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Title: Compliance Order No. HWB-14-20 Addendum 2 - Storm Water Engineering
Structure Work Plan: Attachment A - Construction Scope and Schedule

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**Compliance Order No. HWB-14-20
Addendum 2 – Storm Water
Engineering Structure Work Plan:
Attachment A – Construction Scope and Schedule**

Construction Scope:

- a. Institutional Low Impact Development (LID) Master Plan
 - i. Master Plan / Standards: Subproject consists of identifying opportunities to use LID storm water controls to minimize sediment and other contaminant transport, minimize total volume of storm water discharged to the canyons, and reduce peak velocities/flows entering the canyons from developed areas. This project contains two distinct elements. Element 1: develop a LID Master Plan for Los Alamos National Laboratory (LANL); Element 2: develop LID standards for LANL that will also be provided to Los Alamos County.
 - ii. TA-3 Main Gate Entry (aka TA-61 Main Entry Pond): This subproject, identified in the LID Master Plan, improves storm water quality via increasing infiltration, reducing peak velocities/flows and reducing sediment transport. Prior to completing this project storm water in this area runs through a limited number of entry points directly into the main pond feature/discharge point. The project consists of increasing the number of entry locations to improve storm water distribution into this feature. In addition, once in this area, the storm water conveyances will increase by routing storm water through either (1) rip rap swales and/or forebays, or (2) level spreaders prior to reaching the main pond feature/discharge point. In addition, re-purposed segmental blocks will be used in and around riprap swales to further slow storm water flows and invasive plants will be removed. Final plantings will include native basin seed mix, native perennial seed mix, native upland seed mix and native shrubs/trees.
 - iii. 03-0028 Parking (aka TA-3 Building 28 East): This subproject, identified in the LID Master Plan, improves storm water quality via increasing infiltration, reducing peak velocities/flows and reducing sediment transport. Prior to completing this project storm water in this area directly enters the storm sewer system. The project consists of installing curb cuts to direct storm water into a pervious area. This area will be improved to include rip rap swales, forebays and a filter media with underdrain system to capture and treat storm water prior to discharge into the storm sewer system. The filter media system will contain an emergency overflow to ensure discharges occur during larger storm events.
 - iv. TA-53 Bldg 365 West Parking: This subproject, identified in the LID Master Plan, improves storm water quality via increasing infiltration, reducing peak velocities/flows and reducing sediment transport. Prior to completing this project storm water in this area directly entered the storm sewer system. The project consists of retrofitting the existing storm inlet to function as a detention structure. An asphalt swale and one other asphalt area will be removed and replaced with riprap and/or turf reinforced matted swales. Storm water from the parking lot being routed directly toward the inlet will be redirected within the pervious area to lengthen flow path prior to discharge.
 - v. Additional Designs: These subproject designs will be completed to ensure flexibility with meeting overall scope requirements of the Addendum 2 SEP and allow potential additional projects to be completed if funding is available when all other projects identified in this Attachment A are complete. Each of the four designs improve storm water quality via increasing infiltration, reducing peak velocities/flows and reducing sediment transport. The designs, as identified in the LID Master Plan, are:
 - a. TA-53 La Mesita – East and the eastern portion of the TA-53 La Mesita – Swale
 - b. TA-3 Wellness Center
 - c. TA-3 Physics – South Parking
 - d. TA-3 Building 123 - East

- b. Wetland Enhancement – Mortandad Watershed: Subproject consists of installing a grade control structure downstream of the relatively flat hydraulic grade area with established vegetation below Individual Permit (IP) sampler M-SMA-1 where a head-cut is forming. The structure will decrease sediment transport and reduce peak velocities by arresting headcut formation and further flattening the hydraulic grade in this area.
- c. Upper Cañon de Valle Run-on Controls – Cañon de Valle Watershed: Subproject consists of the following elements:
 - a. Upper project area: the existing channel will be stabilized to minimize potential sediment transport,
 - b. Middle project area: an existing flow restriction will be replaced with a grade control feature, and
 - c. Lower project area: a retention structure will be installed to increase infiltration, decrease peak velocities, and decrease sediment transport.
- d. North Ancho Controls – Ancho Watershed: Subproject consists of installing two structures in the middle and lower portions of North Ancho Canyon. These structures detain low channel flows, reduce downstream sediment transport by capturing some sediment, and reduce peak flows during low and moderate storm events.
- e. DP Dissipater – Los Alamos (DP) Watershed: Planning and design efforts were being completed for this project to address runoff from a heavily urbanized portion of the Los Alamos town site. The initial project location selected through the core team and based on input for Los Alamos County became inaccessible early in the design process due to a County project. A second location was identified. During the early design process it was determined to not meet the primary criteria for project selection as identified in Addendum 2. NMED staff was notified during a 2017 quarterly core meeting.
 - a. Lower Watershed Control – Sandia Watershed: Subproject consists of installing two grade control structures where head cuts are beginning to form. These structures reduce sediment transport and also increase bed elevation slightly in the immediate area. In addition, one plunge pool system will be installed in a side channel containing a head cut to minimize sediment transport. A second plunge pool system will be installed in the main Sandia channel at another head cut location to minimize sediment transport. Bank stabilization measures will be installed along a highly erodible bank located along a bend in the main Sandia channel to minimize sediment transport.
 - b. Middle Mortandad Controls – Mortandad Watershed: Subproject consists of routing storm water from the mesa top TA-55 detention pond through an energy dissipator and into Effluent Canyon upstream of the current discharge location. Within Effluent Canyon a grade control structure will be installed to flatten the hydraulic grade and increase bed elevation immediately downstream of the new discharge location. These elements will prevent further erosion and downstream sediment transport from the existing erosion feature without increasing peak flows at/downstream of the current discharge location.

Construction Schedule

Subproject	Construction ¹ Start Date	Construction ² Complete Date
LID: Master Plan/Standards	N/A ³	N/A ³
LID: TA-3 Main Gate Entry	November 7, 2017	November 29, 2018
LID: 03-0028 Parking	January 10, 2018	September 17, 2018
LID: 53-365 West Parking	October 22, 2018	December 12, 2018
LID: Additional Designs	N/A ⁴	N/A ⁴
Wetland Enhancement - Mortandad Watershed	July 17, 2017	September 12, 2017
Upper Cañon de Valle Run-on Controls – Cañon de Valle Watershed	September 14, 2018	January 7, 2019
North Ancho Controls – Ancho Watershed	March 19, 2018	July 27, 2018
DP Dissipater – Los Alamos (DP) Watershed	N/A ⁵	N/A ⁵
Lower Watershed Control – Sandia Watershed	August 10, 2018	November 14, 2018
Middle Mortandad Controls – Mortandad Watershed	October 1, 2018	January 22, 2019

Notes:

1. Construction Start Date represents anticipated mobilization date.
2. Construction Complete Date represents date final demobilization date and punchlist approval date, whichever is later. Substantial completion date anticipated 10 business days prior to this date.
3. Master Plan/Standards had no construction component.
4. Four LID project designs completed without construction scheduled at time of scope and schedule approval.
5. DP Dissipater project discontinued as detailed in the scope description above.