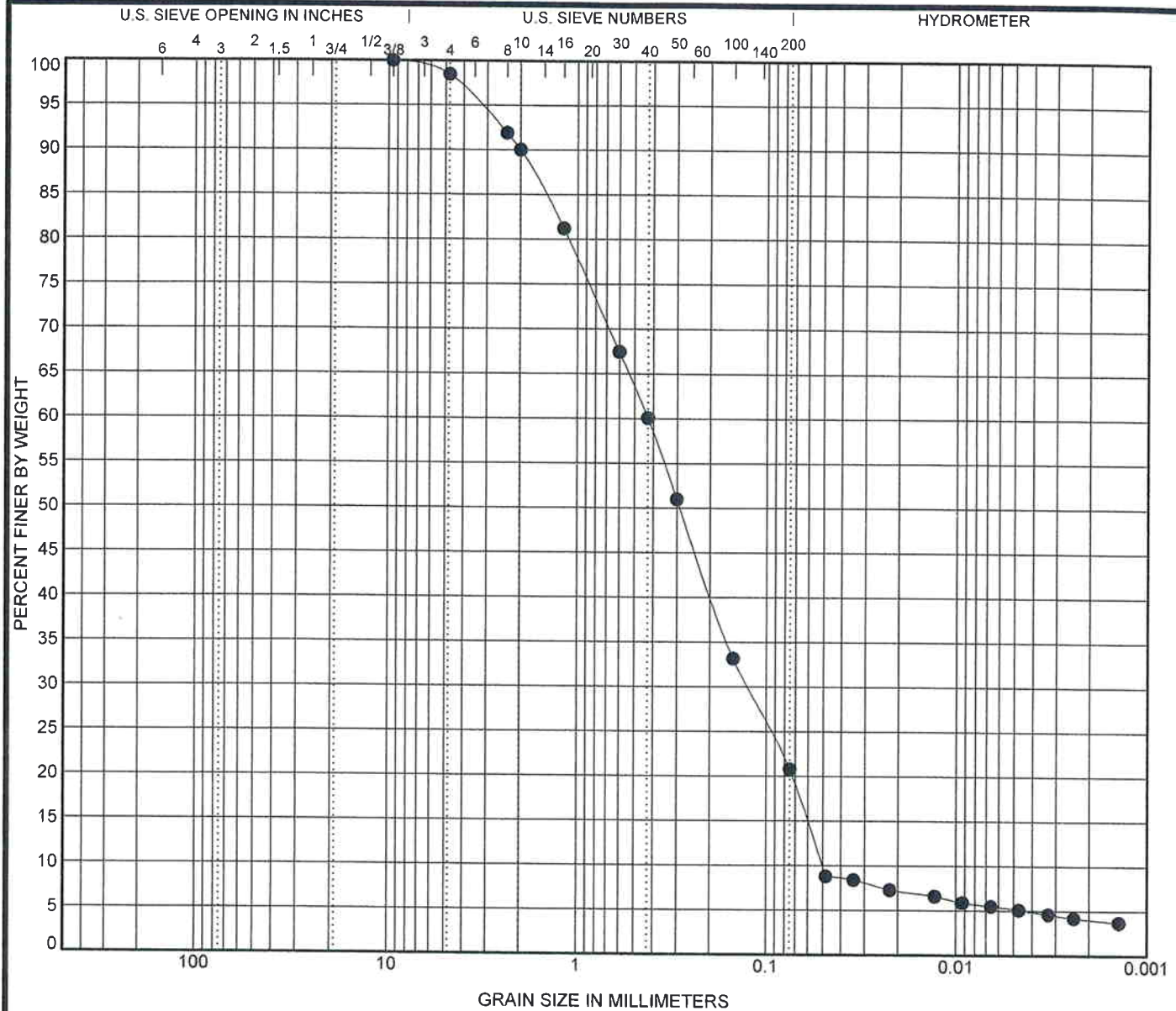
Specimen Identification (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-7a 3.0	12.5	0.695	0.212		6.3	83.3	10.4	

US GRAIN SIZE 8393.001 MIDDLE ROSEWOOD.GPJ WOOD RODGERS.GDT 1/19/09



GRAIN SIZE DISTRIBUTION

Project: Middle Rosewood Creek Restoration Area A
 Location: Incline Village, Nevada
 Number: 8393.001



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

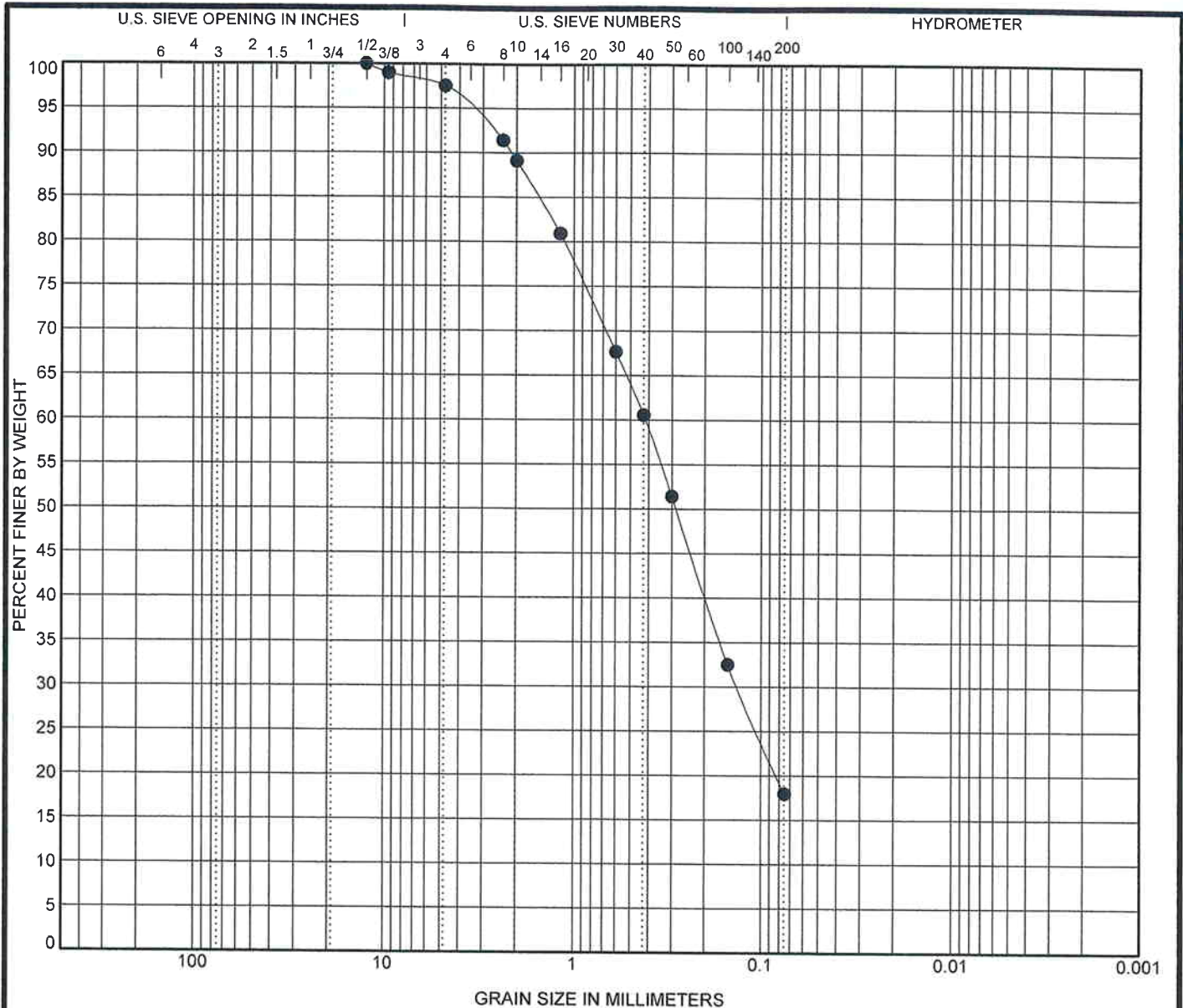
Specimen Identification (ft)	Classification	LL	PL	PI	Cc	Cu
● B-8 2.6	DARK REDDISH-BROWN SILTY SAND (SM)				0.74	8.41

Specimen Identification (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-8 2.6	9.5	0.424	0.126	0.05	1.5	77.7	15.6	5.2

U.S. GRAIN SIZE 8393.001 MIDDLE ROSEWOOD.GPJ WOOD RODGERS.GDT 1/13/09



GRAIN SIZE DISTRIBUTION
 Project: Middle Rosewood Creek Restoration Area A
 Location: Incline Village, Nevada
 Number: 8393.001



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification (ft)	Classification	LL	PL	PI	Cc	Cu
● B-8a 2.3	DARK REDDISH-BROWN SILTY SAND (SM)					

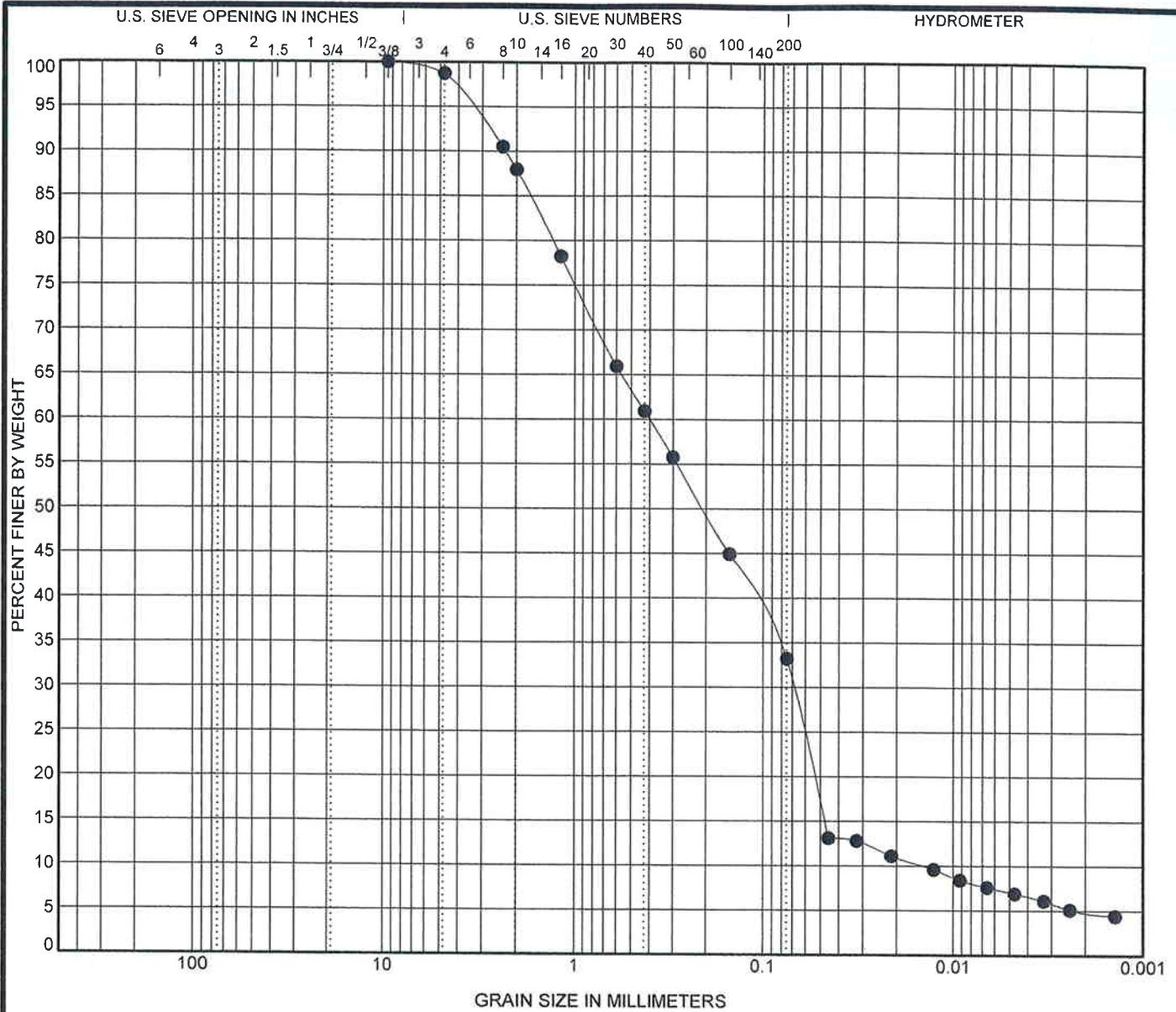
Specimen Identification (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-8a 2.3	12.5	0.416	0.133		2.5	79.6	18.0	



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GRAIN SIZE DISTRIBUTION

Project: Middle Rosewood Creek Restoration Area A
 Location: Incline Village, Nevada
 Number: 8393.001



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

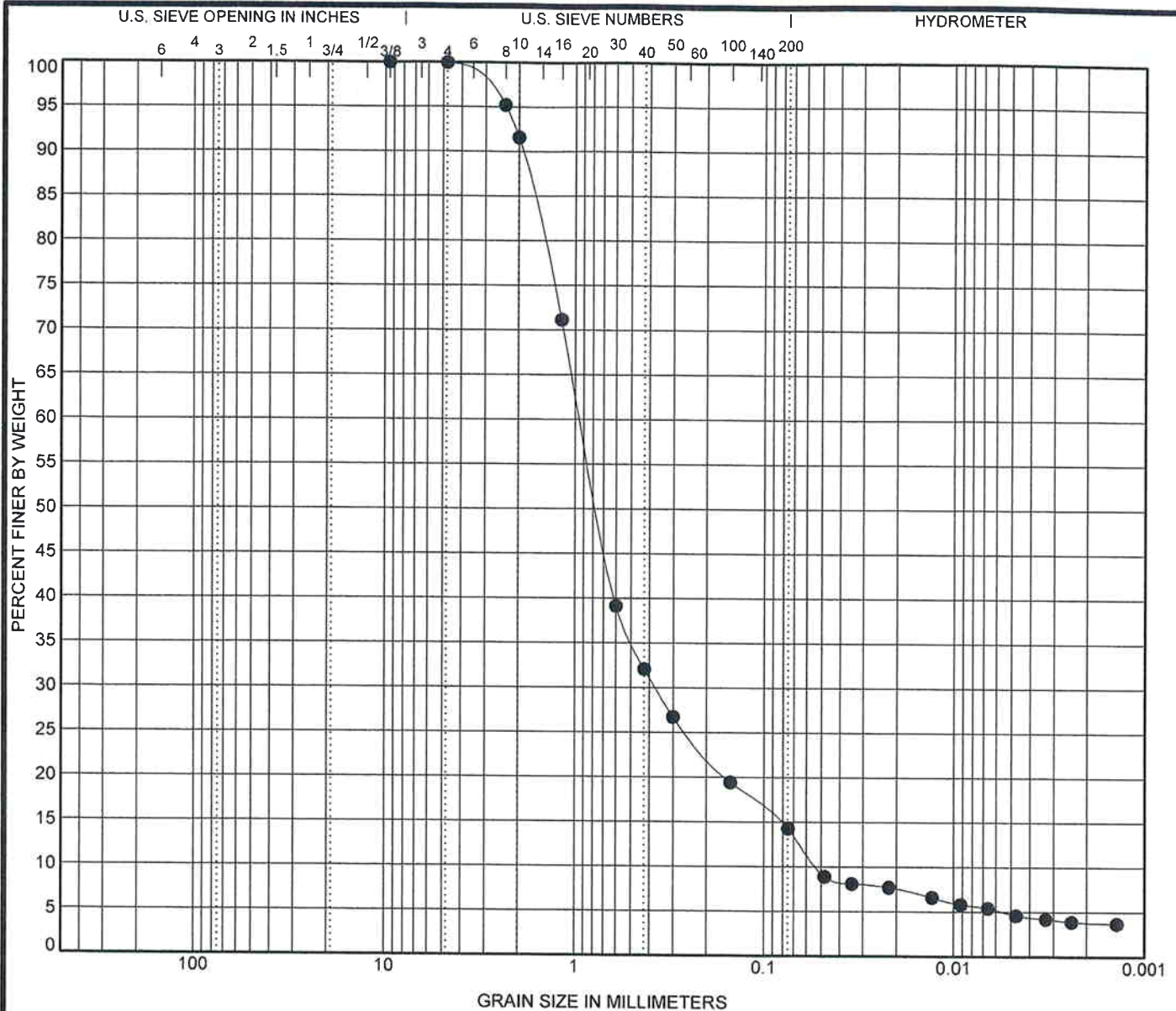
Specimen Identification (ft)	Classification	LL	PL	PI	Cc	Cu
● B-10 0.9	REDDISH-BROWN SILTY SAND (SM)	40	30	10	0.82	27.39

Specimen Identification (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-10 0.9	9.5	0.399	0.069	0.015	1.3	65.5	26.2	7.0

U.S. GRAIN SIZE 8393.001 MIDDLE ROSEWOOD.GPJ WOOD RODGERS.GDT 1/13/09



GRAIN SIZE DISTRIBUTION
 Project: Middle Rosewood Creek Restoration Area A
 Location: Incline Village, Nevada
 Number: 8393.001



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification (ft)	Classification	LL	PL	PI	Cc	Cu
● B-10 2.4	REDDISH-BROWN SILTY SAND (SM)	51	39	12	2.81	17.73

Specimen Identification (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-10 2.4	9.5	0.933	0.371	0.053	0.0	85.7	9.5	4.7

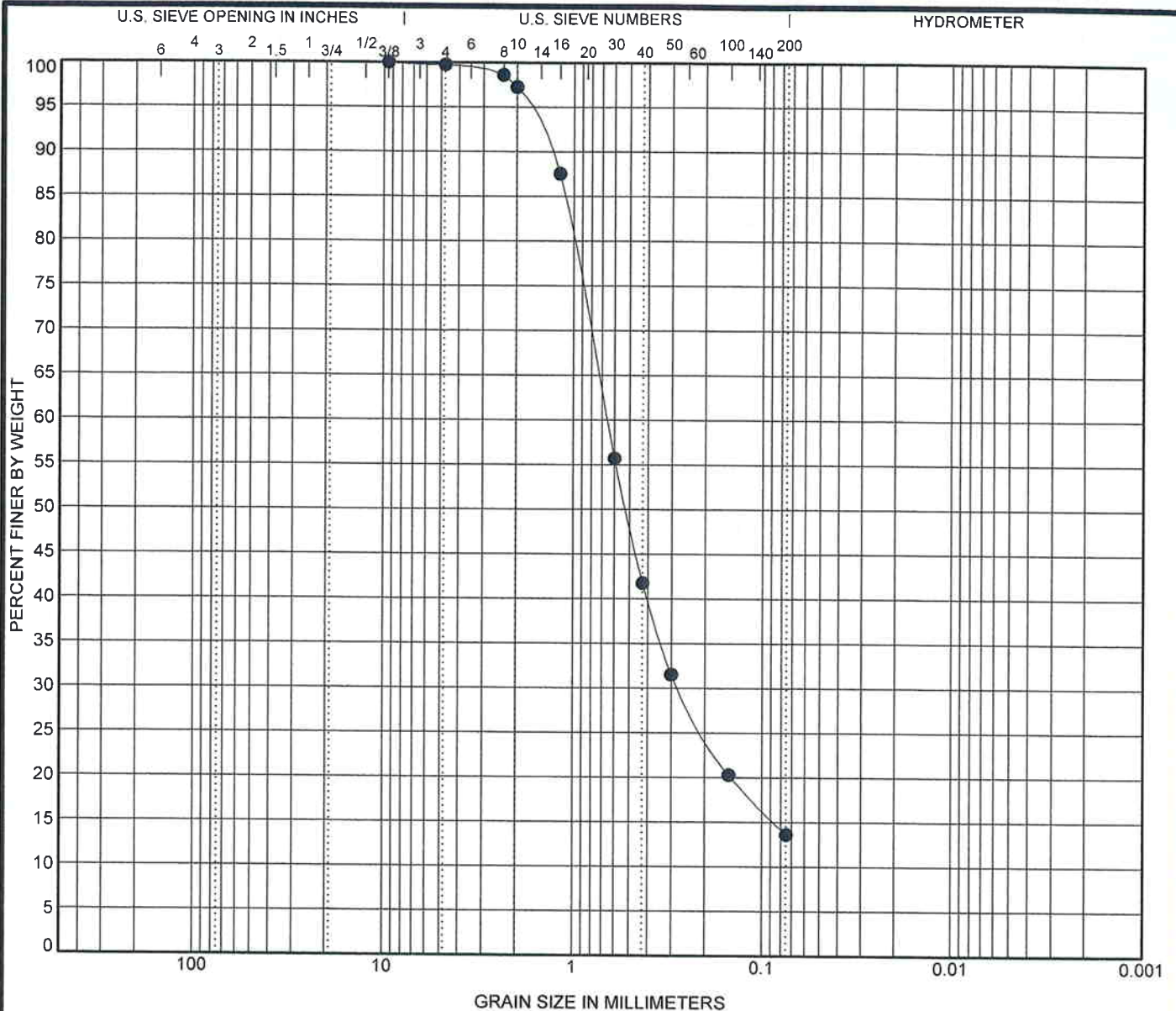


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GRAIN SIZE DISTRIBUTION

Project: Middle Rosewood Creek Restoration Area A
 Location: Incline Village, Nevada
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U.S. GRAIN SIZE 8393.001 MIDDLE ROSEWOOD GP.J. WOOD RODGERS.GDT 1/26/09



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification (ft)	Classification	LL	PL	PI	Cc	Cu
● B-10a 3.1	DARK REDDISH-GRAY SILTY SAND (SM)					

Specimen Identification (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-10a 3.1	9.5	0.657	0.273		0.3	86.1	13.6	

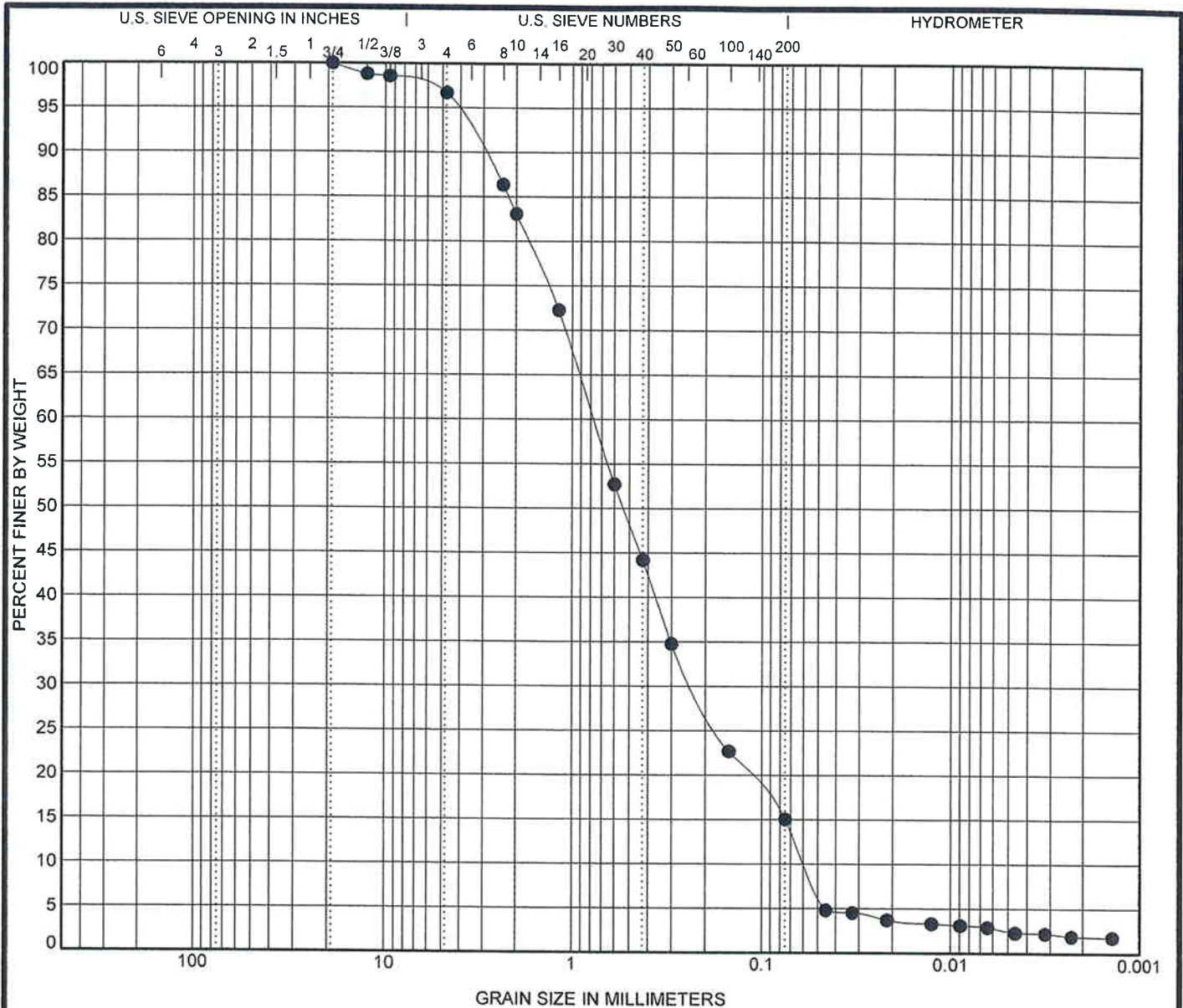


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GRAIN SIZE DISTRIBUTION

Project: Middle Rosewood Creek Restoration Area A
 Location: Incline Village, Nevada
 Number: 8393.001

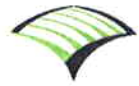
US GRAIN SIZE 8393.001 MIDDLE ROSEWOOD.GPJ WOOD RODGERS.GDT 1/19/09



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification (ft)	Classification	LL	PL	PI	Cc	Cu
● B-11 2.4	REDDISH-BROWN SILTY SAND (SM)				1.15	13.21

Specimen Identification (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-11 2.4	19	0.772	0.228	0.058	3.3	81.7	12.6	2.5

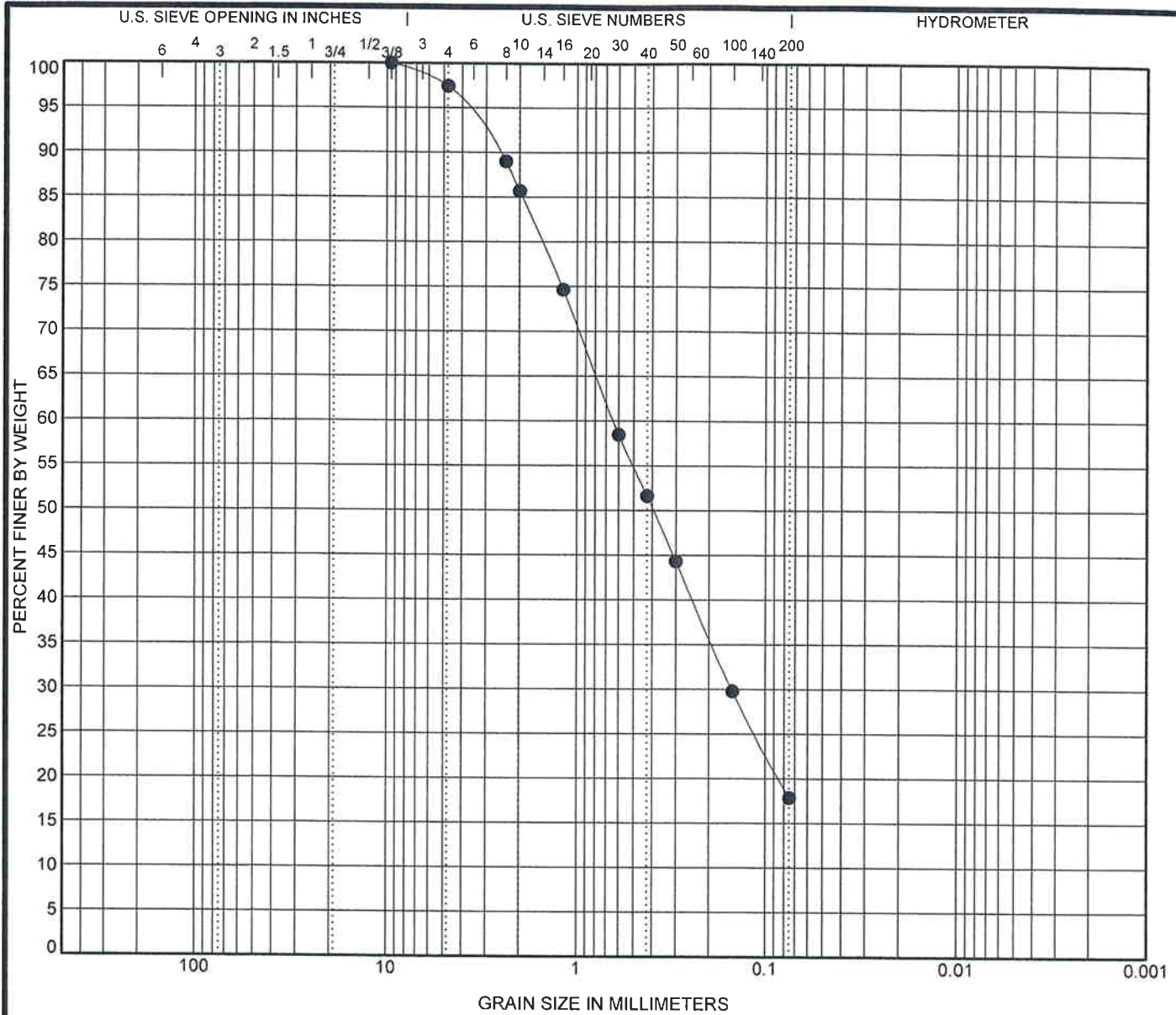


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GRAIN SIZE DISTRIBUTION

Project: Middle Rosewood Creek Restoration Area A
Location: Incline Village, Nevada
Number: 8393.001

U.S. GRAIN SIZE 8393.001 MIDDLE ROSEWOOD CREEK WOOD RODGERS.GDT 1/13/09



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

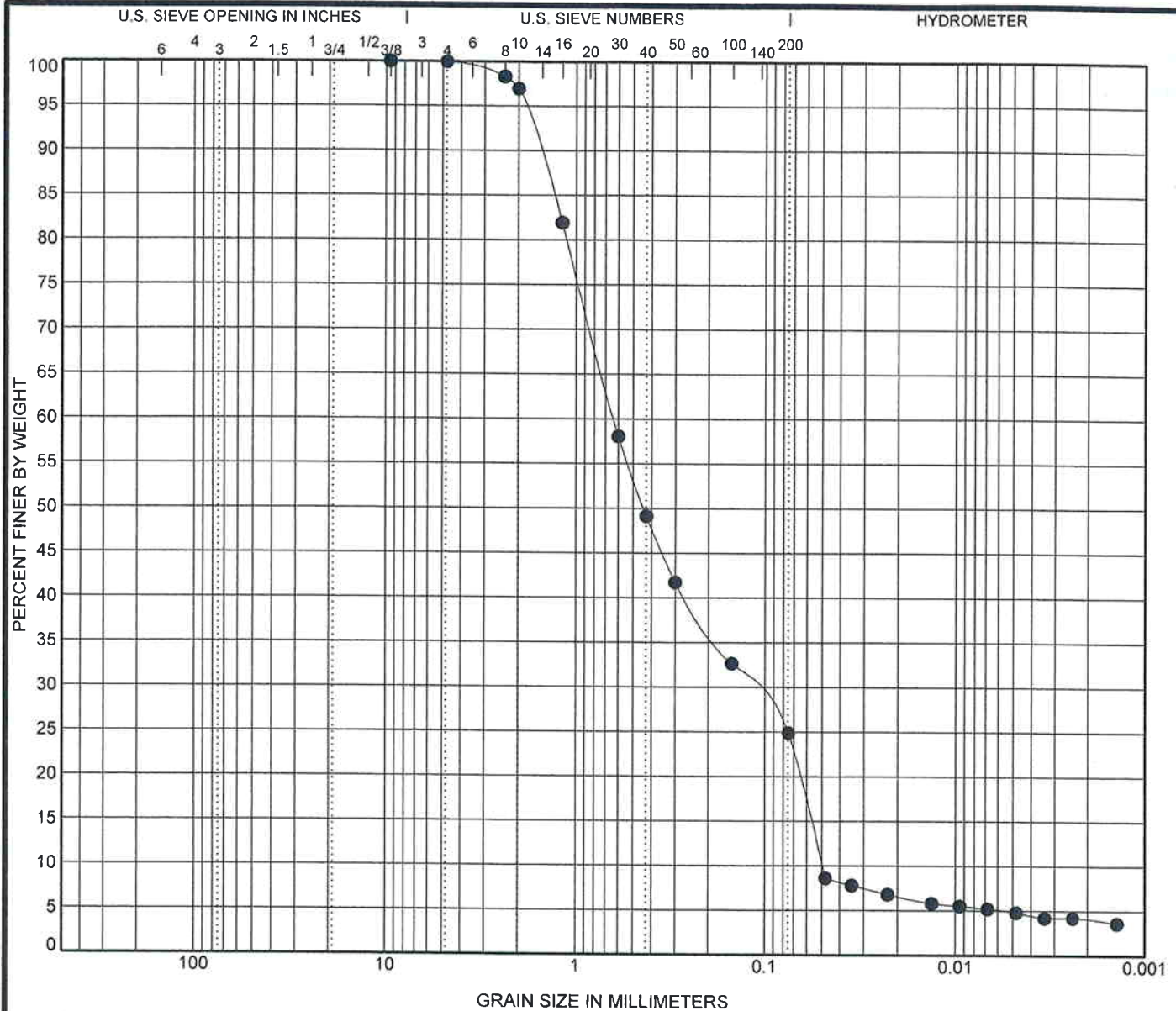
Specimen Identification (ft)	Classification	LL	PL	PI	Cc	Cu
● B-11a 3.8	STRONG BROWN SILTY SAND (SM)					

Specimen Identification (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-11a 3.8	9.5	0.64	0.152		2.6	79.6	17.9	



GRAIN SIZE DISTRIBUTION
 Project: Middle Rosewood Creek Restoration Area A
 Location: Incline Village, Nevada
 Number: 8393.001

U.S. GRAIN SIZE 8393.001 MIDDLE ROSEWOOD.GPJ WOOD RODGERS.GDT 1/19/09



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification (ft)	Classification	LL	PL	PI	Cc	Cu
● B-12 2.3	REDDISH-BROWN SILTY SAND (SM)				0.44	12.76

Specimen Identification (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-12 2.3	9.5	0.634	0.118	0.05	0.0	75.1	20.0	4.8

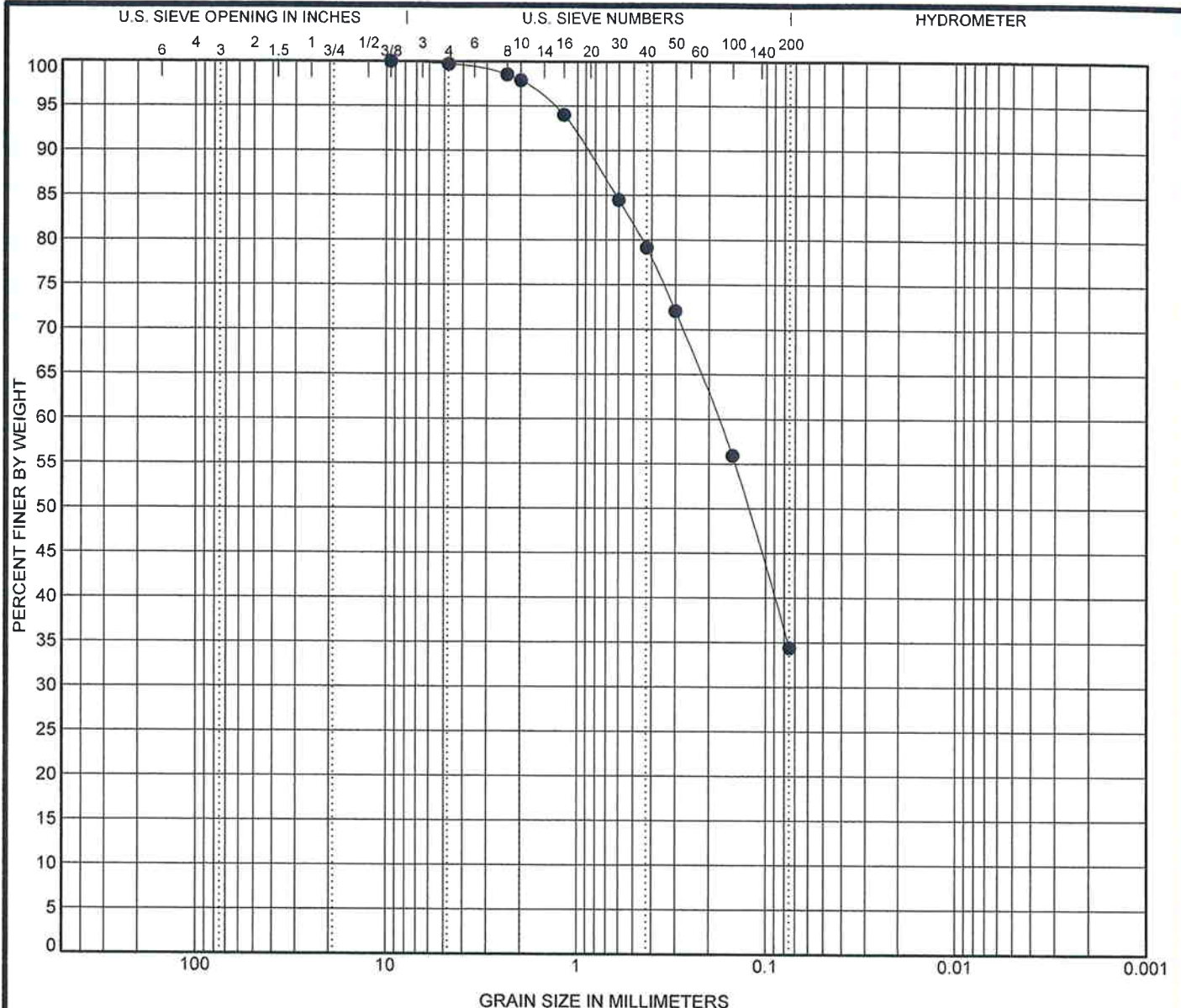


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GRAIN SIZE DISTRIBUTION

Project: Middle Rosewood Creek Restoration Area A
Location: Incline Village, Nevada
Number: 8393.001

US GRAIN SIZE 8393.001 MIDDLE ROSEWOOD.GPJ WOOD RODGERS.GDT 1/13/09



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification (ft)	Classification	LL	PL	PI	Cc	Cu
● B-12a 3.3	DARK REDDISH-BROWN CLAYEY SAND (SC)					

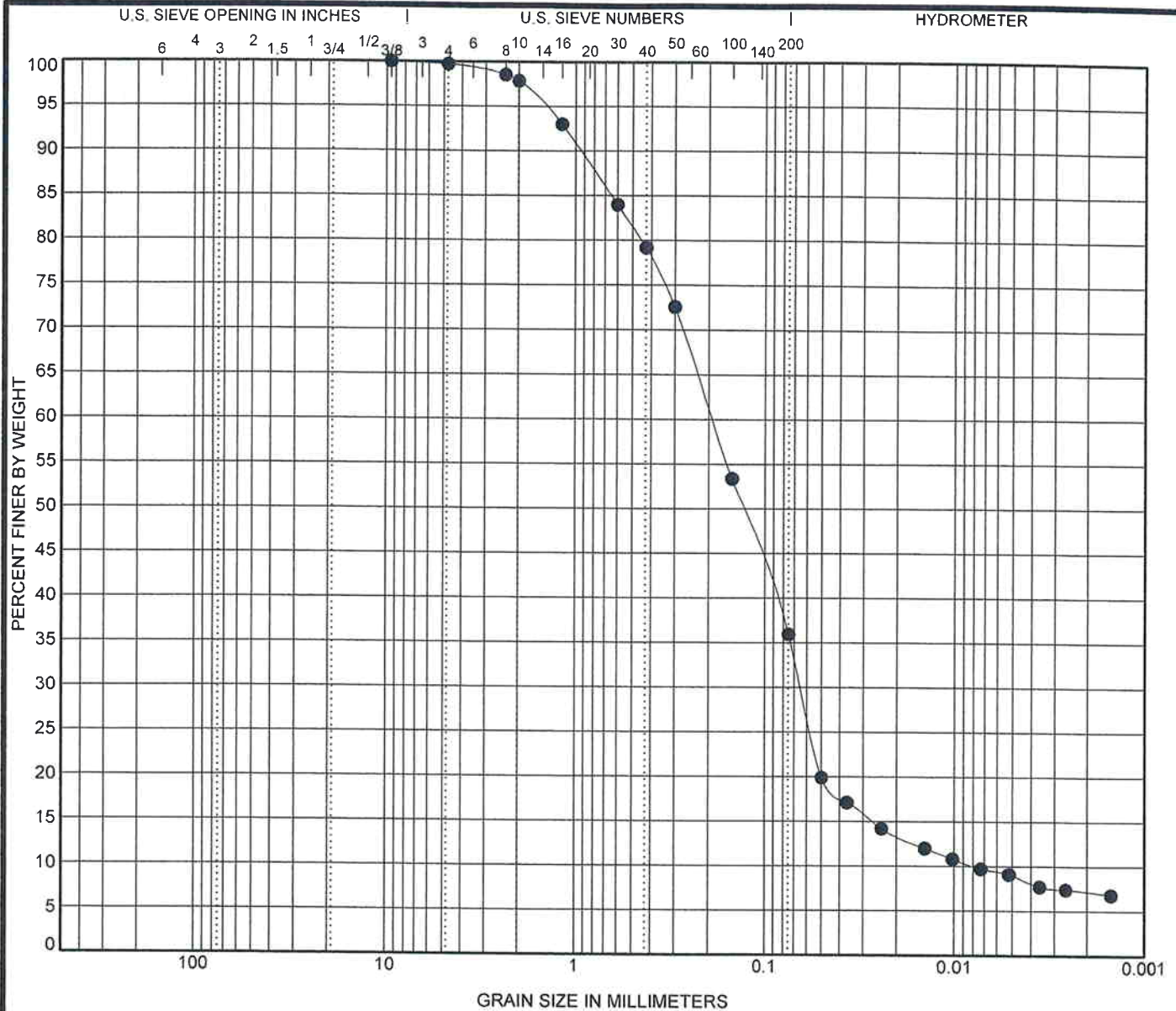
Specimen Identification (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-12a 3.3	9.5	0.179			0.3	65.3	34.4	

US GRAIN SIZE 8393.001 MIDDLE ROSEWOOD.GPJ WOOD RODGERS.GDT 1/19/09



GRAIN SIZE DISTRIBUTION

Project: Middle Rosewood Creek Restoration Area A
 Location: Incline Village, Nevada
 Number: 8393.001



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification (ft)	Classification	LL	PL	PI	Cc	Cu
● B-13 3.0	DARK REDDISH-BROWN SILTY SAND (SM)				2.73	23.83

Specimen Identification (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-13 3.0	9.5	0.191	0.064	0.008	0.3	63.8	27.0	9.0



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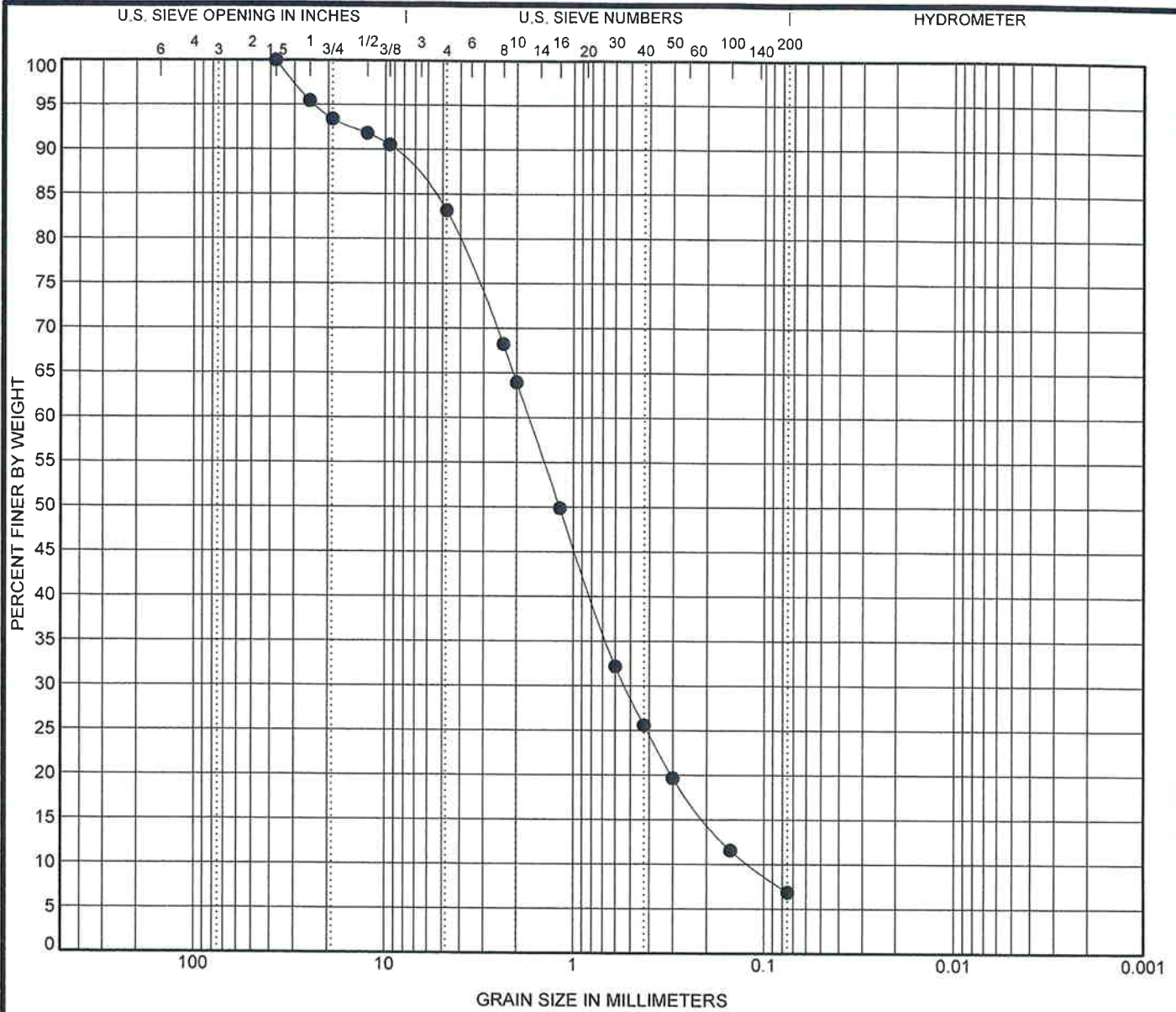
GRAIN SIZE DISTRIBUTION

Project: Middle Rosewood Creek Restoration Area A

Location: Incline Village, Nevada

Number: 8393.001

U.S. GRAIN SIZE 8393.001 MIDDLE ROSEWOOD.GPJ WOOD RODGERS.GDT 1/13/09



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification (ft)	Classification	LL	PL	PI	Cc	Cu
● B-13a 4.2	DK REDDISH-BRN SILTY SAND W/GRAVEL (SW-SM)				1.40	14.47

Specimen Identification (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-13a 4.2	37.5	1.724	0.536	0.119	16.8	76.3	6.9	

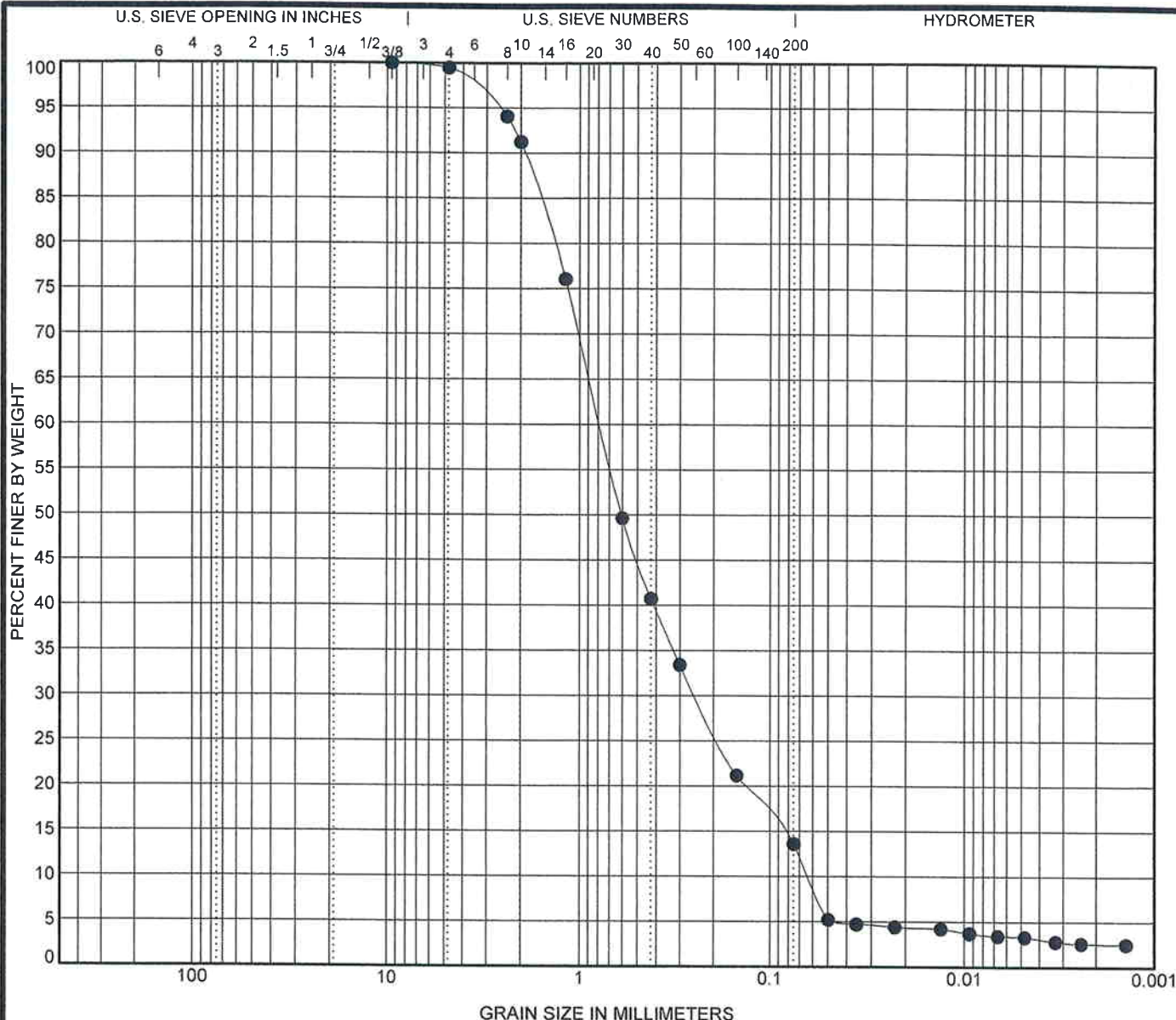


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GRAIN SIZE DISTRIBUTION

Project: Middle Rosewood Creek Restoration Area A
 Location: Incline Village, Nevada
 Number: 8393.001

U.S. GRAIN SIZE 8393.001 MIDDLE ROSEWOOD GPJ WOOD RODGERS GDT 1/19/09



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

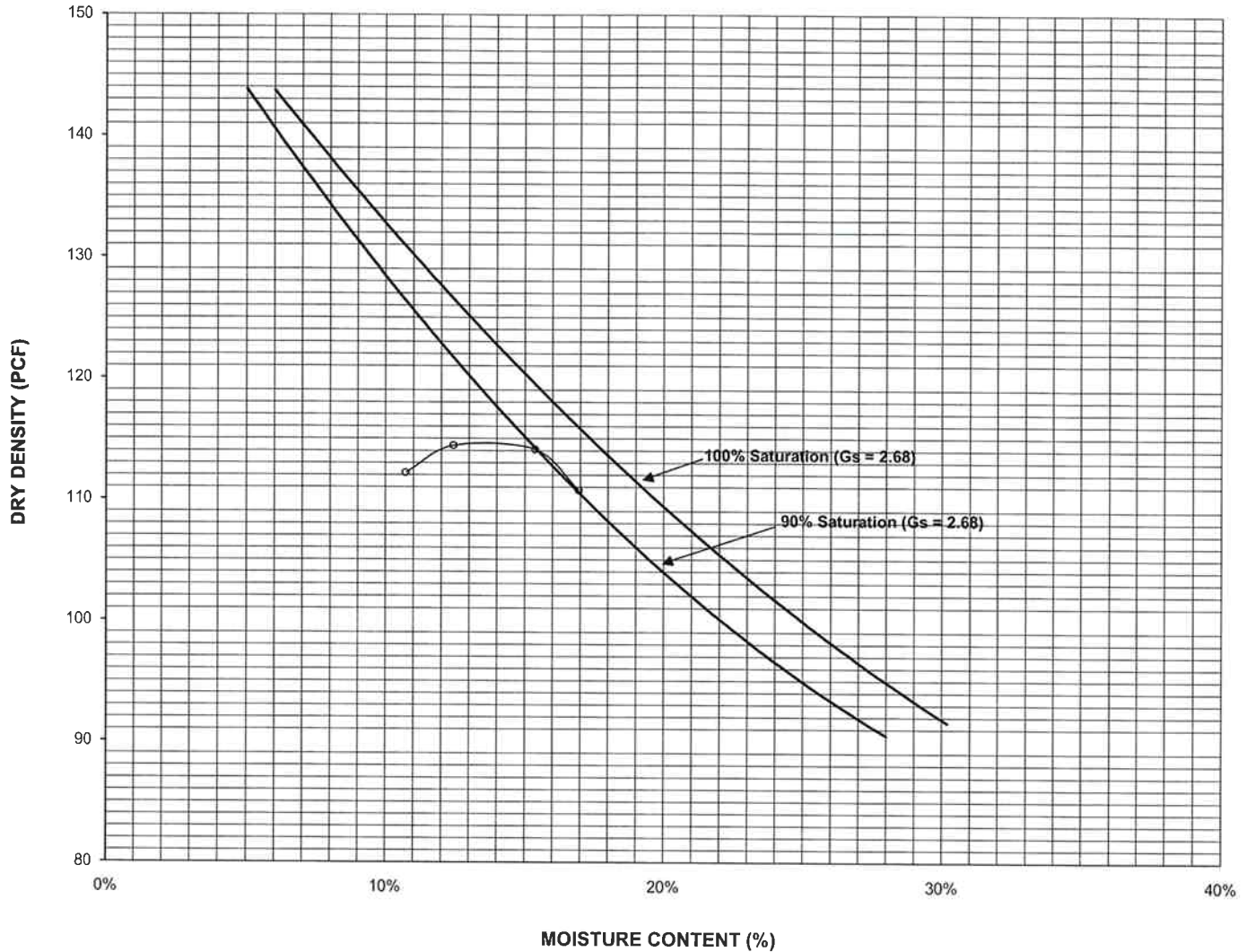
Specimen Identification (ft)	Classification	LL	PL	PI	Cc	Cu
● B-14 2.1	REDDISH-BROWN SILTY SAND (SM)				1.24	12.44

Specimen Identification (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-14 2.1	9.5	0.782	0.248	0.063	0.5	85.9	10.3	3.3



GRAIN SIZE DISTRIBUTION
 Project: Middle Rosewood Creek Restoration Area A
 Location: Incline Village, Nevada
 Number: 8393.001

US GRAIN SIZE 8393.001 MIDDLE ROSEWOOD CREEK WOOD RODGERS.GDT 1/13/09



D 1557-02 Symbol	Sample Source	Classification (Description)	Maximum Dry Density (pcf)	Optimum Moisture Content (percent)
°	Site B-4 at 0.0 to 1.5-Feet	Silty Sand (SM) (Visual Classification Only)	115.0	13.5

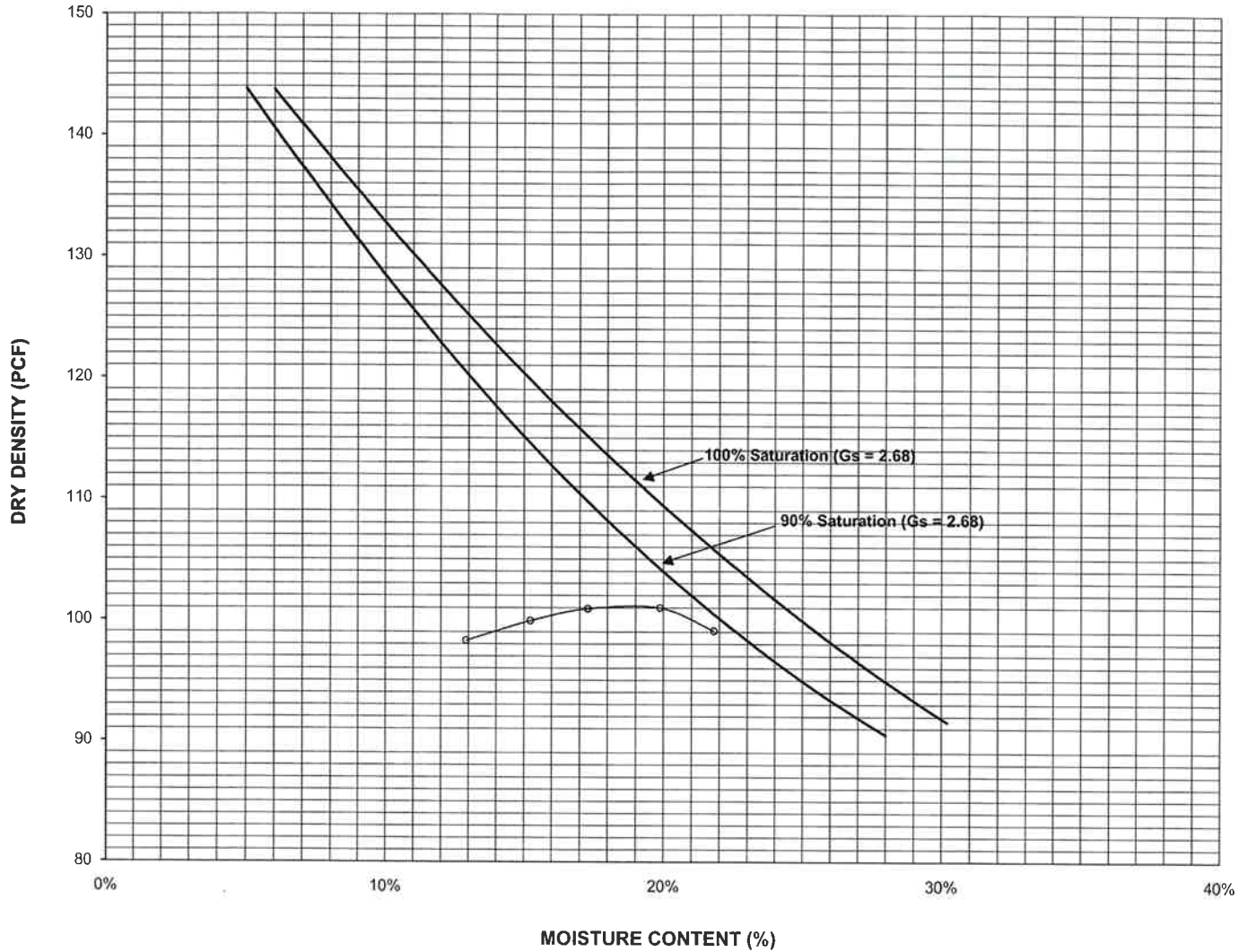
TEST PROCEDURE: <u>D 1557-02</u>	MOLD (inches): <u>4</u>	COMPACTION EQUIPMENT	POINT NO.	MOISTURE	DRY DENSITY (pcf)
METHOD: <u>A</u>	HAMMER (lbs.): <u>10</u>	MANUAL: _____	1	<u>10.7%</u>	<u>112.2</u>
LAYERS: <u>5</u>	FALL (inches): <u>18</u>	MECHANICAL: <u>X</u>	2	<u>12.4%</u>	<u>114.4</u>
BLOWS: <u>25</u>			3	<u>15.4%</u>	<u>114.1</u>
			4	<u>16.9%</u>	<u>110.7</u>
			5	_____	_____
PERCENT PASSING SIEVE SIZE	SPECIFIC GRAVITY	SAMPLE INFORMATION			
3/4" _____	ASSUMED: _____	SAMPLE BULK NO: <u>900</u>			
3/8" _____	ASTM C 127: _____	DATE SAMPLED: <u>12/17/08</u>	SAMPLE PREPARATION METHOD:		
No. 4 <u>97</u>	ABSORPTION (%): _____	DATE RECEIVED/TESTED: <u>12/18/08</u>	DRY: _____ WET: <u>X</u>		

WOOD RODGERS, INC.
8995 Double Diamond Parkway, Building C3
Reno, Nevada 89521
Phone (775) 823-4068 Fax (775) 823-4066



COMPACTION CURVE TEST REPORT
Valley Mountain Consulting
Middle Rosewood Creek Restoration Area A
Incline Village, Nevada

DRAWN BSC	PROJECT NUMBER 8393.001	APPROVED <i>Abel</i>	DATE 12/23/08	REVISED	DATE
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D 1557-02 Symbol	Sample Source	Classification (Description)	Maximum Dry Density (pcf)	Optimum Moisture Content (percent)
°	Site B-12 at 0.0 - 1.5-Feet	Silty Sand (SM) with Organics (Visual Classification Only)	101.0	18.5

TEST PROCEDURE: <u>D 1557-02</u>	MOLD (inches): <u>4</u>	COMPACTION EQUIPMENT	POINT NO.	MOISTURE	DRY DENSITY (pcf)
METHOD: <u>A</u>	HAMMER (lbs.): <u>10</u>	MANUAL: _____	1	<u>12.9%</u>	<u>98.3</u>
LAYERS: <u>5</u>	FALL (inches): <u>18</u>	MECHANICAL: <u>X</u>	2	<u>15.2%</u>	<u>99.9</u>
BLOWS: <u>25</u>			3	<u>17.3%</u>	<u>100.9</u>
			4	<u>19.9%</u>	<u>101.0</u>
			5	<u>21.8%</u>	<u>99.1</u>
PERCENT PASSING SIEVE SIZE	SPECIFIC GRAVITY	SAMPLE INFORMATION			
3/4" _____	ASSUMED: _____	SAMPLE BULK NO: <u>900</u>			
3/8" _____	ASTM C 127: _____	DATE SAMPLED: <u>12/17/08</u>			
No. 4 <u>100</u>	ABSORPTION (%): _____	DATE RECEIVED/TESTED: <u>12/18/08</u>	SAMPLE PREPARATION METHOD:		
			DRY: _____ WET: <u>X</u>		

WOOD RODGERS, INC.
 8995 Double Diamond Parkway, Building C3
 Reno, Nevada 89521
 Phone (775) 823-4068 Fax (775) 823-4066



COMPACTION CURVE TEST REPORT
 Valley Mountain Consulting
 Middle Rosewood Creek Restoration Area A
 Incline Village, Nevada

DRAWN BSC	PROJECT NUMBER 8393.001	APPROVED <i>[Signature]</i>	DATE 12/23/08	REVISED	DATE
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HYDRAULIC CONDUCTIVITY TEST REPORT

SAMPLE DATA

Sample Identification: B-4

Sample Depth, ft.: 0-1.5'

Visual Description: N/A

Sample Type: Remold

Remarks: Sample remolded between 92% and 93% relative compaction at optimum moisture content

TEST RESULTS

Permeability, cm/sec.: 5.05E-06

Average Hydraulic Gradient: 5.8

Effective Cell Pressure, psi: 10

TEST SAMPLE DATA

Before Test

Specimen Height, cm: 7.57

Specimen Diameter, cm: 6.17

Dry Unit Weight, pcf: 106.7

Moisture Content, % 13.6

Specific Gravity, Assumed

Percent Saturation:

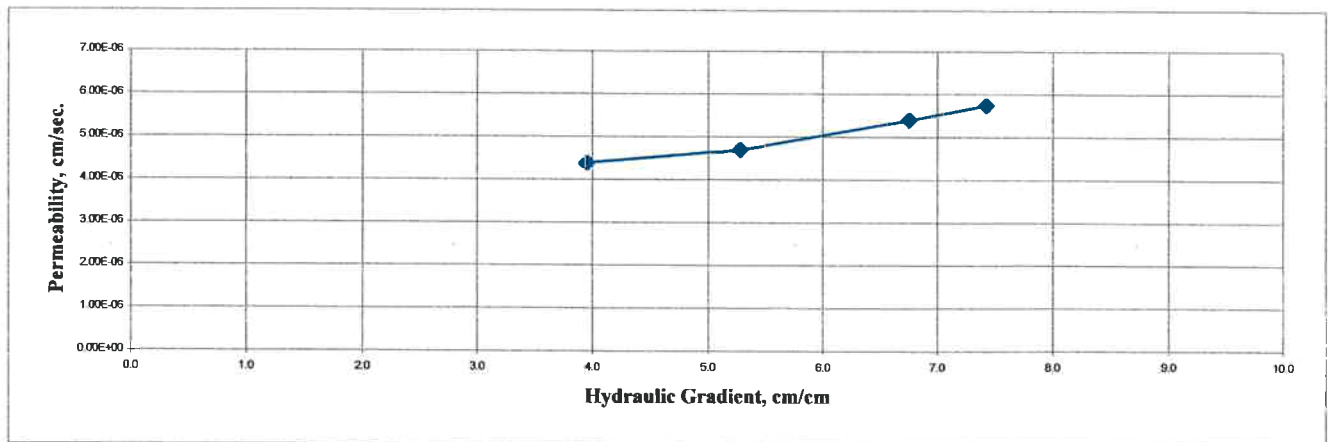
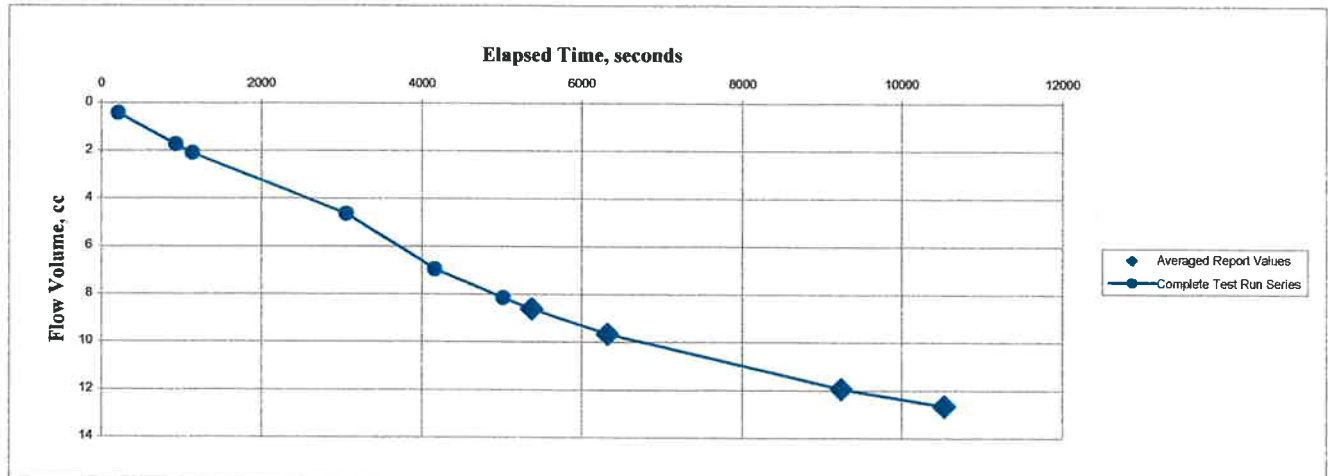
After Test

Specimen Height, cm: 7.57

Specimen Diameter, cm: 6.17

Dry Unit Weight, pcf: 105.8

Moisture Content, % 19.4



Test Method: ASTM D5084 Method C

PROJECT NUMBER: 09-104

January 8, 2009



5040 Robert J. Mathews Blvd., El Dorado Hills, CA 95762
Phone: (916) 939-3460 FAX: (916) 939-3507

Middle Rosewood Creek
Project Number: 8393.001

HYDRAULIC CONDUCTIVITY TEST REPORT

SAMPLE DATA

Sample Identification: B-7
 Visual Description: N/A
 Remarks:

Sample Depth, ft.: 0-19"
 Sample Type: Sample Liner

TEST RESULTS

Permeability, cm/sec.: 8.75E-06

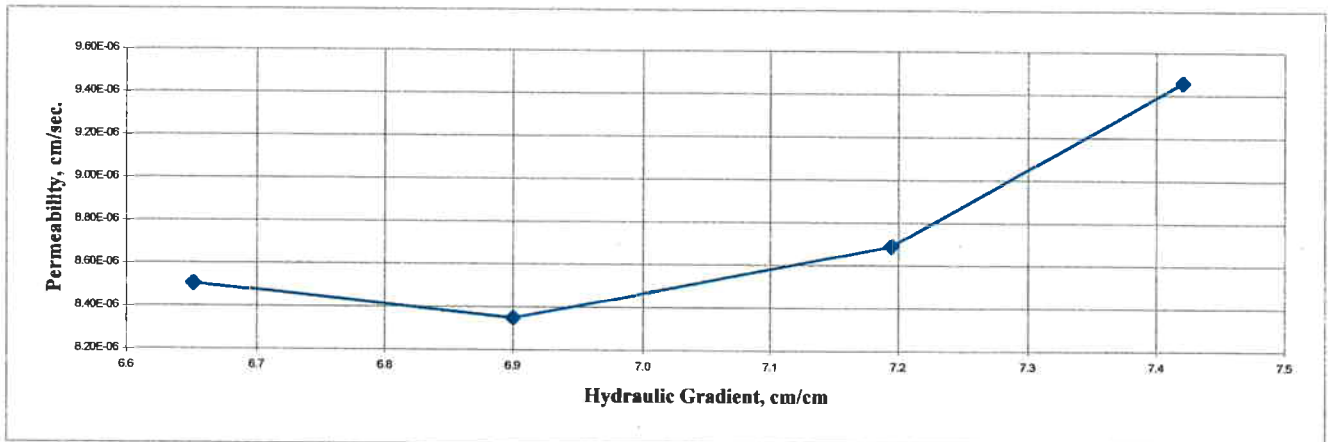
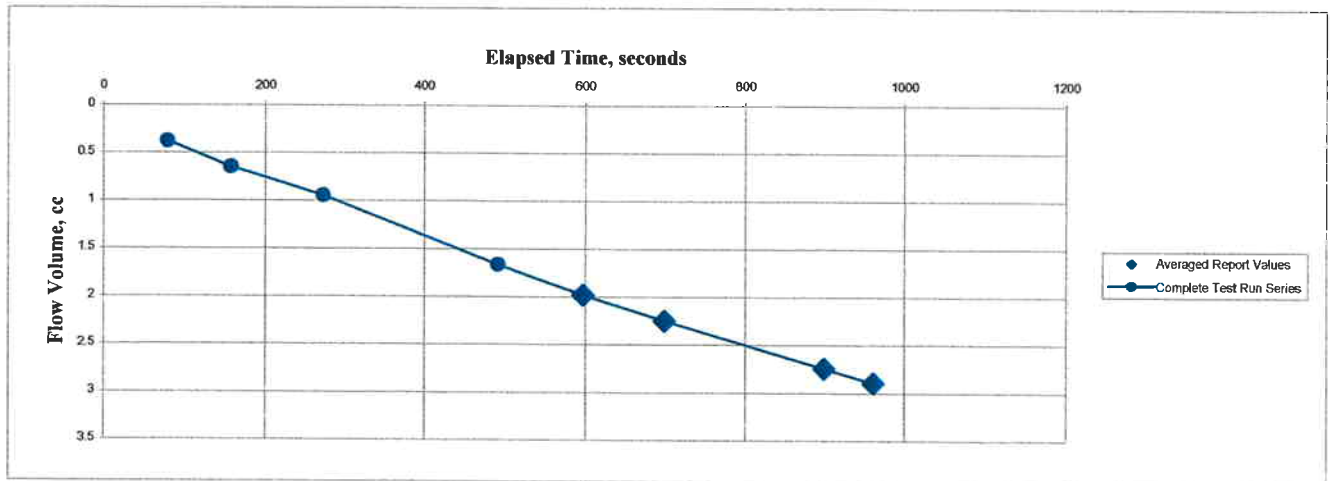
Average Hydraulic Gradient: 7.0

Effective Cell Pressure, psi: 10

TEST SAMPLE DATA

Before Test
 Specimen Height, cm: 9.17
 Specimen Diameter, cm: 7.29
 Dry Unit Weight, pcf: 70.5
 Moisture Content, % 24.0
 Specific Gravity, Assumed
 Percent Saturation:

After Test
 Specimen Height, cm: 8.66
 Specimen Diameter, cm: 7.29
 Dry Unit Weight, pcf: 71.6
 Moisture Content, % 37.1



Test Method: ASTM D5084 Method C

PROJECT NUMBER: 09-104

January 8, 2009



5040 Robert J. Mathews Blvd., El Dorado Hills, CA 95762
 Phone: (916) 939-3460 FAX: (916) 939-3507

**Middle Rosewood Creek
 Project Number: 8393.001**

HYDRAULIC CONDUCTIVITY TEST REPORT

SAMPLE DATA

Sample Identification: B-12

Sample Depth, ft.: 0-1.5'

Visual Description: N/A

Sample Type: Remold

Remarks: Sample remolded between 92% and 93% relative compaction at optimum moisture content

TEST RESULTS

Permeability, cm/sec.: 1.41E-05

Average Hydraulic Gradient: 5.8

Effective Cell Pressure, psi: 10

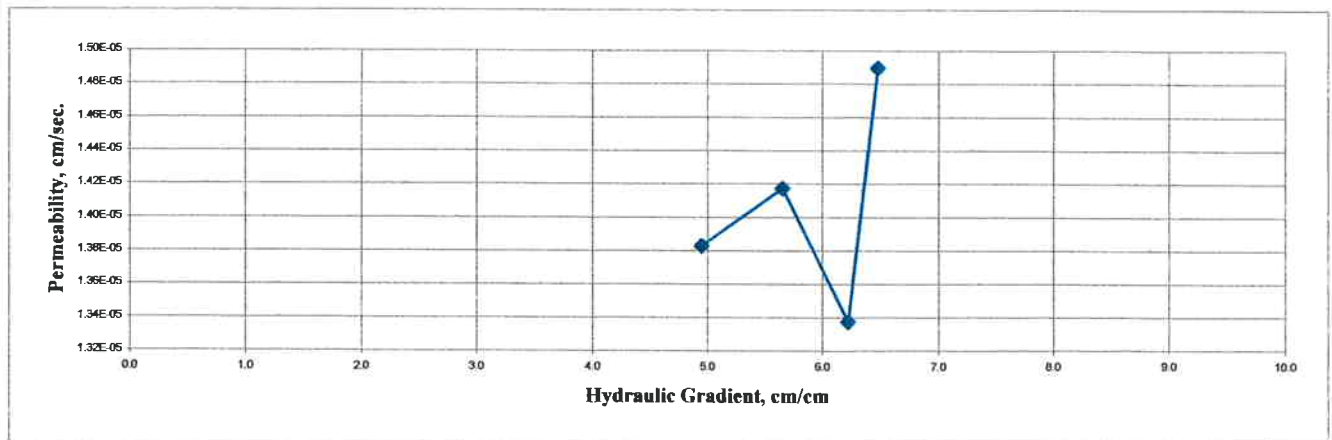
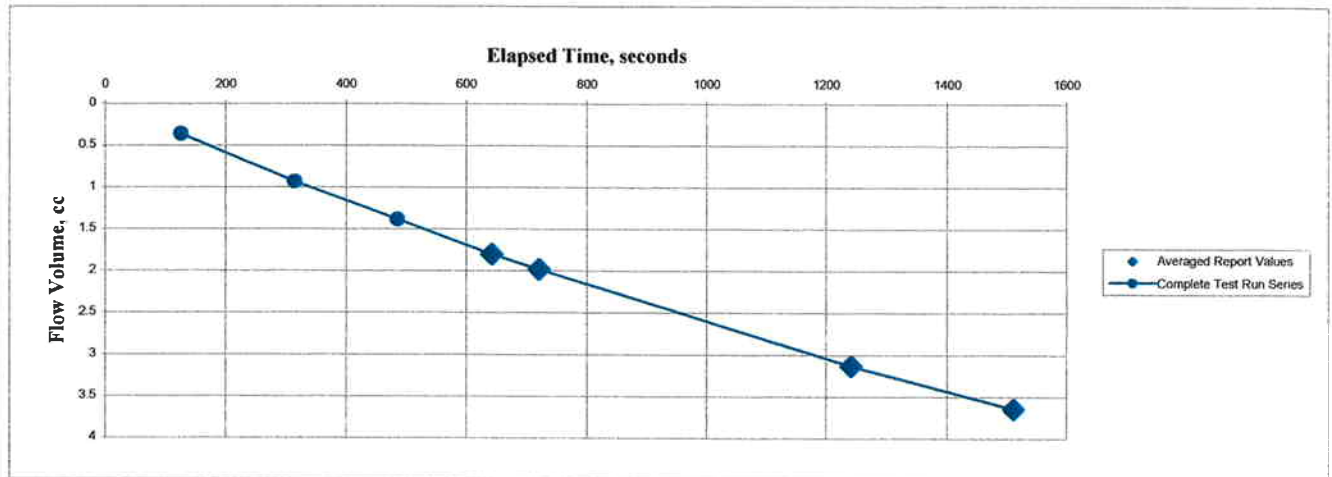
TEST SAMPLE DATA

Before Test

Specimen Height, cm: 7.65
 Specimen Diameter, cm: 6.17
 Dry Unit Weight, pcf: 93.2
 Moisture Content, % 18.6
 Specific Gravity, Assumed
 Percent Saturation:

After Test

Specimen Height, cm: 7.85
 Specimen Diameter, cm: 6.17
 Dry Unit Weight, pcf: 90.8
 Moisture Content, % 24.9



Test Method: ASTM D5084 Method C

PROJECT NUMBER: 09-104

January 8, 2009



5040 Robert J. Mathews Blvd., El Dorado Hills, CA 95762
 Phone: (916) 939-3460 FAX: (916) 939-3507

Middle Rosewood Creek
 Project Number: 8393.001

HYDRAULIC CONDUCTIVITY TEST REPORT

SAMPLE DATA

Sample Identification: B-13

Sample Depth, ft.: 4-27"

Visual Description: N/A

Sample Type: Sample Liner

Remarks:

TEST RESULTS

Permeability, cm/sec.: 5.97E-07

Average Hydraulic Gradient: 2.9

Effective Cell Pressure, psi: 10

TEST SAMPLE DATA

Before Test

Specimen Height, cm: 8.26

Specimen Diameter, cm: 7.29

Dry Unit Weight, pcf: 78.8

Moisture Content, % 23.6

Specific Gravity, Assumed

Percent Saturation:

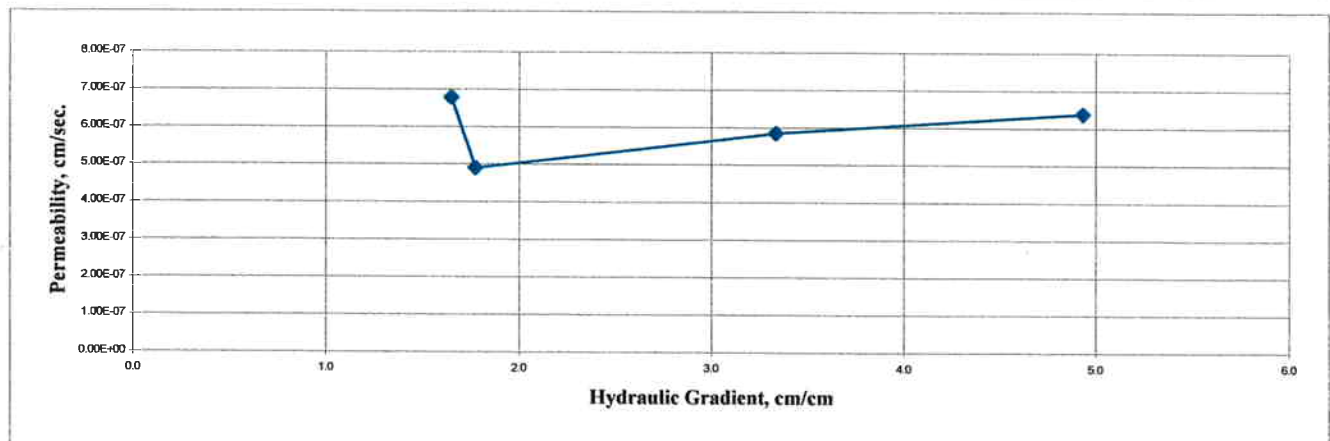
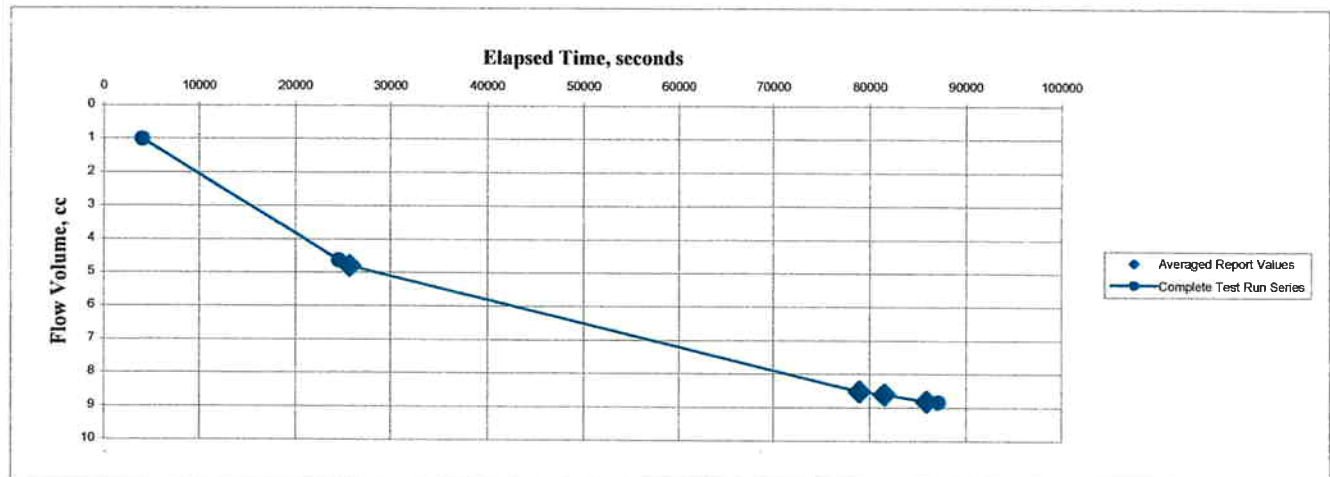
After Test

Specimen Height, cm: 8.13

Specimen Diameter, cm: 7.29

Dry Unit Weight, pcf: 78.4

Moisture Content, % 35.8



Test Method: ASTM D5084 Method C

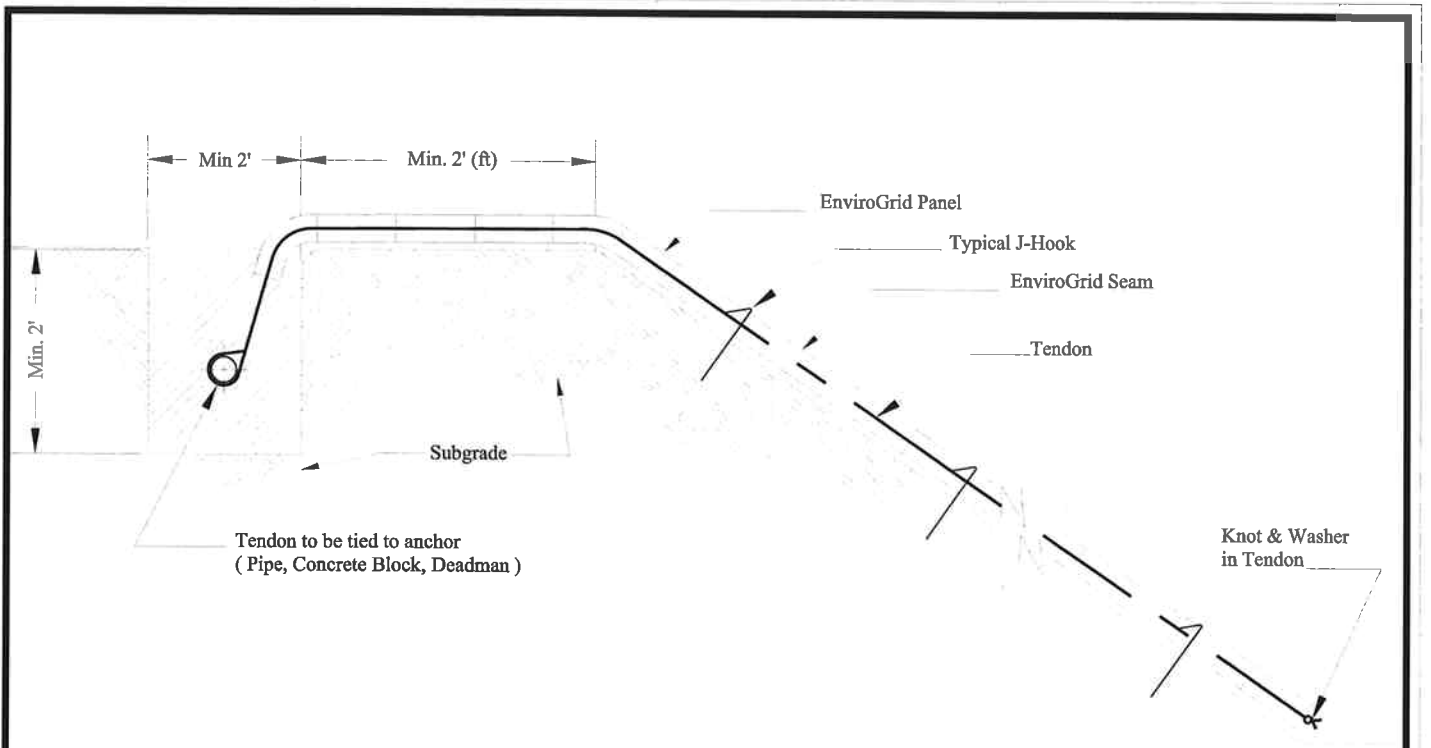
PROJECT NUMBER: 09-104

January 8, 2009



5040 Robert J. Mathews Blvd., El Dorado Hills, CA 95762
Phone: (916) 939-3460 FAX: (916) 939-3507

Middle Rosewood Creek
Project Number: 8393.001



NOTES:

Over Subgrade

ENVIROGRID provides this information only as an accommodation to our customers. No warranty or other representation regarding the suitability of the above application procedure is made due to the fact that each installation has specific requirements that may not have been considered in this generalized procedure. ENVIROGRID makes no warranties or representations regarding the suitability of its ENVIROGRID products for specific uses or applications. Our liability is limited to furnishing, without charge, a replacement for any ENVIROGRID section that is proven defective under normal use or service.

ENVIROGRID TM

By
TKP

Typical Slope Application

Rev #
0

Scale: None

Date: 11-01-02

Drawing No. EnvStd-014

DISTRIBUTION

Geotechnical Investigation
NTCD Middle Rosewood Creek
Rehabilitation Project
Incline Village, Nevada

March 13, 2009

Copies 1-4: Ms. Virginia Mahacek
Valley & Mountain Consulting
1034 Emerald Bay Road, No. 434
South Lake Tahoe, California 96150

Copy 5: Job File

Copy 6: Bound Report File

APPENDIX D

Property Easements and Rights-of-Entry

Nevada Tahoe Conservation District
PO Box 915
Zephyr Cove, NV 89448
(775)586-1610

Third Creek Homeowners' Association
929 Northwood Blvd.
Incline Village, NV 89451
(775) 832-0888

APN: 132-061-1 through 24
132-062-1 through 35
132-063-1 through 33
132-064-1 through 32
132-065-1 through 16

Project: Rosewood Creek Area A Restoration

Memorandum of Understanding (MOU)
between
Third Creek Homeowners Association (HOA)
and
Nevada Tahoe Conservation District

This MOU is made between the Third Creek HOA ("Grantor") and the Nevada Tahoe Conservation District, a political subdivision of the State of Nevada ("Grantee"). This document expresses intent and mutual expectations between the Grantor and Grantee regarding the design, construction, revegetation, monitoring, and maintenance of the Rosewood Creek Area A Restoration Project ("The Project"). The area disturbed during The Project is called the "Restored Area." The goal of this document is to highlight, resolve, and document fundamental understandings regarding The Project, while leaving certain elements for future agreement where indicated.

Project Overview: The Project involves construction of a new active channel of Rosewood Creek from 200 ft north of Northwood Blvd to the culvert at State Route 28, replacement of the culvert under Northwood Blvd, and treatment of the storm-water runoff from the adjacent roads to Rosewood Creek. Once vegetation is established in and around the new channel, active flows will be diverted from the old channel to the new channel. The old channel will be filled with soil, naturally contoured, and revegetated by Grantee. Active construction is anticipated for two seasons in years 1 and 3, with revegetation and irrigation activities, scheduled for years 2, 3, 4, and 5. Construction is anticipated to begin in May of 2012 with completion of construction efforts by September of 2015, and project completion in 2017. The Grantee, assisted by Washoe County, will maintain the functionality of the restoration for ten (10) years after full flow is established in the new channel (see separate Right of Entry between the Grantor and Washoe County Public Works).

//

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Project Goals: These goals were coordinated with the Grantor, Craig Robinson (APN 132-233-01), and the land owners of Club Tahoe (APN 131-200-00) in 2009.

1. Improved Stream Water Quality.

→ The restored stream channel should have flow that reaches the top of bank and overflows onto the floodplain at a frequency and duration typical for a functional stream (e.g., at least several days every couple of years). This will improve water quality due to:

A. Reduced high-flow water velocity which will reduce stream channel erosion and generate less total and fine sediment loads

B. Increased trapping of sediment and nutrient loads on the floodplain

2. Protection from Flooding.

→ No change to the FEMA 500-year (0.02%) floodplain boundary. Changes to the FEMA 100-year (0.1%) floodplain boundary or water elevation would not increase flood hazards to existing structures in the project reach or in adjacent upstream or downstream reaches.

3. Improved Forest Health/Wildlife Habitat.

→ Riparian and upland plant communities within the project area will be managed to lower the risk of catastrophic wildfire, enhance wildlife habitat for species of special significance, improve riparian species recruitment, and remove known noxious/invasive weeds.

4. Enhanced Aquatic Habitat.

→ Stream channel morphology and structures within the project reach will be improved to enhance physical habitat for potential resident fish and benthic macro-invertebrates. These improvements will upgrade the fish habitat in the stream from 'resident marginal' to 'resident good' as designated by Tahoe Regional Planning Agency (TRPA), and will also improve food production in the project area to benefit aquatic species downstream.

5. Improved Fish Passage.

→ Stream channel characteristics within the project reach would be modified to improve fish passage conditions for potential resident and migratory fish such that the restored reach is upgraded from 'migratory marginal' to 'migratory good' as designated by TRPA.

6. Pre-Treated Urban Storm water.

→ Project design will anticipate and be coordinated with future BMP retrofit measures to be initiated by the landowners. Storm water discharge from public right of ways will be managed to minimize pollutant loads as defined by TRPA and to minimize the risk of soil and/or stream channel erosion.

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7. Improved Fish Access

→ The Project Team will coordinate with project sponsors on adjacent downstream stream reaches (lower Rosewood Creek and Third Creek) to improve potential access for migratory fish into the project reach from the downstream reaches.

Items of Understanding: Although the Grantor and Grantee agree on the overall goals of The Project, each have unique perspectives of how the project will be completed. By elucidating these perspectives as expectations, it is anticipated misunderstandings can be avoided during construction of The Project. The following are the agreed upon mutual expectations of all parties:

1. The Grantor supports The Project to improve the clarity of Lake Tahoe and, to that end, will establish a right-of-entry with the Grantee to permit the Grantee, their designated agents, and/or contractors access the Grantor's property to restore, inspect, monitor, and maintain functionality of Rosewood Creek. The Grantee, its authorized agents, and/or contractors and sub-contractors agree to hold harmless and indemnify the Grantor from any loss or liability, financial or otherwise, resulting from any claim, demand, suit, action, lien, encumbrance or cause of action relating to Grantee's performance of work, including, but not limited to, bodily injury, including death and property damage caused by Grantee's performance of work.
2. The Grantee will advocate for millions of dollars of public funds to be allocated for The Project. In return, the Grantor assures the Grantee that it will be permitted to complete The Project in substantial conformance with the 90% design plans (dated March 2011) and with the stipulation that the construction boundaries will be no larger and no additional trees will be removed as a result of the 100% design, and that Grantor and Grantee mutually resolve the remaining issues of concern as identified in this MOU.
3. The Grantee will start construction as early in the summer as possible but still be reasonably assured that the objectives for that year will be met before the end of the TRPA grading season (i.e., October 15th). That is, it is anticipated construction would start in May of 2012, however, Grantee will not start The Project without sufficient committed funds to complete the project by 2017.
4. The Grantor will designate a person or person(s) authorized to make decisions regarding real-time, minor adjustments to The Project during construction. Ideally that person is located near the project site so they can observe the issue first hand and provide timely direction.
5. The Grantor is not required to make fiscal contributions to The Project; however, the Grantee expects in-kind contributions from the Grantor to assist in completing The Project. For example, supplying irrigation water, allocating staging area(s),

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providing parking locations, and monitoring access of non-authorized personnel to the Restored Area at no cost to the Grantee.

6. Water to irrigate the revegetation in the Restored Area will be provided by the Grantor at no cost to the Grantee. The Grantee will assist the Grantor to ensure the Grantor does not incur sewer charges related to the irrigation.
7. The Grantor will provide areas outside the construction zone for staging equipment and project material. The Grantee will stage equipment and material only at those designated locations. The staging will not deny access of a client or homeowner to their residence and will comply with access requirements for firefighting equipment. The preferred staging area in the Third Creek Condominium HOA is:
 - a) The Club House staging area, along Trinity Circle within the Club House parking lot. The area encompasses approximately 1,400 ft² which is less than half of the Club House parking lot, and is shown on Sheet S-1 in the 90% Plans.

In addition, there are potential alternative staging areas, which have been included in environmental review, but would need express written Grantor approval before being utilized. Such potential alternative staging areas include:

 - b) Four parking slots at the corner of Third Creek Circle and Third Creek Drive. This area encompasses approximately 2,400 ft² and includes two parking slots on Third Creek Circle and two on Third Creek Drive.
 - c) The three parking slots on Aurora Drive across from Aurora Lane near Northwood Blvd. with a total area of 800 ft².
8. The Grantee and their designated representatives will visit the Restored Area frequently and because there is limited, if any, parking on the road shoulder, the Grantor will designate appropriate parking areas and other reasonable limitations as to time and manner of use by the Grantee and designated representatives.
9. During active construction periods, anticipated to last up to 10 weeks in early summer of 2012 and 2014, access to the Restored Area will be prohibited to all persons not designated by the Grantee except for the representative identified in item 4 or persons necessary in the case of a safety, fire, or other emergency. Orange fence will be used to delineate the active construction area (see the 90% design plans) and will remain until construction is completed for the season. After each active construction period, the contractor will remove the fence.
10. For a period of five (5) years, beginning in May 2012, and with the exception of periods of construction, access to the project area will be limited to a single path mutually agreed to by the Grantor and Grantee.
11. With the exception of the path designated above, access into or through the Project Area will be prohibited for five (5) years for all persons not designated by the Grantee or as excepted in Item 9. Failure to adequately control access may compromise the revegetation efforts and void contractor responsibility for the

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revegetation success. The Grantee will help prevent access to the Restored Area by installing signs along the permanent perimeter of the Restored Area then, if necessary, by installing a rope around all or part of the permanent perimeter of the restored area. The Grantee will remove all signs and rope, if necessary, at the end of the restoration project.

12. The Grantor will assist in preventing access to the Restored Area for five (5) years by:

- a) Providing annual written notification to all owners depicting the Restored Area (with a map provided by the Grantee) explaining access limitations each year the Restored Area is closed. Written notification will ask owners to notify any renters of the closure;
- b) Informing persons found entering the Restored Area that the area is closed; and,
- c) Notifying the Grantee of repeated access issues.

13. The Grantor can expect a significant change in the visual aesthetics in the Restored Area, specifically, a long term reduction in visual screening due to thinning, relocation, and removal of existing vegetation. Additionally, for the first five years, visual aesthetics may be impacted due to irrigation pipe, temporary best management erosion control practices, perimeter rope, and/or access control signs. Short term visual impacts also include the presence of construction equipment and supplies, and staging of rock, soil, and other material during periods of active construction. These visual impacts will be minimized by:

- a) Covering irrigation pipe with mulch or duff, and
- b) Not stockpiling material in or near the Restored Area beyond the period of active construction without permission of the Grantor.
- c) Grantor and Grantee will work collaboratively to design and implement a visual screening mitigation plan to offset the impacts described in this paragraph, as well as mitigating any physical damage that occurs outside the Restored Area, including damage to trees or existing vegetation. This visual screening mitigation plan will be developed and agreed upon prior to commencement of construction, and implemented on an agreed timetable included in the plan. Any physical damage that occurs outside the Restored Area must be repaired or mitigated by Grantee within a reasonable time after active construction ends.

14. During construction, the Grantors will allow the Grantee to establish construction access to the Restored Area as designated in the 90% design drawings (March 2011). These areas of construction access will be restored before October 15th of that year.

15. The Grantors should expect construction noise weekdays between 8am and 6pm during construction periods consistent with TRPA guidelines.

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16. The Grantee will encourage the Grantor to review The Project's final design documents and will make every attempt to accommodate comments and suggestions within the scope of funding and regulatory restrictions.
17. Forest health will be improved by The Project, but forest health will degrade in succeeding years unless the Grantor takes steps to maintain it.
18. The Grantee makes no assurance and will provide no compensation for any change in property value.
19. The Project has been designed not to increase flood risk to any existing structure, but should flooding occur due to negligence of Grantee in the design or implementation of the project, Grantor shall be held harmless in accord with paragraph 1.
20. If requested by the Grantor, TRPA may re-examine the delineation of the Stream Environment Zone (SEZ) boundary as a result of The Project, but the Grantor should not *expect* a change in the SEZ boundary. Nonetheless, if there is a change in the SEZ boundary, which takes in areas previously mapped non SEZ areas, allowable coverage shall not be reduced and any structures or improvements located in the newly designated SEZ area shall not be required to be removed, and may be maintained and repaired.
21. The Grantor should expect the Restored Area to be routinely inundated during annual high flow conditions of the creek following The Project. Inundation may temporarily reduce access through the Restored Area, but this process is a critical aspect of the sediment reduction strategy.
22. The Grantee will monitor the Restored Area for 10 years following construction (anticipated to be from October 2013 through October 2023). Grantee must make every effort to provide Grantor and/or its agents or representatives with reasonable notice of such monitoring that requires entry onto Grantor's property. Monitoring may involve photos, surveying, and water quality sampling. Once the final construction and revegetation is completed, use of heavy construction equipment is not permitted without the express permission of the grantor.
23. The Grantee is not responsible for completion of the Grantor's residential BMPs, however Grantee will cooperate with Grantor with regards to construction schedule and the potential for shared use of contractors and sub-contractors so that BMPs can be completed efficiently.
24. If Grantee's contractor damages conifer trees outside the designated area of construction, Grantor will be compensated at the rate of \$500 per caliper inch of each tree fatally damaged and proportional compensation for partial damage as determined during a final walk through by a certified arborist chosen by Grantor, TRPA forester, and a Grantee representative. If Grantee's contractor damages vegetation other than conifers, they will be replaced with vegetation as chosen by the Grantor at a rate of 1:1.

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25. All damages to property outside the construction area including access, staging areas and roads will be restored by Grantee to original, or better, condition by the end of the final construction period except by express written permission of the Grantor. If the damage is not repaired within this time frame, the Grantor can withdraw all future access permission to Grantee and have damaged areas repaired by a third party, for which the Grantee will pay.
26. This MOU will not be binding on the Grantor or Grantee unless the permit to complete the mandated surface water management improvements, BMP, is granted by TRPA to the Grantor within two weeks of notification to TRPA that the homeowners have approved the project.
27. The Board of Directors and over 51% of the homeowners have approved this project as required by the bylaws of the Third Creek Homeowners Association.

Third Creek Homeowners Association



Tom Groves
President, Third Creek HOA Board of Directors

12/29/2011
Date

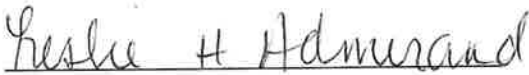
Nevada Tahoe Conservation District



Douglas Martin
District Manager

January 10, 2012
Date

Attest as to form:



Leslie Admirand
Washoe County District Attorney

1-9-2012
Date

Recording Requested by and Return to:

GRANTOR:
Club Tahoe Condominium
P.O. Box 7440
Incline Village, NV 89450

GRANTEE:
Division of State Lands
901 S Stewart, Suite 5003
Carson City, NV 89701

EASEMENT DEED AND AGREEMENT
TO BE RECORDED AGAINST 131-200-00

THIS EASEMENT, made and entered into this 24 day of
February 2012 between CLUB TAHOE CONDOMINIUM, a NEVADA non-
profit corporation, hereinafter referred to as GRANTOR, and the STATE OF NEVADA,
by and through the Division of State Lands, hereinafter referred to as GRANTEE.

RECITALS:

1. GRANTOR, is the owner of the parcel legally described in Exhibit 1 attached hereto and incorporated herein by reference.
2. GRANTOR has the legal authority to enter into this Agreement to grant to GRANTEE the easement as more fully described below.
3. The purpose of this easement is to protect restored areas included in the Middle Rosewood Creek Stream Environment Zone (SEZ) Restoration-Area A project being implemented by the Nevada Tahoe Conservation District (NTCD). Funds for the implementation of this restoration were provided by the State of Nevada, through the Division of State Lands and therefore an easement from the land owner to the State of Nevada is required to protect the restored areas in perpetuity from disturbance.

WITNESSETH:

The GRANTOR does hereby grant to GRANTEE a perpetual nonexclusive easement that includes the following areas as depicted on Exhibit 2; 1) an approximate ninety (90) foot by one-hundred twenty (120) foot restored area of SEZ that includes a wetland area and stormwater improvements; and 2) Fifty (50) feet on either side of approximately 200 feet of enhanced stream channel (hereinafter "Restored Areas").

1. This Easement Deed and Agreement may not be modified, amended, terminated or abandoned except by execution and delivery of an instrument executed and acknowledged by GRANTEE, and GRANTOR agrees that, in the absence of such an instrument, no conduct by GRANTEE shall constitute a termination or abandonment of the Easement.
2. GRANTOR hereby agrees that the Restored Areas included in the Rosewood Creek Restoration Project Middle Reach, Area A, which are depicted in Exhibit 2, and which include a SEZ restoration area, a constructed wetland area, 200 linear feet of enhanced channel construction and stormwater improvements will be maintained and protected in a manner consistent with the project goals.
3. The parties intend that all covenants and agreements set forth herein relate to the protection and maintenance of the Restored Areas, or some part thereof, and shall run with the land of GRANTOR, successors or assigns of GRANTOR who acquires any estate or interest in or right to use the Restored Areas shall be bound hereby for the benefit of GRANTEE and its assigns and successors.

4. Upon completion of the project, the Restored Areas will be surveyed and a legal description completed, at NTCD's expense. The parties may re-record this easement with the legal description attached as Exhibit 3. Failure to re-record will not affect the validity of this Easement. In the case of a conflict between the legal description in Exhibit 3 and the area shown in Exhibit 2, the legal description in Exhibit 3 shall prevail.
5. The use of Restored Areas shall be restricted to permanent open space. As open space the restored areas of the property shall be restricted as follows:
 - a. No building, fences, billboards or other structures shall be placed or erected upon the Restored Areas, and no driveways, roads or paving shall be placed or located on or within said Restored Areas.
 - b. The topography of the Restored Areas shall be maintained in their restored condition, and no excavation, removal of topsoil, sand, gravel, rocks or minerals, fill or other topographic changes shall be made, except to prevent soil erosion as approved by NDSL in writing.
 - c. There shall be no dumping of soil, trash, ashes, garbage, waste or other unsightly or offensive materials allowed on the Restored Areas.
 - d. There shall be no removal, destruction or cutting of trees, shrubs, or other vegetation on the Restored Areas except as may be necessary for (a) the prevention or treatment of disease or (b) as required for fire protection or (c) the maintenance of the Restored Areas.

- e. There shall be no use of the Restored Areas which may or does materially alter or disturb the Restored Areas, other than those uses specified under the section below setting forth the reservations to GRANTOR.
 - f. There shall be no storage of vehicles, boats, firewood, building materials or equipment on the Restored Areas.
 - g. There shall be no industrial or commercial activity permitted on the Restored Areas.
 - h. There shall be no activities, actions, uses or conditions detrimental or adverse to water conservation, erosion control, soil conservation, fish and wildlife or habitat preservation, done or allowed on the Restored Areas.
 - i. No off-road vehicles shall be permitted on the Restored Areas except as necessary to carry out fire protection.
 - j. There shall be no signs or advertising of any kind located on or within the Restored Areas except for the specified and limited purposes of posting the property and showing ownership.
6. Notwithstanding the foregoing restrictions, the following enumerated rights are reserved by the GRANTOR:
- a. The right to remove hazardous substances, rubbish, diseased plants or trees or to correct dangerous conditions on the Restored Areas.
 - b. The right to remove any vegetation, which constitutes or contributes to a fire hazard to the neighboring parcels.
 - c. The right to repair underground utility lines.

- d. The right to post signs to prevent trespass or to prevent the creation of prescriptive easements.
- e. The right to remove non-native trees or plants, subject to the GRANTOR's obtaining all necessary regulatory approvals.
- f. The right to employ "controlled burns" for fire protection and habitat enhancement purposes pursuant to required governmental approvals.

GENERAL PROVISIONS


1. **Waiver.** No violation or breach of any provision of this Agreement may be waived unless in writing. Waiver of any one breach of any provision of this Agreement shall not be deemed to be a waiver of any other breach of the same or any other provision of this Agreement.
2. **Indemnification.** GRANTOR agrees to indemnify, defend and hold harmless the State of Nevada and its agents from and against any and all liability for personal injuries, property damage, or for loss of life or property resulting from, or in any way connected with the condition or use of the premises covered herein, including any hazard, deficiency, defect, or other matter, known or unknown, except to the extent of any liability, loss, cost or expense caused by GRANTEE's or its agents' negligence or willful misconduct in connection with GRANTEE's activities referred to in Section 4. Maintenance. This indemnification does not exclude the State of Nevada's right to participate, at its own cost, in its defense of a matter subject to this indemnification.

3. **Severability.** In the event that any one or more covenant, condition, right or other provision contained in this Agreement is held to be invalid, void or illegal by any court of competent jurisdiction, the same shall be deemed severable from the remainder of this Agreement and shall in no way affect, impair or invalidate any other covenant, condition, right or other provision contained in this Agreement.
4. **Maintenance.** The GRANTEE, its successors and assign, its agent(s) or contractor(s) shall hereby be granted access for inspection and/or maintenance of the easement area to evaluate and/or correct any impacts to Restored Areas and to enforce all terms of this easement. These rights of access and enforcement granted to the GRANTEE do not obligate the GRANTEE to inspect or maintain the Restored Areas.
5. **Enforcement.** The GRANTEE, its successors and assign, Washoe County and the NTCD shall hereby be granted authority to enforce all terms of this easement.

IN WITNESS WHEREOF, the parties have subscribed this Easement Deed and Agreement the day and year first above written.

GRANTOR:

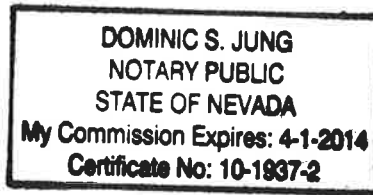
CLUB TAHOE CONDOMINIUM

By: 
Daren McDonald
Club Tahoe Condominium

STATE OF NEVADA)
 ss.
COUNTY OF)

On Feb 24, 2012, personally appeared before me, a notary public, Daren McDonald who acknowledged that he/she executed the above instrument.


NOTARY PUBLIC



GRANTEE:
STATE OF NEVADA
Division of State Lands

By: _____
James R. Lawrence
Administrator and Ex-Officio
State Land Registrar

APPROVED as to Form:
CATHERINE CORTEZ MASTO
Attorney General

By: _____
Kevin Benson
Deputy Attorney General

NR 111 \$ None

622475 *for cancellation*
199-MK

622475

LETTER OF INTENT TO
FIRST CENTENNIAL TITLE

DEED

1 THIS INSTRUMENT, made this 8th day of August, 1979, by
2 and between CECO-7, a Nevada Limited Partnership, as Grantor, Party of the
3 First Part, and CLUB TAHOE RESORT OWNERS' ASSOCIATION, INC., a
4 Nevada non-profit corporation
5 whose address is 914 Northwood Blvd., P.O. Box 3546, Gardiner
6 Village, Nevada 89450
7 as Grantee, Party of the Second Part.

WITNESSETH:

8 That said Grantor, for and in consideration of the sum of Ten Dollars
9 (\$10.00), lawful money of the United States of America, and other good and
10 valuable consideration to it in hand paid by said Grantee, the receipt of
11 which is hereby acknowledged, does by these presents, GRANT, BARGAIN, SELL AND
12 CONVEY unto said Grantee, all that parcel of land situate in the County of
13 Washoe, State of Nevada, described as follows:

14 Condominium Unit No. _____, for Interval Nos. 1-52, inclusive
15 Condominium Unit No. _____, for Interval No. _____
16 Condominium Unit No. _____, for Interval No. _____
17 Condominium Unit No. _____, for Interval No. _____
18 as shown on the map of CLUB TAHOE, filed in the office of the
19 Recorder of Washoe County, Nevada, on June 7, 1978, under File No. 510625.

20 TOGETHER WITH the appurtenances thereto belonging, including an
21 undivided interest in the Common Area of CLUB TAHOE as the same is defined
22 in the Declaration of Covenants, Conditions and Restrictions for CLUB TAHOE,
23 recorded in the office of the Recorder of Washoe County, Nevada, on
24 August 15, 1978, as Document No. 551501, Official Records, and all amendments
25 thereto, all of which are, by this reference, incorporated into and made a
26 part hereof.

27 This conveyance is subject to all of the provisions of said Declaration
28 and Chapter 117 of Nevada Revised Statutes, as amended, which provisions the
29 Grantee herein assumes and agrees to observe and perform.

30 TO HAVE AND TO HOLD said premises, together with all and singular the
31 rights and appurtenances thereof, to the Grantee in fee simple.

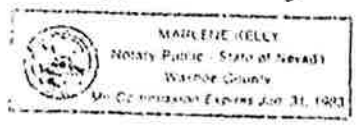
32 IN WITNESS WHEREOF, the Grantor has executed this conveyance as of the
day and year first above written.

CECO-7, a Nevada Limited Partnership
By *David Wallace Hansen*
DAVID WALLACE HANSEN, General Partner

STATE OF NEVADA)
) ss.
COUNTY OF WASHOE)

On this 8th day of August, 1979, before me, personally
appeared DAVID WALLACE HANSEN, and acknowledged to me that he executed
the above instrument on behalf of CECO-7, a Nevada Limited Partnership.

Margie Kelly
NOTARY PUBLIC



622475
OFFICIAL RECORDS
WASHOE COUNTY, NEV.
RECORD REQUESTED BY
AUG 10 1979
FIRST CENTENNIAL
TITLE CO. OF NEVADA
COUNTY RECORDER
FEE \$ 1.00

WHEN RECORDED MAIL TO GRANTEE AT:

NR 1417 PAGE 464

AUG 10 1979

AUG 10 1979

LAND CAPABILITY BOUNDARIES OUTSIDE OF THE SZG ARE NOT SHOWN AT THIS TIME.

71+ WILLOW ALSO LOCATED WITHIN 145 FT. OF EXISTING LOCATION AS DIRECTED BY ENGINEER (TYP).

PROPOSED OLVERT CHANNEL TREATMENT. SEE DETAIL FOR CHANNEL TYPES AND METALS.

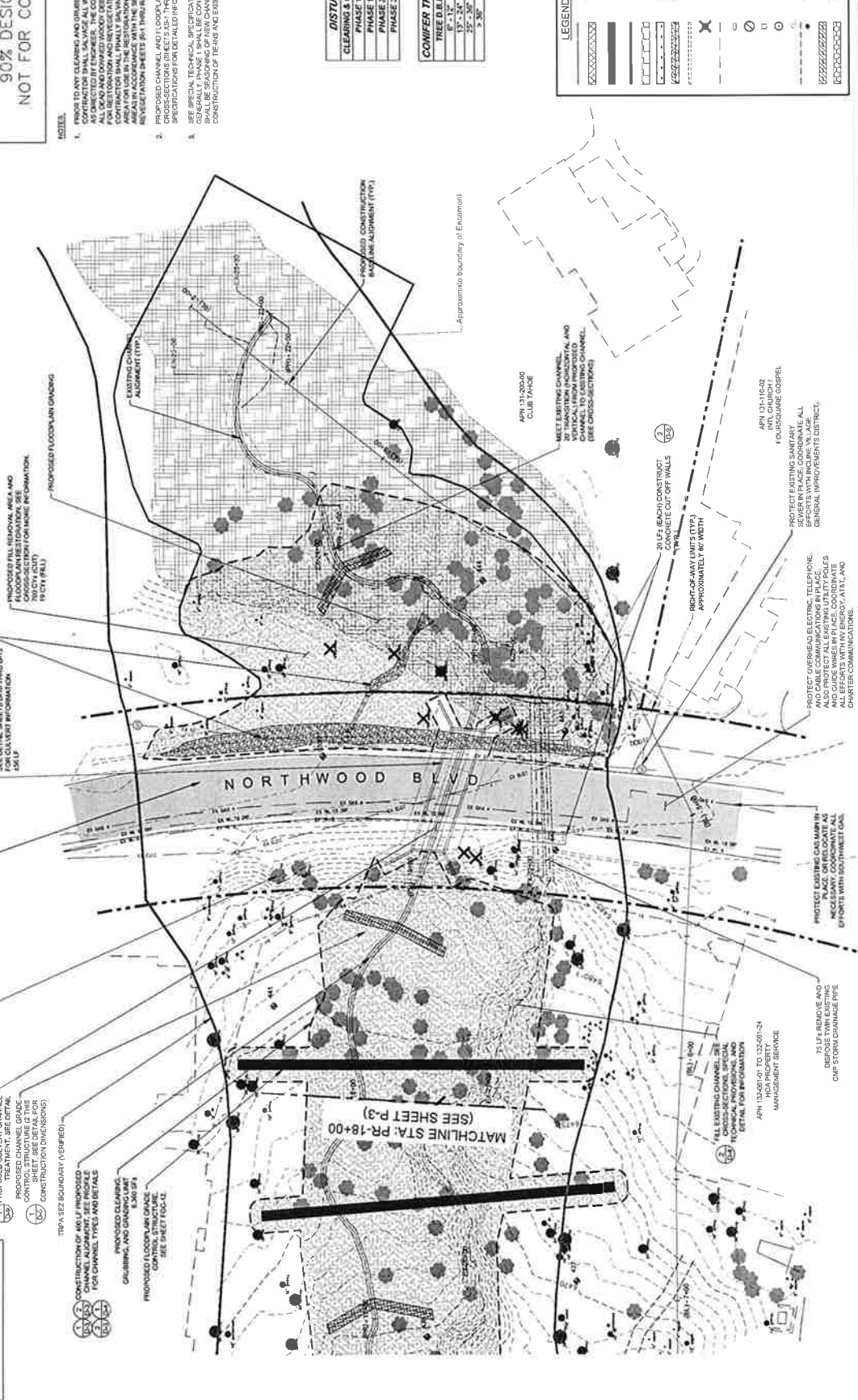
- 1. PROPOSED FULL REMOVAL AREA AND CROSS-SECTION FOR CHANNEL INFORMATION.
- 2. PROPOSED FLOODPLAIN ZONING.
- 3. PROPOSED CHANNEL ALIGNMENT (TYP).
- 4. PROPOSED CONSTRUCTION MATCHLINE ALIGNMENT (TYP).
- 5. APPROXIMATE BOUNDARY OF EASEMENT.
- 6. MEET EXISTING CHANNEL TO TRANSFER HORIZONTAL AND VERTICAL ALIGNMENT TO EXISTING CHANNEL. (SEE CROSS-SECTIONS).
- 7. 20 FT. EACH CONSTRUCT CONCRETE CUT OFF WALLS APPROXIMATELY 10 FT IN.
- 8. RIGHT-OF-WAY LIMITS (TYP).
- 9. PROTECT OVERHEAD ELECTRIC, TELEPHONE, AND CABLE WIRE IN PLACE. COORDINATE EFFORTS WITH LOCAL UTILITY AND CHARTER COMMUNICATIONS.
- 10. PROTECT EXISTING GAS MAIN IN PLACE. PLACE OR RELOCATE AS NECESSARY. COORDINATE ALL EFFORTS WITH LOCAL UTILITY AND CHARTER COMMUNICATIONS.
- 11. 15 FT. RADIUS AND DISPOSE WITH EXISTING CDP STORM DRAINAGE PIPE.

SEE SHEETS P-5, P-6, & P-6 FOR ROADWAY INFORMATION.

PROPOSED CONCRETE OPEN BOTTOM FOR CULVERT INFORMATION. SEE DETAIL SHEETS D-10 THRU D-13 FOR CULVERT INFORMATION.

SEE SHEETS P-4 & P-4 FOR ROADWAY INFORMATION.

PROPOSED FULL REMOVAL AREA AND CROSS-SECTION FOR CHANNEL INFORMATION.



90% DESIGN PLANS NOT FOR CONSTRUCTION

NOTES

1. PRIOR TO ANY CLEARING AND GRUBBING IN THE DISTURBED AREA THE CONTRACTOR SHALL SALVAGE ALL WILLOW AND ASPEN FOR RELOCATION. ALL DEAD AND DAMAGED WOODY DEBRIS FOR USE IN WOOD CHIP MATERIALS FOR RESTORATION ACTIVITIES SHALL BE TO BE REMOVED FROM THE PROJECT AREA FOR USE IN THE RESTORATION AND REVEGETATION OF ALL DISTURBED AREAS. ALL WILLOW AND ASPEN SHALL BE RELOCATED TO THE REVEGETATION SHEETS (P-1 THRU P-4) FOR THE PROJECT.
2. PROPOSED CHANNEL AND FLOODPLAIN TO BE CONSTRUCTED AS SHOWN ON CROSS-SECTIONS (SHEET D-25) THROUGH D-37). SEE SPECIAL TECHNICAL SPECIFICATIONS FOR DETAILED INFORMATION.
3. SEE SPECIAL TECHNICAL SPECIFICATIONS FOR CONSTRUCTION FINISHES, CHANNEL TYPES AND METALS. SEE DETAIL SHEETS D-10 THRU D-13 FOR CONSTRUCTION OF TRENCH AND EXISTING CHANNEL BACKFILL.

DISTURBANCE AREAS

CLEARING & GRUBBING	24,300 SF±
PHASE 1 CUT	800 CY±
PHASE 2 FILL	1,500 CY±
PHASE 3 FILL	110 CY±
PHASE 3 CUT	700 CY±

CONIFER TREE REMOVAL TABLE

TREE D.B.H.	NO. OF TREES
8" - 12"	5
13" - 24"	3
25" - 36"	0
> 36"	0

LEGEND

PROPOSED ALIGNMENT

- PROPOSED CHANNEL GRADE
- CONTROL STRUCTURE
- PROPOSED CHANNEL TYPE
- PROPOSED BURNED PROTECTION
- PROPOSED FULL REMOVAL
- PROPOSED GRASS LIKED SWALE
- PROPOSED GRASS LIKED SWALE
- EXISTING CULVERT PIPE
- CONIFER REMOVAL
- EXISTING CURB
- UTILITY BOX
- SIGNAL
- POST
- POLE
- SIGN
- EMERGENCY CONTROL POINT (TYP)
- INDIVIDUAL WEED (BULL THISTLE)
- INDIVIDUAL WEED (ITALIAN)

Sheet P-4 MIDDLE ROSEWOOD CREEK AREA "A" SEZ RESTORATION PLAN VIEW STATION: PR-18+00 TO PR-22+19	DATE 3/20/11																	
 	 GRAPHIC SCALE 1" = 100'																	
REVISIONS <table border="1" style="width: 100%; height: 100px;"> <thead> <tr> <th>NO.</th> <th>DATE</th> <th>BY</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>	NO.	DATE	BY													<table border="1" style="width: 100%;"> <tr> <td style="width: 50%; text-align: center;"> WOOD RODGERS 1415 S. MAIN ST., SUITE 200 LAS VEGAS, NV 89102 TEL: 702.735.1100 FAX: 702.735.1101 </td> <td style="width: 50%; text-align: center;"> NEVADA-TAHOE CONSERVATION DISTRICT 1000 S. MAIN ST., SUITE 200 LAS VEGAS, NV 89102 TEL: 702.735.1100 FAX: 702.735.1101 </td> </tr> </table>	WOOD RODGERS 1415 S. MAIN ST., SUITE 200 LAS VEGAS, NV 89102 TEL: 702.735.1100 FAX: 702.735.1101	NEVADA-TAHOE CONSERVATION DISTRICT 1000 S. MAIN ST., SUITE 200 LAS VEGAS, NV 89102 TEL: 702.735.1100 FAX: 702.735.1101
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APN: 132-233-01

Project: Rosewood Creek Area A Restoration

Memorandum of Understanding (MOU)
between
D. Craig Robinson
and
Nevada Tahoe Conservation District

This MOU is made between the D. Craig Robinson (“Grantor”) and the Nevada Tahoe Conservation District, a political subdivision of the State of Nevada (“Grantee”). This document expresses intent and mutual expectations between the Grantor and Grantee regarding the design, construction, revegetation, monitoring, and maintenance of the Rosewood Creek Area A Restoration Project (“The Project”). The area disturbed during The Project is called the “Restored Area.” The goal of this document is to highlight, resolve, and document fundamental understandings regarding The Project.

Project Overview: The Project involves construction of a new active channel of Rosewood Creek from 200 ft north of Northwood Blvd to the culvert at State Route 28, replacement of the culvert under Northwood Blvd, and treatment of the stormwater runoff from the adjacent roads to Rosewood Creek. Once vegetation is established in and around the new channel, active flows will be diverted from the old channel to the new channel. The old channel will be filled with soil, naturally contoured, and revegetated. Active construction is anticipated for two seasons in years 1 and 3, with revegetation and irrigation activities, scheduled for years 2, 3, 4, and 5. Construction is anticipated to begin in August of 2011 with completion of construction efforts in October 2013 and project completion in 2016. The Grantee, assisted by Washoe County, will maintain the functionality of the restoration for ten (10) years after full flow is established in the new channel (see separate Right of Entry between the Grantor and Washoe County Public Works).

Project Goals: These goals were coordinated with the Grantor, Third Creek Condominiums Home Owners Association (APNs 132-061-1 through 24, 132-062-1 through 35, 132-063-1 through 33, 132-064-1 through 32, 132-065-1 through 16), and the land owners of Club Tahoe (APN 131-200-00) in 2009.

1. Improved Stream Water Quality.

- The restored stream channel should have flow that reaches the top of bank and overflows onto the floodplain at a frequency and duration typical for a functional stream (e.g., at least several days every couple of years). This will improve water quality due to:
- A. reduced high-flow water velocity which will reduce stream channel erosion and generate less total and fine sediment loads
 - B. increased trapping of sediment and nutrient loads on the floodplain

2. Protection from Flooding.

→ No change to the FEMA 500-year (0.02%) floodplain boundary. Changes to the FEMA 100-year (0.1%) floodplain boundary or water elevation would not increase flood hazards to existing structures in the project reach or in adjacent upstream or downstream reaches.

3. Improved Forest Health/Wildlife Habitat.

→ Riparian and upland plant communities within the project area will be managed to lower the risk of catastrophic wildfire, enhance wildlife habitat for species of special significance, improve riparian species recruitment, and remove known noxious/invasive weeds.

4. Enhanced Aquatic Habitat.

→ Stream channel morphology and structures within the project reach will be improved to enhance physical habitat for potential resident fish and benthic macroinvertebrates. These improvements will upgrade fish habitat in the stream from 'resident marginal' to 'resident good' as designated by Tahoe Regional Planning Agency (TRPA), and will also improve food production in the project area to benefit aquatic species downstream.

5. Improved Fish Passage.

→ Stream channel characteristics within the project reach would be modified to improve fish passage conditions for potential resident and migratory fish such that the restored reach is upgraded from 'migratory marginal' to 'migratory good' as designated by TRPA.

6. Pre-Treated Urban Stormwater.

→ Project design will anticipate and be coordinated with future BMP retrofit measures to be initiated by the landowners. Stormwater discharge from public right of ways will be managed to minimize pollutant loads as defined by TRPA and to minimize the risk of soil and/or stream channel erosion.

7. Improved Fish Access

→ The Project Team will coordinate with project sponsors on adjacent downstream stream reaches (lower Rosewood Creek and Third Creek) to improve potential access for migratory fish into the project reach from the downstream reaches.

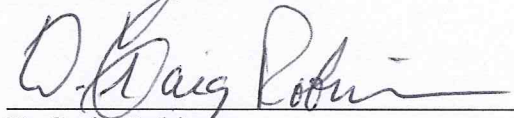
Items of Understanding: Although the Grantor and Grantee agree on the overall goals of The Project, each have unique perspectives of how the project will be completed. By elucidating these perspectives as expectations, it is anticipated misunderstandings can be avoided during construction of The Project. The following are hereby agreed to by all parties:

1. The Grantor supports The Project to improve the clarity of Lake Tahoe and to that end will establish a right-of-entry with the Grantee to permit the Grantee, their designated agents, and/or contractors access the Grantor's property to restore, inspect, monitor, and maintain functionality of Rosewood Creek. The Grantee, its authorized agents, and/or contractors agree to hold harmless and indemnify the Grantor from any loss or liability, financial or otherwise, resulting from any claim, demand, suit, action or cause of action based on bodily injury including death or property damage caused by Grantee's performance of work.

2. The Grantee will advocate for millions of dollars of public funds to be allocated for The Project. In return, the Grantor assures the Grantee it will be permitted to complete The Project based the 90% design plans (dated March 2011).
3. The Grantee will start construction as late in the summer as possible but still be reasonably assured that the objectives for that year will be met before the end of the TRPA grading season (i.e., October 15th). It is anticipated construction would start mid August of 2011.
4. The Grantor will designate a person or person(s) authorized to make decisions regarding real-time, minor adjustments to The Project during construction. Ideally that person is located near the project site so they can observe the issue first hand and provide timely direction.
5. The Grantor is not required to make fiscal contributions to The Project; however, the Grantee expects in-kind contributions from the Grantor to assist in completing The Project. For example, supplying irrigation water, allocating staging area(s), providing parking locations, and monitoring access of non-authorized personnel to the Restored Area at no cost to the Grantee.
6. Water to irrigate the revegetation in the Restored Area will be provided by the Grantor at no cost to the Grantee. The Grantee will assist the Grantor to ensure the Grantor does not incur sewer charges related to the irrigation.
7. The Grantor will provide areas outside the construction zone for staging equipment and project material. The Grantee will stage equipment and material only at those designated locations. The staging will not deny access of a client and will comply with access requirements for fire fighting equipment. The staging area is depicted on page 115 (S-1) of the 90% design plans and encompasses the rear third of the existing parking lot.
8. The Grantee and their designated representatives will visit the Restored Area frequently and because there is limited, if any, parking on the road shoulder, the Grantor will designate appropriate parking areas to be used by the Grantee and designated representatives.
9. During active construction periods, anticipated to last up to 10 weeks in late summer of 2011 and 2013, access to the Restored Area will be prohibited to all persons not designated by the Grantee. Orange fence will be used to delineate the active construction area (see the 90% design plans) and will remain until construction is completed for the season. After construction the contractor will remove the fence.
10. Access into or through the Project Area will be prohibited for five (5) years for all persons not designated by the Grantee. Failure to adequately control access may compromise the revegetation efforts and void contractor responsibility for the revegetation success. The Grantee will help prevent access to the Restored Area by taking the following progressive measures at the discretion of the Grantee:
 - a) installing signs along the permanent perimeter of the Restored Area, then, if necessary,
 - b) installing a rope around all or part of the permanent perimeter of the Restored Area, then, if necessary,
 - c) installing a fence around all or part of the permanent perimeter of the Restored Area.

- The Grantee will remove all signs, rope, and fence at the end of the restoration project.
11. The Grantor will assist in preventing access to the Restored Area for five (5) years by:
 - a) informing persons found entering the Restored Area that the area is closed, and,
 - b) notifying the Grantee of repeated access issues.
 12. The Grantor can expect a significant change in the visual aesthetics in the Restored Area, specifically, a long term reduction in visual screening due to thinning, relocation, and removal of existing vegetation. Additionally, for the first five years, visual aesthetics may be impacted due to irrigation pipe, temporary best management erosion control practices, fencing, perimeter rope, and/or access control signs. Short term visual impacts also include the presence of construction equipment and supplies, and staging of rock, soil, and other material during periods of active construction. These visual impacts will be minimized by:
 - a) covering irrigation pipe with mulch or duff, and
 - b) not stockpiling material in or near the Restored Area beyond the period of active construction without permission of the Grantor.
 13. During construction, the Grantor will allow the Grantee to establish construction access to the Restored Area as designated in the 90% design drawings (March 2011). These areas of construction access will be restored to the extent feasible before October 15th of that year.
 14. The Grantor should expect construction noise weekdays between 8am and 6pm during construction periods consistent with TRPA guidelines.
 15. The Grantee will encourage the Grantor to review The Project's final design documents and will make every attempt to accommodate comments and suggestions within the scope of funding and regulatory restrictions.
 16. Forest health will be improved by The Project, but forest health will degrade in succeeding years unless the Grantor takes steps to maintain it.
 17. The Grantee makes no assurance and will provide no compensation for any change in property value.
 18. The Project has been designed not to increase flood risk to any existing structure.
 19. If requested by the Grantor, TRPA may re-examine the delineation of the Stream Environment Zone (SEZ) boundary as a result of The Project, but the Grantor should not *expect* a change in the SEZ boundary.
 20. The Grantor should expect the Restored Area to be routinely inundated during annual high flow conditions of the creek following The Project. Inundation may temporarily reduce access through the Restored Area, but this process is a critical aspect of the sediment reduction strategy.
 21. The Grantee will monitor the Restored Area for 10 years following construction (anticipated to be from October 2013 through October 2023). Monitoring may involve photos, surveying, and water quality sampling.
 22. The Grantee is not responsible for completion of the Grantor's residential BMPs.

Mr. D. Craig Robinson



D. Craig Robinson
Landowner

MARCH 11, 2011
Date

Nevada Tahoe Conservation District

Douglas Martin
District Manager

Date

Attest as to form:

Leslie Admirand
Washoe County District Attorney

Date

Date: FEB 11, 2011

Scott Brown
Nevada Tahoe Conservation District
PO Box 915
400 Dorla Court
Zephyr Cove, NV 89448

SUBJECT: Middle Rosewood Creek Area A SEZ Restoration

Dear Mr. Martin:

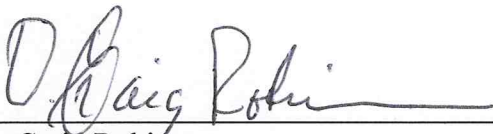
Permission is hereby granted to the Nevada Tahoe Conservation District (NTCD), its authorized agents and/or contractors to enter in and upon the grounds of 948 Tahoe Blvd. (APN 132-233-01), Incline Village for the purpose of surveying, constructing, monitoring, and revegetating Rosewood Creek and to accomplish all necessary incidents thereto.

This permission is granted for a period of thirteen (13) years from March 2010.

This permission is granted with the understanding that NTCD and its authorized agents and/or contractors agree to hold harmless and indemnify the owner from any loss or liability, financial or otherwise, resulting from any claim, demand, suite, action or cause of action based on bodily injury including death or property damage caused by the performance of work under this Right of Entry.

This permission is granted with the understanding that you will hereafter, without necessary delay, prosecute said work to its completion.

Sincerely,



D. Craig Robinson
948 Tahoe Blvd.
Incline Village, NV 89451

Accepted on behalf of NTCD

By: _____
DOUG MARTIN
District Manager