

ATTACHMENT 1

2012 SITE-WIDE BMP ACTIVITIES

Attachment 1: Site-wide BMP Activities 2012

OUTFALL (Location)	BMP ACTIVITIES DURING 2012
001 (South Slope below Perimeter Pond)	Performed regular outfall maintenance including inspection of the outfall and flume for any excess sediment/debris; observation of sediment and erosion controls around the perimeter of the outfall and drainage area; checking sample box, flow meter control box for the presence of debris and/or animals. Flow meter reset and tape replaced on monthly basis. Cleaned sample boxes and flume prior to rain events. Conducted weed abatement. Completed initial site walk and pre-planning for implementation of BMPs for Outfall 001 BMP Compliance Plan. Temporary BMPs (hay bale check structures and fiber rolls) were installed in the drainage, and removed prior to installation of permanent BMPs. A trench alongside the road was excavated, lined with geotextile, and filled with gravel to enhance drainage. Existing rills along the road were filled with rip rap to prevent further erosion. Dressed roads with fresh gravel, and graded the road upstream from the culvert to direct runoff. Installed permanent BMPs (two check dams in the drainage, and an apron of rip rap at the inlet of the flume). Banks and access paths were restored with jute matting and fiber rolls.
002 (South Slope below R-2 Pond)	Performed regular outfall maintenance including sediment and erosion control inspections around the perimeter of the outfall drainage area; inspection of outfall and flume for any excess sediment/debris; checking flow meter control box for the presence of debris and/or animals; flume, outfall and sample box drained and cleared of sediment and debris. Flow meter reset and tape replaced on monthly basis. Completed annual ISCO maintenance inspection and reset of ISCO autosampler. Cleaned sample boxes and flume prior to rain events.
003 Radioactive Material Handling Facility (RMHF)	Performed regular outfall maintenance including sediment and erosion control inspections; flume and outfall inspections for any excess sediment/debris; maintenance inspections of the structural BMPs including the stormwater retention basin, conveyance and filter system; checking sample box, flow meter control box for spiders and presence of debris and/or animals. Flow meter reset and tape replaced on monthly basis. Installed hay bale and biodegradable fiber rolls in the drainage at the culvert entrance at RMHF south fence line, and removed T-posts from areas south of RMHF and east of Building 4024 (B4024).
004 Sodium Reactor Experiment (SRE)	Performed regular outfall maintenance including sediment and erosion control inspections; flume, outfall and liner inspections for any excess sediment/debris; maintenance inspections of the structural BMPs including the stormwater retention system,

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	conveyance and filter system; checking sample box, flow meter control box for the presence of debris and/or animals; inspection of dedicated retention tanks. Flow meter reset and tape replaced on monthly basis. Cleaned sample boxes and flume prior to rain events. Removed silt fence at 17 th Street pond, installed silt fence and fiber roll at the Eastern Debris area, and replaced hay bales at Old Conservation Yard (OCY) and New Conservation Yard (NCY) drainage with a gravel bag check dam. Performed vegetation clearance, street sweeping, and cleaning of the culverts. Installed fiber rolls above culverts, and placed gravel filter bags at the entrance to culverts. Added jute matting to slope at west end of concrete culvert and rip rap to the culvert inlet. Installed rip rap to dissipate runoff from the upper paved area.
005 Former Sodium Disposal Facility (FSDf)-1	Performed regular outfall maintenance including sediment and erosion control inspections; inspection of the outfall and flume for any excess sediment/debris; maintenance inspections on structural BMPs including the conveyance, stormwater retention system, and sediment basin liner; inspection of dedicated retention tanks. Connected the stormwater retention tanks in series. Cleaned sample boxes and flume prior to rain events.
006 (FSDf-2)	Performed regular outfall maintenance including inspection of the flume, outfall and liner for any excess sediment/debris; sediment and erosion control inspections near the outfall; maintenance inspections on the structural BMPs including the stormwater retention system and filter system; inspection of dedicated retention tanks; checking sample box, flow meter control box for the presence of debris and/or animals. Flow meter reset and tape replaced on monthly basis. Connected the stormwater retention tanks in series. Cleaned sample boxes and flume prior to rain events.
007 (Building 100)	Performed regular outfall maintenance including sediment and erosion control inspections at perimeter of outfall; observation of the sediment basin liner and outfall for any excess sediment/debris or deficiencies; maintenance inspection of the conveyance system, stormwater retention system, and sediment basin liner; checking high level float/switch in sedimentation basin; inspection of dedicated retention tanks. Connected the stormwater retention tanks in series. Cleaned sample boxes and flume prior to rain events.
008 (Happy Valley)	Performed regular outfall maintenance including sediment and erosion control inspections near the perimeter of the outfall and within the drainage area; maintenance and repair of existing

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	<p>sediment and erosion controls; observation of the outfall and flume for any excess sediment/debris, and clearing excess sediment from the flume; checking sample box, flow meter control box for the presence of debris and/or animals. Flow meter reset and tape replaced on monthly basis. Completed bi-annual inspections of approximately eleven hundred native plants within the outfall and Happy Valley Drainage. Cleaned sample boxes and flume prior to rain events. Conducted maintenance near flume that included removal of built-up sediment in rip rap just up gradient of flume, and replaced fiber rolls and silt fence adjacent to the flume. Removed hay bales, fiber rolls, and stakes at restored Happy Valley ISRA areas. Applied supplemental gravel to access road and turnouts in Happy Valley. Temporary erosion controls (sand bags and fiber rolls) were placed along the access road to wells RD-76 and PZ-074, and road closure measures were installed to prevent through-traffic. Two rip rap check dams were installed upstream from the outfall flume.</p>
<p>009 (WS-13 Drainage)</p>	<p><i>Outfall BMPs:</i> Performed regular outfall maintenance including checking sample box, flow meter control box for spiders and presence of rodents/animals. Flow meter reset and tape replaced on monthly basis. Completed bi-annual inspections of approximately nineteen hundred native plants within the outfall watershed.</p> <p><i>Hydroseed:</i> Applied hydroseed at B-1, LOX, Area II Landfill (A2LF), and sites within the Northern Drainage.</p> <p><i>B-1 BMPs:</i> At ISRA area B1-1C, replaced old fiber rolls with biodegradable fiber rolls, installed supplemental rip rap on the slope, removed silt fence, and installed a check dam. Replaced broken/spent gravel bags and performed street sweeping at the B-1 entrance. Installed 36-inch curb cuts and additional check dams/slope protection upstream from the B-1 media filter. During rain events, sand bags were temporarily deployed at the curb cuts to divert flow from the road into the B-1 culvert. Placed additional rip rap within the B-1 media filter bed and near the entry gate into the B-1 filter media area. Removed spent fiber rolls from B1-1A area. Removed silt fence from B1-1A vegetated area and constructed an earth berm in its place. Placed a gravel path at the B-1 site and roughened soil to encourage rooting after hydroseeding. Re-adjusted loosened tarp and replaced sand bags along the top and at base of gunite slope at B-1. Installed 18-inch curb cuts in the planted median near Post 505 and planted container plants.</p>

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	<p><i>Culvert BMPs:</i> Removed silt fence and spent fiber rolls at Culvert Modification (CM) 11. Replaced hay bale at CM-3, removed sediment accumulated within the asphalt swale between CM-6 and CM-11, and removed old silt fencing in the drainage upstream from CM-9. Installed fabric over weir boards at CM-1, CM-2, CM-3, CM-4, CM-6, CM-8, CM-9, CM-10, and CM-11, and added gravel to the media filter beds at CM-2, CM-3, CM-4, CM-8, CM-10, and CM-11. Along Area II Road, replaced and installed additional biodegradable fiber rolls along road west of CM-11. Removed excess sediment, plant debris, and loose fiber roll straw from the asphalt swale east of CM-2, the asphalt swale between CM-11 and CM-6, and behind the sand bag berm at the corner of Helipad Road and Area II Road. Replaced broken sand bags and maintained sand bag berm northwest of CM-1. Repaired cracked concrete seals around the HDPE culverts at CM-1 and CM-9. Sediment and debris were cleared from culverts and basins, and rip rap was added at CM-9 upstream of the weir boards. Trimmed and replaced fabric wrapping on weir boards at CM-1, CM-2, CM-10, CM-3, CM-4, CM-6, CM-11, CM-8, and CM-9.</p> <p><i>Road Maintenance BMPs:</i> Installed fiber rolls and rip rap along the former culvert at Area I Road. Applied gravel to the Well 13 Road entrance and access road. Vegetation clearance, removal of spent fiber rolls and maintenance of paths in Instrument Experimentation Lab (IEL) and Bowl area in preparation for Bee Fest. Replaced fiber rolls and removed excess sediment along RD-47 Road. Installed biodegradable fiber rolls along Area II Landfill access road. Replaced sand bag berm at foot of access road, adjacent to CM-6. Road at A2LF was dressed with fresh gravel, and gravel was added to turnouts along Area II Road.</p> <p><i>CM-9 BMP Addendum Activities:</i> Installed matting, fiber rolls, gravel, and sand bags on slopes along the road east of CM-9 and north of IEL-3.</p> <p><i>RMMP BMPs:</i> Exposed geocell material at LOX was covered with gravel, and deteriorated gravel filter bags in the berm were replaced with sand bags. Performed manual cleanup of lead shot in the Northern Drainage. Completed installation of structural BMPs, including High density Polyethylene (HDPE) slope drains at the LOX sand bag berm, rip rap check dams in the Northern Drainage, rip rap along banks for protection against erosion and velocity dissipation, and grouted rip rap at the box culvert. Added gravel at the LOX sand bag berm and placed boulders near the slope drain inlets to protect the gravel berms from traffic. Pole</p>

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	<p>cuttings and native plants were installed in the Northern Drainage during completion of the RMMP work. Following RMMP construction activities, jute matting was applied to slopes below A2LF where crews accessed the Northern Drainage.</p> <p><i>NASA BMPs:</i> Maintained plastic sheeting covering active ISRA excavation areas in Ash Pile/Sewage Treatment Plant (AP/STP) and at ISRA area Expendable Launch Vehicle (ELV)-1C, and added supplemental sand bags. Repaired construction fencing at ELV. The swale along Helipad Road and downstream culvert were cleaned, and jute matting and fiber rolls were installed along the slope to prevent further migration of sediment. Performed street sweeping from Helipad Road to CM-1 and cleared plant debris and soil from two swales down gradient from ELV. Installed plastic sheeting to divert water from the ELV excavation and installed a silt fence at the base to retain sediment. Installed sand bags and fiber rolls at the bottom of Helipad Road to direct runoff into the culvert. Installed a sand bag diversion along the curb from the old fire station to Helipad, and two additional sand bag berms were installed up gradient from ELV. Replaced and secured plastic sheeting at western and eastern portion of ISRA area ELV-1C. The Helipad berms were raised, and covered with plastic sheeting. Placed 20 percolation holes behind the western sand bag berm and 35 percolation holes behind the eastern sand bag berm at the Helipad. A flow-through expandable plug was installed at Berm B, and Berm A was plumbed to storage tanks near Outfall 010. The swale at the east end of Helipad was blocked with plastic sheeting and sand bags to prevent flow to Outfall 009. Pumps were placed at Berm A and at the base of the swale to pump captured water to the storage tanks.</p> <p><i>Lower Parking Lot BMP:</i> Received 90% design plans for the Lower Lot Biofilter BMP and continued construction of the Lower Lot Biofilter, including construction of the sediment basin, media filter, and shade structure; installation of erosion control matting, rip rap aprons, and silt fence; planting of native plants; and excavation and placement of the cistern. Spent fiber rolls were removed from the biofilter and sediment basin area prior to excavation. Temporary BMPs were implemented during Lower Lot biofilter construction, including street sweeping, stockpile management, and installation of fiber rolls, tarps, and sand bags. Replaced the wooden retaining wall at the base of gunite-lined slope above the Lower Lot with new wooden boards backed with filter fabric and installed sand bags and fiber rolls at the northwest</p>

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	<p>end to prevent runoff around the wall.</p> <p><i>IEL Area BMPs:</i> Performed street sweeping at the Building 1436 (B1436) parking lot. Removed silt fence and spent fiber rolls at the former Atomics International tower area near B436. Removed spent fiber rolls from well-vegetated ISRA areas IEL-1 and IEL-2.</p>
<p>010 (Building 203)</p>	<p>Performed regular outfall maintenance including maintenance inspections on structural BMPs including the filter media, conveyance and the stormwater retention system; inspection of dedicated retention tanks; maintenance and inspection of sediment and erosion controls within areas of disturbance or sparse vegetation; checking sample box, flow meter control box for the presence of debris and/or animals. Flow meter reset and tape replaced on monthly basis. Cleaned sample boxes and flume prior to rain events. Performed maintenance on pump at base of filtration media/system. Removed spent fiber rolls from well vegetated area west of the outfall. Installed a new pump at the discharge of outfall. Retention tank pressure plug was serviced and replaced.</p>
<p>011 (Perimeter Pond)</p>	<p><i>Outfall BMPs:</i> Performed regular outfall maintenance including maintenance inspections on structural BMPs including the weir, filter media, pump and conveyance system; sediment and erosion control inspections at flume, drainage area, perimeter of outfall, pond and around conveyance system; checking sample box, flow meter control box for the presence of debris and/or animals. Flow meter reset and tape replaced on monthly basis. Cleaned sample boxes and flume prior to rain events. Constructed a swale, drain, and rip rap sediment catch near road leading down to outfall flume and sample point, and silt fence along the Outfall 011 access road. Revised outfall BMP by installing a y-strainer, extending the wall to direct flow into the sample box, and plumbing the Stormwater Treatment System (SWTS) effluent to media bed. Completed initial site walk and pre-planning for implementation of BMPs for Outfall 011 BMP Compliance Plan. BMPs include installation of two check dams and a rip rap apron at the sample box outlet.</p> <p><i>Maintenance and Implementation of Post-Demo BMPs:</i> Laid fresh gravel on the road at Component Testing Laboratory (CTL)-III above perimeter pond, and compacted loose soil and slopes of former road. Performed selective weeding of mustard plants around the former Bowl, CTL-III facilities. Repaired a washed out water bar along the road to the former Canyon Test Stands. Implemented post-demolition BMPs at the former Building 1359</p>

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	<p>(B1359) that include biodegradable fiber rolls, gravel, and jute matting. Replaced sand bags on CTL-V road by the old fuel farm and cleaned up weed abatement debris from CTL-V road. Removed spent fiber rolls from well-vegetated areas north of the Advanced Propulsion Testing Facility (APTF), Laser Engineering Test Facility (LETF), and near CTL-I. Replaced the deteriorated straw wattles on the construction area above the Area I Burn Pit area, and repaired silt fence. Applied hydroseed at LETF, CTL-III, and CTL-V.</p> <p><i>Stormwater Treatment System (SWTS), Conveyance, and Pond Construction and Maintenance:</i> Revised intake structure piping at R-1 Pond and moved pond level staff gage. Installed pumps, piping, valves, electrical and secondary containment for chemicals at the Outfall 011 SWTS. Constructed raised, grated platforms around the bag filters at Outfall 011 SWTS. Modified uphill discharge piping to reduce discharge velocity. Installed a concrete liner in the culvert underneath SWTS. Installed jute matting and biodegradable fiber rolls to the south slope of the Outfall 011 SWTS for sediment and erosion control. Transplanted mulefat cuttings to two 5-ft areas around R-1 Pond where vehicles disturbed soil.</p>
012 (ALFA Test Stand)	<p>Performed regular outfall maintenance including maintenance inspections on structural BMPs including pump, conveyance system and retention tank; transfer pump maintenance; observation of condition of the sand bag berm; inspection of outfall and perimeter for presence of rodents/animals. Conducted weed abatement at media beds and cleaned sample boxes and flume prior to rain events.</p>
013 (BRAVO Test Stand)	<p>Performed regular outfall maintenance including maintenance inspections on structural BMPs including pump, conveyance system and retention tank; observation of condition of the sand bag berm; inspection of outfall and perimeter for presence of rodents/animals. Cleaned sample boxes and flume prior to rain events.</p>
014 Advanced Propulsion Test Facility (APTF)	<p>Performed regular outfall maintenance including inspections on structural BMPs; observation of the condition and integrity of the liner and berm; observation of sediment and erosion control BMPs around outfall perimeter. Cleaned sample boxes and flume prior to rain events. Implemented post-demolition BMPs at the former APTF facility that include biodegradable fiber rolls, gravel, and jute matting. Applied hydroseed near outfall. Completed the BMP berm by raising it 2 feet and installed a bento liner. Completed</p>

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	retro-fitting of riser and discharge piping that leads from bermed area to retention tank. A screen was installed on the outfall discharge pipe.
018 (R-2 Spillway)	<p><i>Outfall BMPs:</i> Performed regular outfall maintenance including maintenance inspections on structural BMPs including the filter media and conveyance system; checking sample box, flow meter control box for the presence of debris and/or animals. Flow meter reset and tape replaced on monthly basis. Cleaned sample boxes and flume prior to rain events.</p> <p><i>Post-demo BMPs:</i> Completed implementation of biodegradable fiber rolls, jute matting and sand bags at the former Sewage Treatment Plant (STP)-III. Applied hydroseed at Environmental Effects Lab (EEL) and STP-III. Installed post-demo BMPs (sand bags and fiber rolls) at Building 4015.</p> <p><i>Stormwater Treatment System (SWTS), Conveyance, and Pond Construction and Maintenance:</i> Added gravel to areas of loose soil around the Outfall 018 SWTS. Installed a raised, grated platform around bag filter vessels and piping to granulated activated carbon (GAC) vessels. Constructed a short wall to separate area of work within the SWTS area and lined culvert on west side of SWTS. Concrete and rebar supports were installed at the walkway above R-2 Pond, and post-construction BMPs (jute matting and fiber rolls) were installed. Surge tank from Perimeter Pond was placed at R-2 and painted.</p>
019 (GETS)	<p>Quarterly maintenance including: system alarm testing, media vessel leak detection and repair, air compressor maintenance, an oil change and belt tension inspection on the air compressor, inspected motor rotation on transfer pumps PC-200 and PC-201, cleaned iron scaling off differential pressure transducers DPI-200 & DPI-201, cleaned sump pump and verified operation, inspected and verified operation of safety shower, cleaned foot valves, strainers and flushed potable water through chemical injection pumps for calcium chloride (CaCl₂) and sulfuric acid (H₂SO₄), and exercised pneumatic valves. Media vessels replaced and backwashed, and associated bag filters replaced as needed. The Horiba U-22 Water Quality Instrument was factory calibrated as part of compliance monitoring and sampling efforts. Automated pH adjustment system was function tested and calibrated, a metals treatment resin was changed out, and Pacific Health and Safety (H&S) completed an H&S audit in First Quarter 2012. System placed temporarily offline to observe effect on seeps during Third Quarter 2012. Automated influent valves were</p>

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	<p>installed and modifications to the PLC screen were made for remote control of valves on October 2012. Replaced purolite media for metals treatment and the installed temporary perchlorate vessels to perform a pump test on RD-10. Semiannual housekeeping was performed in November 2012. The WS-9A pump was pulled, cleaned and re-installed in December 2012. Rip rap dissipater at end of discharge line down gradient of Outfall 001 replaced. Overall system operation is nominal.</p>
<p>RSW-002 (Arroyo Simi Frontier Park)</p>	<p>Collected receiving water sample at Arroyo Simi Frontier Park location in Fourth Quarter 2012. Conducted monthly receiving water inspections.</p>