APPENDIX A
ENVIRONMENTAL PERFORMANCE STANDARDS AS AMENDED ON APRIL 6, 2017

ENVIRONMENTAL PERFORMANCE STANDARDS
APRIL 6, 2017

For Massachusetts National Guard Properties at the Massachusetts Military Reservation

CAMP EDWARDS TRAINING AREA GENERAL PERFORMANCE STANDARDS

None of the following banned military training activities shall be allowed in the Camp Edwards Training Areas:
-Artillery live fire
-Mortar live fire
-Demolition live fire training
-Artillery bag burning
-Non-approved digging, deforestation or vegetation clearing
-Use of' 'CS', riot control, or tear gas for training outside the NBC bunkers
-Use of field latrines with open bottoms
-Vehicle refueling outside designated Combat Service Area and Fuel Pad locations
-Field maintenance of vehicles above operator level

Limitations on the use of small arms ammunition and live weapon fire fall into the following two categories:

- Live weapon fire is prohibited outside of established small arms ranges. Live weapon fire is not allowed on established small arms ranges except in accordance with Environmental Performance Standard 19, other applicable Performance Standards, and a range-specific plan approved through the Environmental Management Commission (EMC).

- Blank ammunition for small arms and simulated munitions may be used in areas outside of the small arms ranges, using only blank ammunition and simulated munitions identified on an approved list of munitions. Joint review and approval for inclusion on the list shall be through by the Environmental & Readiness Center (E&RC) and the EMC.

Each user will be responsible for proper collection, management, and disposal of the wastes they generate, as well for reporting on those actions.

Use and application of hazardous materials or disposal of hazardous waste shall be prohibited except as described in the Groundwater Protection Policy.

Vehicles are only authorized to use the existing network of improved and unimproved roads, road shoulders, ranges and bivouac areas, except where necessary for land rehabilitation and management, water supply development, and remediation, or where roads are closed for land rehabilitation and management.

Protection and management of the groundwater resources in the Camp Edwards Training Area will focus on the following:

- Development of public and Massachusetts Military Reservation water supplies.
- Preservation and improvement of water quality and quantity (recharge).
- Activities compatible with the need to preserve and develop the groundwater resources.

All users of the Camp Edwards Training Area must comply with the provisions of the Groundwater Protection Policy and any future amendments or revisions to the restrictions and requirements. These will apply to all uses and activities within the overlays relative to Wellhead Protection, Zone II's within the Cantonment Area, and the Camp Edwards Training Areas.

Development of water supplies will be permitted within the Camp Edwards Training Area after review and approval by the managing agencies, principally the Department of the Army and its divisions, together with the Massachusetts Department of Environmental Protection, and the Massachusetts Division of Fish and Wildlife.

All phases of remediation activities will be permitted within the Camp Edwards Training Area after review and approval by the managing agencies, principally the Department of the Army and its divisions, together with the federal and state agencies who will have jurisdiction for remediation.

Pollution prevention and management of the Camp Edwards training ranges will focus on and include the following:

The Camp Edwards Training Area, including the Small Arms Ranges (SAR) and their associated "Surface Danger Zones," and any areas where small arms or other munitions or simulated munitions are used, shall be managed as part of a unique water supply area under an adaptive management program that integrates pollution prevention, and best management practices (BMP), including the recovery of projectiles. This will be done through individual range-specific plans that are written by the Massachusetts National Guard and approved for implementation through the EMC and any other regulatory agency having statutory and/or regulatory oversight. Adaptive, in this context, means making decisions as part of a continual process of monitoring, reviewing collected data, evaluating advances in range monitoring, design and technology, and responding with management actions as dictated by the resulting information and needs of protecting the environment while providing compatible military training within the Upper Cape Water Supply Reserve.

A range plan shall be designed and followed to reduce the potential for an unintended release to the environment outside of the established containment system(s) identified in the range-specific plans. All users must be aware of, and comply with, the Environmental Performance Standards that are applicable to all SAR activities. Any range specific requirements will be coordinated through the E&RC with the EMC, incorporating those specific requirements into the appropriate range-specific plans and range information packets. Camp Edwards SAR Pollution Prevention Plan shall be followed to prevent or minimize releases of metals or other compounds related to the normal and approved operation of each SAR. The adaptive SAR management program components required in each range-specific plan shall include:

- Consultation with applicable agencies with oversight of the training area before undertaking any actions that are subject to state and/or federal regulatory requirements.
- Specific recovery plans for the removal and proper disposition of spent projectiles, residues and solid waste associated with the weapons, ammunition, target systems, and/or their operation and maintenance.
- Reduction of adverse impacts to the maximum extent feasible, including consideration for the design/redesign and/or relocation of the activity or encouraging only those activities that result in meeting the goal of overall projectile and/or projectile constituent containment.
- Internal and external coordination of documentation for the Camp Edwards range management programs and other related Camp Edwards management programs including: the Integrated
- Training Area Management Program, Range Regulations, Camp Edwards Environmental Management System, Civilian Use Manual, and Standard Operating Procedures.
- Long-term range maintenance, monitoring and reporting of applicable parameters and analysis.

The Massachusetts National Guard shall ensure that all training areas where munitions or simulated munitions are used or come to be located, including range areas, range surface danger zones, and any other areas within the Upper Cape Water Supply Reserve that are operational ranges are maintained and monitored following approved management plans that include planning for pollution prevention, sustainable range use and where applicable, restoration.

Protection and management of the vegetation of the Camp Edwards Training Area for focus on the following:

- Preservation of the habitat for federal- and state-listed rare species and other wildlife.
- Preservation of the wetland resource areas.
- Activities compatible with the need to manage and preserve the vegetative resources.
- Realistic field training needs.
- Identification and restoration of areas impacted by training activities.

Goals for the Adaptive Ecosystem Management approach to management of the Camp Edwards properties will be as follows:

- Management of the groundwater for drinking water resources
- Conservation of endangered species.
- Management of endangered species habitat for continuation of the species.
- Ensuring compatible military training activities.
- Allowing for compatible civilian use.
- Identification and restoration of areas impacted by training activities.

The Environmental Performance Standards will be incorporated into the programs and regulations of the Massachusetts National Guard as follows. Those standards relating to natural resources management shall be incorporated as standards into each of the state and federal environmental management programs and attached as an appendix or written into the documentation accompanying the plan or program. All the Environmental Performance Standards will be attached to the Integrated Training Area Management Plan 'Trainer's Guide' and to the Camp Edwards Range Regulations. Modification of the Standards Operating Procedures will include review and conformance with the Environmental Performance Standards for trainers and soldiers at Camp Edwards.

SPECIFIC RESOURCE PERFORMANCE STANDARDS IN THE CAMP EDWARDS TRAINING AREA

1. Groundwater Resources Performance Standards

1.1. All actions, at any location within the Camp Edwards Training Areas, must preserve and maintain groundwater quality and quantity, and protect the recharge areas 1:0 existing and potential water supply wells. All areas within Camp Edwards Training Areas will be managed as State Zone U, and, where designated, Zone I, water supply areas.

1.2 The following standards shall apply to designated Wellhead Protection Areas:

- The 400-foot radius around approved public water supply wells will be protected from all access with signage. That protection will be maintained by the owner and/or operator of the well, or the leaseholder of the property.
- No new stormwater discharges may be directed into Zone I areas.

- No in ground septic system will be permitted within a Zone I area.
- No solid wastes may be generated or held within Zone I areas except as incidental to the construction, operation, and management of a well.
- Travel in Zone I areas will be limited to foot travel or to vehicles required for construction, operation, and maintenance of wells.
- No new or existing bivouac activity or area shall be located within a Zone I area.
- All other areas will be considered as Zone II designated areas and will be subject to the standards of the Groundwater Protection Policy.

1.3 Land-use activities that do not comply with either the state Wellhead Protection regulations (310 CMR 22.00 et seq.) or the Groundwater protection Policy are prohibited.

1.4 All activities will suppol1 and not interfere with either the Impact Area Groundwater Study and/or the Installation Restoration Program. All activities shall conform to the requirements of Comprehensive Environmental Response, Compensation and Liability Act, the Massachusetts Contingency Plan, and the Safe Drinking Water Act.

1.5 Extraction, use, and transfer of the groundwater resources must not de- grade [e.g. draw down surface waters] in freshwater ponds, vernal pools, wetlands, and marine waters, unless properly reviewed, mitigated, and approved by the managing and regulating agencies.

1.6 Land uses and activities in the Camp Edwards Training Areas will meet the following standards:

- Will conform to all existing and applicable federal, state and local regulations.
- Must be able to be implemented without interference with ongoing remediation projects.
- Allow regional access to the water supplies on the Massachusetts Military Reservation.

1.7 The following programs and standards will be used as the basis for protecting groundwater resources in the Camp Edwards Training Areas:

- Groundwater Protection Policy.
- Federal and Department of Defense environmental programs: Integrated Natural Resources Management Plan, Integrated Training Area Management Program, Range Regulations, Spill Prevention Control and Countermeasures Plan (or equivalent), Installation Restoration *Plan,* Impact Area Groundwater Study, or other remediation programs.
- State and federal laws and regulations pertaining to water supply.

2. Wetlands and Surface Water Performance Standards

2.1 Since there are relatively few wetland resources found at the Massachusetts Military Reservation, and since they are important to the support of habitat and water quality on the properties, the minimum standard will be no net loss of any of the wetland resources or their 100-foot buffers.

2.2 Land uses and activities will be managed to prevent and mitigate new adverse impacts and eliminate or reduce existing conditions adverse to wetlands and surface water resource areas. Impacts from remediation activities may be acceptable with implementation of reasonable alternatives.

2.3 Wetland area management priorities:

- Protection of existing; wetland resource areas for their contributions to existing and potential drinking water supplies.
- Protection of wetlands for rare species and their habitats.
- Protection of human health and safety.

2.4. Activities will be managed to preserve and protect wetlands and vernal pools as defined by applicable, federal, state, and local regulations. These activities will include replacement or replication of all wetland resource buffer areas, which are lost after completion of an activity or use.

2.5 All land altering activities within 100 feet of a certified vernal pool must be reviewed before commencement by the Massachusetts Department of Environmental Protection/Wetlands Unit and the Natural Heritage and Endangered Species Program within the Division of Fish and Wildlife for impacts to wildlife and habitat. The certification of vernal pools will be supported by the on site personnel and will proceed with the assistance of the appropriate state agencies.

2.6 All new uses or activities will be prohibited within the wetlands and their IOO-foot buffers, except those associated with an approved habitat enhancement or restoration program; those on existing improved and unimproved roads where appropriate sediment and erosion controls are put in place prior to the activity; or those where no practicable alternative to the proposed action is available. No new roads should be located within the 100-foot buffers. Existing roads within such buffers should be relocated provided that:

- The relocation does not cause greater environmental impact to other resources.
- There are funds and resources allocated for resource management and that those resources are approved and available for the relocation.

2.7 During the period of 15 February to 15 May, listed roads/trails within 500 feet of wetlands will be closed to vehicle access to protect the migration and breeding of amphibians. Emergency response and environmental management activities will not be restricted.

- Donnelly and Little Halfway Ponds maneuver trails (excluding the permanently closed section along the eastern edge of Donnelly Pond) from Frank Perkins Road north to Wood Road
- Red Maple Swamp trail from Wood Road north and east to Avery Road
- Orchard and Jefferson Roads (continuous) from Cat Road south and east to Burgoyne Road
- Maneuver trail(s) in powerline easement north of Gibbs Road from Goat Pasture Road west to the boundary of training areas C-13 and C-14
- Grassy Pond trail (side access to Sierra Range) from Gibbs Road south to Sierra Range
- Sandwich Road from the powerline easement north to the gas pipeline right of way
- Bypass Bog/Mike Range Road from entrance to Mike Range south and west to Greenway Road

2.8 No new bivouac area shall be located within 500 feet of any wetland. Any existing bivouac within a wetland buffer shall be relocated provided there are funds and resources allocated for the relocation.

3. Rare Species Performance Standards

3.1 As the Natural Heritage and Endangered Species Program of the Massachusetts Division of Fisheries & Wildlife has identified the entire Massachusetts Military Reservation as State Priority Habitat for state-listed species (version dated 2000-2001), all activities and uses must comply with the Massachusetts Endangered Species Act and its regulations.

3.2 Where activities and uses are not specifically regulated under the Camp Edwards Training Area Range and Environmental Regulations, including these Environmental Performance Standards, the MMR Environmental and Readiness Center must review the activities for conformance with the Integrated Natural Resource Management Plan, and shall- consult with the Natural Heritage and Endangered Species Program regarding potential impacts to state-listed species.

3.3 All activities impacting rare species habitat must be designed to preserve or enhance that habitat as determined by the MMR Environmental and Readiness Center in consultation with the Natural Heritage and Endangered Species Program.

3.4 Users are prohibited from interfering with state and federal listed species.

3.5 Users will report all sightings of recognized listed species, e.g. box turtles, within any area of the Massachusetts Military Reservation.

4. Soil Conservation Performance Standards

4.1 Activities and uses must be compatible with the limitations of the underlying soils. Limitations on uses and activities may be made where the soils or soil conditions would not support the activity.

4.2 Agricultural soil types will be preserved for future use.

4.3 Any perennial or intermittent stream identified by the Environmental & Readiness Center Office will be protected from siltation by retaining undisturbed vegetative buffers to the extent feasible.

4.4 Cultural resource evaluations must be completed before any earth-moving operation may take place in undisturbed areas with high potential for cultural resources, and earth moving may be limited to specific areas (See Cultural Resource Performance Standards).

4.5 An erosion control analysis will be made part of the land management programs (Integrated Natural Resource Management Plan, the Integrated Training Area Management Program, Range Regulations, Civilian Use, and Standard Operating Procedures) for the Camp Edwards Training Area, including appropriate mitigation measures where existing or potential erosion problems are identified.

4.6 For all improved and unimproved roads, ditches and drainage ways:

- All unimproved roads, ditches, roads and drainage ways identified for maintenance will be cleaned of logs, slash and debris.
- Unimproved roads and roads may not otherwise be improved unless approved for modification.
- Any trail, ditch, road, or drainage way damaged by activities will be repaired in accordance with the hazard and impact it creates.

4.7 Erosion-prone sites will be inspected periodically to identify damage and mitigation measures.

5. Vegetation Management Performance Standards

5.1 All planning and management activities impacting vegetation

- Will ensure the maintenance of native plant communities, and
- Shall be performed to maintain the biological diversity.

5.2 Revegetation of disturbed sites will be achieved by natural and artificial recolonization by native species.

5.3 Timber harvesting or clear-cutting of forested areas should not occur on steep slopes with unstable soils or with in the buffers to wetland resources.

5.4 Vegetation management will be subject to a forest management and fire protection program prepared by the users in accordance with federal standards, and carried out in a manner acceptable to the Massachusetts Military Reservation Committee and other state agencies or commissions, as may be designated by the Commonwealth of Massachusetts.

6. Habitat Management Performance Standards

6.l The Camp Edwards Training Area will be managed as a unique rare species and wildlife habitat area under n adaptive ecosystem management program that integrates ecological, socio-economic, and institutional perspectives, and which operates under the following definitions:

- Adaptive means making decisions as part of a continual process of monitoring, reviewing collected data, and responding with management actions as dictated by the resulting information and needs of the system.
- Ecosystem means a system-wide understanding of the arrangements of living and non-living things, and the forces that act upon and within the system.
- Management entails a multi-disciplinary approach where potentially competing interests are resolved with expert analysis, user and local interest considerations, and a commitment to compromise interests when the broader goal is achieved to manage the Camp Edwards Training Area as a unique wildlife habitat area.

6.2 The adaptive ecosystem management program will include:

- Coordinated documentation for the management programs, Integrated Natural Resource Management Plan, the Integrated Training Area Management Program, Range Regulations, Civilian Use, and Standard Operating Procedures.
- The Massachusetts National Guard Environmental and Readiness Center staff and necessary funding to support its ecosystem management plans, as related to the amount of training occurring.
- Cooperative agreements to create a management team of scientific and regulatory experts.
- Long-term land maintenance, monitoring of resources and trends, study and analysis.
- Recovery plans for species and habitats identified for improvement.
- Consultation with Federal and State agencies charged with oversight of the Endangered Species Program before any actions that may affect state and federal-listed species habitat.
- Reduction of adverse impacts to the maximum extent possible, including consideration for the relocation of the activity or encouraging only those activities that result in meeting a habitat management goal.
- Habitat management activities designed to promote protection and restoration of native habitat types.

7. Wildlife Management Performance Standards

7.1 Native wildlife habitats and ecosystems management will focus on the following:

- Protecting rare and endangered species, and,
- Maintaining biodiversity.

7.2 Hunting, recreation and educational trips must be approved, scheduled, planned, and supervised through Range Control.

7.3 Any activity or use will prioritize protection of life, property, and natural resource values at the boundaries of the Camp Edwards Training Area where wildlife interfaces with the surrounding built environment.

7.4 Wildlife management will include the following actions, specific to the species targeted for management:

- Development and implementation of a plan to monitor hunting of game species.
- Planning for multi-use objectives for recreation and hunting that incorporate public input and recommendations.
- Development of suitable monitoring programs for federal and state-listed species, and regular exchange of information with the Natural Heritage and Endangered Species Program.

8. Air Quality Performance Standard

8.1 All uses and activities will be responsible for compliance with both the State Implementation Plan for Air Quality and the Federal Clean Air Act.

8.2 Air quality management activities will include air sampling if required by regulation of the activity.

9. Noise Management Performance Standards

9.1 Noise management activities shall conform to the Army's Environmental Noise Management Program policies for evaluation, assessment, monitoring, and response procedures.

10. Pest Management Performance Standards

10.1 Each user will develop and implement an Integrated Pest Management Program to control pest infestations that may include outside contracting of services. Non-native biological controls should not be considered unless approved by federal and state agencies.

10.2 Each user will be held responsible for management of pests that threaten rare and endangered species, or are exotic and invasive species, Invasive plant species that may be considered pest species are those defined by the United States Fish and Wildlife Service and the Massachusetts Natural Heritage and Endangered Species Program of the Division of Fisheries and Wildlife office. Site-specific analysis will be performed before implementation of any proposed pest management plans.

10.3 Pest vegetation control must be balanced against environmental impact and any proposed pest management activities, including the use of herbicides and mechanical methods, within rare species habitat areas must be approved by the Natural Heritage and Endangered Species Program, or in the case of federally listed species, by the United States Fish and Wildlife Service.

10.4 Only herbicide formulations approved by the United States Environmental Protection Agency, the Department of Agriculture, the agency managing the user, and the Commonwealth of Massachusetts may be applied.

10.5 Herbicides and pesticides will not be applied by aerial spraying unless required by emergency conditions and approved under applicable state and federal regulations.

11. Fire Management Performance Standards

11.1 All activities and uses shall manage, prevent, detect, and suppress fires on the Camp Edwards Training Area in coordination with the local and state fire services and natural resource managers in the Environmental & Readiness Center.

11.2 Prescribed bums will be used as a habitat management and fire prevention tool. Prescribed burns will be used to reduce natural fire potential and create or maintain diverse and rare species habitat.

11 .3 Pre-suppression activities will include strategic firebreaks and other management of vegetation in high risk and high-incidence areas. The Integrated Natural Resource Management Plan and Fire Management Plan will be consulted for proposed actions.

11.4 Other than the above, no open fires are allowed.

12. Stormwater Management Performance Standards

12.1 All stormwater facilities shall comply with the State Department of Environmental Protection Guidelines for Stormwater Management, including Best Management Practices and all other applicable standards for control and mitigation of increased storm water flow rates and improvement of water quality.

12.2 All increases in stormwater runoff will be controlled within the user's property.

12.3 No new stormwater discharges will be made directly into wetlands or wetland resource areas.

13. Wastewater Performance Standards

13.1 All wastewater and sewage disposal will be in conformance with the applicable Federal and Massachusetts Department of Environmental Protection agency regulations.

14. Solid Waste Performance Standards

14.1 All solid waste streams (i.e., wastes not meeting the criteria for hazardous wastes) will be monitored and managed to substitute, reduce, recycle, modify processes, implement best management practices, and/or reuse waste, thereby reducing the total tonnage of wastes,

14.2 All users will be held responsible for collection, removal and disposal outside of the Camp Edwards Training Areas of solid wastes generated by their activities.

14.3 All users must handle solid wastes using best management practices to minimize nuisance odors, windblown litter, and attraction of vectors.

14.4 No permanent disposal of solid waste within the Groundwater protection Policy area/Camp Edwards field training areas will be permitted.

15. Hazardous Materials Performance Standards

15.1 Where they are permitted, use and application of hazardous materials shall be otherwise minimized in accordance with pollution prevention and waste minimization practices, including material substitution.

15 .2 No permanent disposal of hazardous wastes within the Groundwater protection Policy area/Camp Edwards field training areas will be permitted.

15.3 Fuel Management

15.3.1 Spill Prevention, Control, and Countermeasure Plan, is in place to reduce potential for a release. Camp Edwards Spill Response Plan is in place to respond to a release if an event should occur. All users will comply with these plans at the Camp Edwards Training Area.

15.3.2 If found, non-complying underground fuel storage tanks will be removed in accordance with state and federal laws and regulations to include remediation of contaminated soil.

15 .3.3 No storage or movement of fuels for supporting field activities, other than in vehicle fuel tanks, will be permitted except in approved containers no greater than five gallons in capacity.

15.3.4 New storage tanks are prohibited unless they meet the following requirements:

- Are approved for maintenance heating, or, permanent emergency generators and limited to propane or natural gas fuels.
- Conform to the Groundwater Protection Policy and applicable codes.

15.4 Non-fuel Hazardous Material Storage

15.4 .1 No storage above those quantities necessary to support field training activities will be allowed within the Camp Edwards Training Area except where necessary to meet regulatory requirements, and where provided with secondary containment.

15.4.2 When required by applicable regulation, the user shall implement a Spill Prevention, Control and Containment/Emergency Response or other applicable response plan.

16. Hazardous Waste Performance Standards

16.1 All uses shall comply with applicable local, state, and federal regulations governing hazardous waste generation, management, and disposal (including overlays relative to Wellhead Protection, Zone II' s within the Cantonment Area) .

16.2 Accumulations of hazardous waste shall be handled in accordance with regulations governing accumulation and storage.

16.3 Existing facilities must implement pollution prevention and waste minimization procedures (process modifications, material substitution, recycling, and best management practices) to minimize waste generation and hazardous materials use.

16.4 Occupants and users will be held responsible for removing all solid or hazardous wastes generated during the period of use/tenancy/visitation upon their departure or in accordance with other applicable or relevant regulations.

16.5 Remedial activities undertaken under the Installation Restoration Program, the Impact Area Groundwater Study Program, the Massachusetts Contingency Plan, or other governing remediation programs are exempt from additional regulation (e.g., waste generation volume limits). Removal, storage, and disposal of contaminated material are required to comply with all state, and federal regulations.

16.6 Post-remedial uses and activities at previously impacted sites will be allowed in accordance with terms and conditions of the applicable regulations.

16.7 All hazardous wastes will be transported in accordance with federal Department of Transportation regulations governing shipment of these materials.

16.8 Transport shall reduce the number of trips for transfer and pick-up of hazardous wastes for disposal to extent feasible. Tills may include planning appropriate routes that minimize proximity to sensitive natural resource areas, and reducing internal transfers of material, including transfers from bulk storage tanks to drums, tankers, carboys, or other portable containers or quantities.

16.9 No permanent disposal of hazardous wastes within the Groundwater Protection Policy area/Camp Edwards field training areas will be permitted.

17. Vehicle Performance Standards

17.1 Vehicles within the Camp Edwards Training Area will be limited to the existing improved and unimproved road system except where required for natural resource management or property maintenance or where off-road activity areas are located and approved by the Environmental and Readiness Center in consultation with the Massachusetts Division of Fisheries and Wildlife.

17.2 Unimproved, established access ways will be limited to use by vehicles in accordance with soil conditions as described in the Soil Conservation Performance Standards.

17.3 The number of military and civilian vehicles within the Camp Edwards Training Area will be controlled using appropriate scheduling and signage.

18. General Use and Access Performance Standards

18.1 General User Requirements. Requirements that will apply to all users, both public and private, in the Camp Edwards Training Area include the following:

- All acts that pollute the groundwater supply are prohibited.
- No litter or refuse of any sort may be thrown or left in or on any property.
- All users will be held responsible for providing, maintaining, and re- moving closed-system, sanitary facilities necessary for their use and activity.
- No person shall wade or swim in any water body except for activities approved by the Massachusetts National Guard including remediation, scientific study, or research.
- Vehicles may only be driven on roads authorized and designated for such use and parked in designated areas, and may not cross any designated wetland.
- Public users may not impede the military training activities.

18.2. Civilian Use Manual. To guide public conduct on the Massachusetts Military Reservation, a Civilian Use Manual will be prepared and periodically updated. All civilian users will obtain and follow this Manual.

18.3. Siting and Design Performance Standards

18.3.1 New or expanded buildings should not be proposed within the Camp Edwards Training Areas, with the following exceptions:

- Buildings to support allowed training, operations and activities, including upgrading of those facilities currently in place,
- Buildings used for the purposes of remediation activities,
- Buildings used for the purposes of development, operation and maintenance of water supplies,
- Buildings used for the purpose of natural resource and land management.

19. Range Performance Standards

19.1. All operational ranges including but not limited to small arms ranges (SAR) shall be managed to minimize harmful impacts to the environment within the Upper Cape Water Supply Reserve. Range management at each range shall include to the maximum extent practicable metal recovery and recycling, prevention of fragmentation and ricochets, and prevention of sub-surface percolation of residue associated with the range operations. Camp Edwards shall be held responsible for the implementation of BMPs by authorized range users, including collection and removal of spent ammunition and associated debris.

19.2. Small arms ranges shall only be used in accordance with approved range plans. These plans shall be designed to minimize to the maximum extent practicable the release of metals or other contaminates to the environment outside of specifically approved containment areas/systems. Occasional ricochets that result in rounds landing outside of these containment areas is expected and every effort to minimize and correct these occurrences shall be taken. Failure to follow the approved range plans shall be considered a violation of this EPS.

19.3. All operational SARs shall be closely monitored by the Massachusetts National Guard to assess compliance of the approved range plans as well as the implementation and effectiveness of the range specific BMPs.

19.4. Camp Edwards/Massachusetts National Guard Environmental and Readiness Center shall staff and request appropriate funding to support its SAR management plans.

19.5. All users must use and follow Camp Edwards' Range Control checklists and procedures to:

- Minimize debris on the range (e.g. shell casings, used targets)
- Minimize or control residues on the ranges resulting from training (e.g., unburned constituents, metal shavings from the muzzle blast)
- Ensure the range is being used for the designated purpose in accordance with all applicable plans and approvals

19.6. Camp Edwards is responsible for following range operation procedures and maintaining range pollution prevention systems. Range BMPs shall be reviewed annually for effectiveness and potential improvements in their design, monitoring, maintenance, and operational procedures in an effort to continually improve them. Each year the annual report shall detail the range-specific activities including, but not limited to, the number of rounds fired, number of shooters and their organization, and the number of days the range was in use. The annual report will also detail active SAR groundwater well and lysimeter results, as well as any range maintenance/management activities that took place that training year and the result of such activities, i.e. lbs. of brass and projectiles recovered and recycled, etc. The Massachusetts National Guard shall provide regular and unrestricted access for the EMC to all its data and information, and will provide immediate access to environmental samples from the range, including range management and monitoring systems and any other applicable activities operating on the ranges.

19.7. Range plans and BMPs for training areas shall be reviewed and/or updated at least every three years. Management plans for new and upgraded ranges shall be in place prior to construction or utilization of the range. Range plans, at a minimum, will address long-term sustainable use, hydrology and hydrogeology, physical design, operation, management procedures, record keeping, pollution prevention, maintenance, monitoring, and applicable technologies to ensure sustainable range management. Range plans shall be integrated with other training area planning processes and resources.

19.8. The Massachusetts National Guard shall establish procedures for range maintenance and where applicable, maintenance and/or clearance operations to permit the sustainable, compatible, and safe use of operational ranges for their intended purpose within the Upper Cape Water Supply Reserve. In determining the frequency and degree of range maintenance and clearance operations, the Massachusetts National Guard shall consider, at a minimum, the environmental impact and safety hazards, each range's intended use, lease requirements, and the quantities and types of munitions or simulated munitions expended on that range.

APPENDIX B
LIST OF CONTACTS

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APPENDIX C
SMALL ARMS RANGE AND SOLDIER VALIDATION LANE INFORMATION

Operations Maintenance and Monitoring Activities

OPERATIONS, MAINTENANCE & MONITORING ACTIVITIES
JULIET & KILO RANGE
TY 2020

Date	Juliet	Kilo
5 Oct 19	Pre/post fire inspection (3 cm)	Pre/post fire inspection (W 7 cm; E 6.5 cm)
15 Oct 19	Maintenance: 50 gallons pumped (3 cm)	Maintenance: 40 gallons pumped (W 5 cm; E 6.5 cm)
19, 20 Oct 19	------	Pre/post fire inspection (W 5 cm; E 6.5 cm)
21 Oct 19	Maintenance: 40 gallons pumped (1 cm)	Maintenance: 40 gallons pumped (1 cm)
2 Nov 19	-----	Pre/post fire inspection (W 5 cm; E 6.5 cm)
15 Nov 19	-----	Pre/post fire inspection (W 9 cm; E 6.5 cm)
15, 16 Nov 19	Pre/post fire inspection (4 cm)	-----
16 Nov 19	-----	Pre/post fire inspection (W 10 cm; 6.5 cm)
19 Nov 19	-----	Maintenance: 60 gallons pumped (W 1 cm; E 6.5 cm)
5 Dec 19	Maintenance: 50 gallons pumped (3 cm)	Maintenance: 45 gallons pumped (W 4 cm; E 6.5 cm)
16 Dec 19	Maintenance: 30 gallons pumped (3 cm)	Maintenance: 60 gallons pumped (W 4 cm; 6.5 cm)
28 Jan 20	-----	Maintenance: tarp cover fixed; 50 gallons pumped (W 3 cm; E 6.5 cm)
12 Feb 20	Maintenance: tarp fixed and 50 gallons pumped (2 cm)	Maintenance: tarp cover replaced; 90 gallons pumped (W3.5 cm; E 6.5 cm
18 Feb 20	Maintenance: tarp fixed and water level checked (4.5 cm)	-----
18 Mar 20	-----	Maintenance: 60 gallons (W 4 cm; E 6.5 cm)
31 Mar 20	-----	Maintenance: 35 gallons pumped (W 2.5 cm; E 6.5 cm)
1 Apr 20	Pre/post fire inspection (4.5 cm)	Pre/post fire inspection (W 2.5 cm; E 6.5 cm)
4 May 20	Pre/post fire inspection; 55 gallons pumped (2 cm)	Maintenance: 45 gallons pumped (W 6 cm; E 6.5 cm)
29 May 20	Pre/post fire inspection (2 cm)	-----
4 Jun 20	-----	Maintenance: 60 gallons pumped (W 2 cm; E 6.5 cm)
15, 26 Jun 20	-----	Pre/post fire inspection (W 12 cm; E 6.5 cm)
29 Jun 20	Maintenance: 55 gallons pumped (2 cm)	Maintenance: 45 gallons pumped (W 2 cm; E 6.5 cm)
16 Jul 20	Maintenance: 40 gallons pumped (1 cm)	Maintenance: 55 gallons pumped (W 1 cm; E 6.5 cm)
31 Jul 20	Maintenance: repaired STAPP top cover and water level checked (1 cm)	Maintenance: repaired STAPP top cover and water level checked (W 1 cm; E 6.5 cm)
1 Aug 20	-----	Pre/post fire inspection (W 1 cm; E 6.5 cm)
2 Aug 20	Pre/post fire inspection (1 cm)	-----
8 Aug 20	-----	Pre/post fire inspection (W 10 cm; E 6.5 cm)
23 Aug 20	-----	Pre/post fire inspection (W 10 cm; E 6.5 cm)

OPERATIONS, MAINTENANCE & MONITORING ACTIVITIES
SIERRA & INDIA RANGES
TY 2020

Date	Sierra	India
5 Oct 19	-----	Pre/post fire inspection
5, 6 Oct19	Pre/post fire inspection	-----
18, 20 Oct 19	Pre/post fire inspection	-----
19, 25 Oct 19	-----	Pre/post fire inspection
26, 27 Oct 19	Pre/post fire inspection	Pre/post fire inspection
1,2 Nov 19	-----	Pre/post fire inspection
1, 3 Nov 19	Pre/post fire inspection	
15, 16 Nov 19	-----	Pre/post fire inspection
15, 17 Nov 19	Pre/post fire inspection	-----
2, 6 Mar 20	-----	Maintenance: Firing line flattened; all bullet pockets filled
4 Mar 20	Maintenance: Bullet pockets filled with screened loam	
7 Mar 20	Pre/post fire inspection	-----
13, 14 Mar 20	Pre/post fire inspection	Pre/post fire inspection
15 Jun 20	-----	Pre/post fire inspection
25, 26 Jun 20	Pre/post fire inspection	
26 Jun 20	-----	Pre/post fire inspection
10 Jul 20	Pre/post fire inspection	-----
17 Jul 20	Pre/post fire inspection	-----
18, 19 Jul 20	Pre/post fire inspection	-----
8 Aug 20	Pre/post fire inspection	-----
9, 17 Aug 20	Pre/post fire inspection	Pre/post fire inspection
20, 21 Aug 20	Pre/post fire inspection	-----
21 Aug 20	-----	Maintenance: bullet pockets repaired
23 Aug 20	Pre/post fire inspection	-----
23-25 Aug 20	-----	Pre/post fire inspection
24 Aug 20	Maintenance: bullet pockets filled with screened loam	-----
4 Sep 20	Pre/post fire inspection	-----
10, 11 Sep 20	-----	Pre/post fire inspection
10, 12 Sep 20	Pre/post fire inspection	------
25 Sep 20	Pre/post fire inspection	Pre/post fire inspection
26 Sep 20	Pre/post fire inspection	------
26, 27 Sep 20	-----	Pre/post fire inspection

OPERATIONS, MAINTENANCE & MONITORING ACTIVITIES
LIMA RANGE
TY 2020

Date	Activity
12, 14 Feb 20	Maintenance: Range netting repaired
26, 27 Feb 20	Pre/post fire inspection
17 Jul 20	Pre/post fire inspection

OPERATIONS, MAINTENANCE & MONITORING ACTIVITIES
ECHO RANGE
TY 2020

Date	Activity
9, 15 Jan 20	Maintenance: Firing lane excavation, electrical work, firing lane backfilled
26 Jun 20	Pre/post fire inspection
10 Aug 20	Pre/post fire inspection
18 Aug 20	Pre/post fire inspection
9 Sep 20	Pre/post fire inspection
10, 12 Sep 20	Pre/post fire inspection

Lead Ammunition Use

Juliet, Kilo, Tango and Echo Ranges

LEAD AMMUNITION USE HISTORY JULIET RANGE								
Training Year	**.40 Cal Lead**	**9 mm Lead**	**7.62 mm Lead**	**5.56 mm Lead**	**.38 Cal Lead**	**.45 Cal Lead**	**.233 Cal Lead**	**Total**
TY 2020	0	7,690	0	0	0	0	0	7,690
TY 2019	0	17,774	0	12,315	0	0	0	30,089
TY 2018	0	12,781	0	23,802	0	0	0	36,583
TY 2017	0	26,108	0	25,789	0	0	0	51,897
TY 2016	0	9,200	0	51,852	0	0	0	61,052
TY 2015	2,500	24,828	0	36,938	0	1,000	0	65,266
TY 2014	2,400	18,874	9,000	6,663	0	0	0	36,937
TY 2013	2,450	9,260	0	27,286	0	0	1,200	40,196
TY 2012	750	12,819	0	14,457	0	0	3,000	31,026
TY 2011	0	16,911	0	46,630	0	0	0	63,541
TY 2010	0	7,311	0	27,060	0	0	0	34,371
TY 2009	0	4,780	0	11,482	0	0	0	16,262
TY 2008	0	0	0	0	0	0	0	0
TY 2007	0	0	0	0	0	0	0	0
TOTAL	**8,100**	**168,336**	**9,000**	**284,274**	**0**	**1,000**	**4,200**	**474,910**

Note: A STAPP™ bullet capture system was installed at Juliet Range in August/September 2008.

LEAD AMMUNITION USE HISTORY KILO RANGE								
Training Year	**.40 Cal Lead**	**9 mm Lead**	**7.62 mm Lead**	**5.56 mm Lead**	**.38 Cal Lead**	**.45 Cal Lead**	**.233 Cal Lead**	**Total**
TY 2020	0	61,480	0	21,052	0	1,500	0	84,032
TY 2019	0	44,428	0	36,751	0	0	0	81,179
TY 2018	0	25,803	0	93,539	0	0	0	119,342
TY 2017	0	50,147	0	65,515	0	0	0	115,662
TY 2016	0	21,373	0	28,265	0	0	0	49,638
TY 2015	0	15,601	0	54,372	0	0	0	69,973
TY 2014	0	31,304	0	49,052	0	0	0	80,356
TY 2013	0	731	0	73,011	0	0	0	73,742
TY 2012	0	7,181	0	52,731	0	0	0	59,912
TY 2011	14,362	9,850	0	100,942	0	0	0	125,154
TY 2010	1,450	7,500	0	51,412	0	0	0	60,362
TY 2009	0	6,675	0	23,108	0	0	0	29,783
TY 2008	0	0	0	0	0	0	0	0
TY 2007	0	0	0	0	0	0	0	0
TOTAL	**15,812**	**282,073**	**0**	**649,750**	**0**	**1,500**	**0**	**949,135**

Note: A STAPP™ bullet capture system was installed at Kilo Range in August/September 2008.

LEAD AMMUNITION USE HISTORY TANGO RANGE									
Training Year	**.40 Cal Lead**	**9 mm Lead**	**7.62 mm Lead**	**5.56 mm Lead**	**.38 Cal Lead**	**.45 Cal Lead**	**.233 Cal Lead**	**.22 Cal Lead**	**Total**
TY 2017	0	2,250	4,240	9,380	0	0	0	625	16,495
TY 2016	0	4,200	0	0	0	0	0	0	4,200
TY 2015	0	5,240	0	1,720	0	0	0	0	6,960
TY 2014	0	0	0	3,220	0	0	0	0	3,220
TY 2013	1,600	1,800	0	2,000	0	0	4,550	0	9,950
TY 2012	2,800	7,373	0	1,944	0	0	0	0	12,117
TY 2011	5,200	6,765	0	25,157	0	0	0	0	37,122
TY 2010	40,341	2,496	0	41,042	0	6,449	0	0	90,328
TY 2009	0	31,985	0	105,077	300	0	0	0	137,362
TY 2008	4,075	9,094	4,556	0	0	0	0	0	17,725
TY 2007	0	0	0	8,547	0	0	0	0	8,547
TOTAL	**54,016**	**71,203**	**8,796**	**198,087**	**300**	**6,449**	**4,550**	**625**	**344,026**

Note: A STAPP™ bullet capture system was installed at Tango Range in July 2006 and dismantled in October 2017.

LEAD AMMUNITION USE HISTORY ECHO RANGE					
Training Year	**.40 Cal Lead**	**9 mm Lead**	**.38 Cal Lead**	**.45 Cal Lead**	**Total**
TY 2020	0	14,308	0	0	14,308
TY 2019	0	4,350	0	0	4,350
TY 2018	0	0	0	0	0
TY 2017	0	0	0	0	0
TY 2016	0	0	0	0	0
TY 2015	0	347[1]	0	0	347
TY 2014	0	0	0	0	0
TY 2013	0	0	0	0	0
TY 2012	0	0	0	0	0
TY 2011	0	0	0	0	0
TY 2010	0	0	0	0	0
TY 2009	0	0	0	0	0
TY 2008	0	0	0	0	0
TY 2007	0	100[1]	0	0	100
TOTAL	**0**	**19,105**	**0**	**0**	**19,105**

Notes: Echo Range became operational in Fall 2019.
1. Firing at Echo Range in TY 2007 and TY 2015 were part of tests for reintroducing lead ammunition.

LEAD AMMUNITION USE HISTORY CUMULATIVE							
Training Year	**Echo Range**	**Sierra Range**	**KD Range**	**Tango Range**	**Juliet Range**	**Kilo Range**	**Total**
TY 2020	14,308	0	0	0	7,690	84,032	106,030
TY 2019	4,350	0	0	0	30,089	81,179	115,618
TY 2018	0	0	0	0	36,583	119,342	155,925
TY 2017	0	0	0	16,495	51,897	115,662	184,054
TY 2016	0	0	0	4,200	61,052	49,638	114,890
TY 2015	347[1]	0	1,993[3]	6,960	65,266	69,973	144,539
TY 2014	0	0	0	3,220	36,937	80,356	120,513
TY 2013	0	0	0	9,950	40,196	73,742	123,888
TY 2012	0	0	0	12,117	31,026	59,912	103,055
TY 2011	0	2,120[2]	0	37,122	63,541	125,154	227,937
TY 2010	0	0	0	90,328	34,371	60,362	185,061
TY 2009	0	0	0	137,362	16,262	29,783	183,407
TY 2008	0	0	0	17,725	0	0	17,725
TY 2007	100[1]	0	0	8,547	0	0	8,647
TOTAL	**19,105**	**2,120**	**1,993**	**344,026**	**474,910**	**949,135**	**1,791,289**

Notes: 1. Firing at Echo Range in TY 2007 and TY 2015 were part of tests for reintroducing lead ammunition.

2. Firing at Sierra Range in TY 2011 was part of a Line of Sight Analysis test.

3. Firing at KD Range in TY 2015 was part of a planning-level noise assessment.

Copper Ammunition Use

Sierra and India Ranges

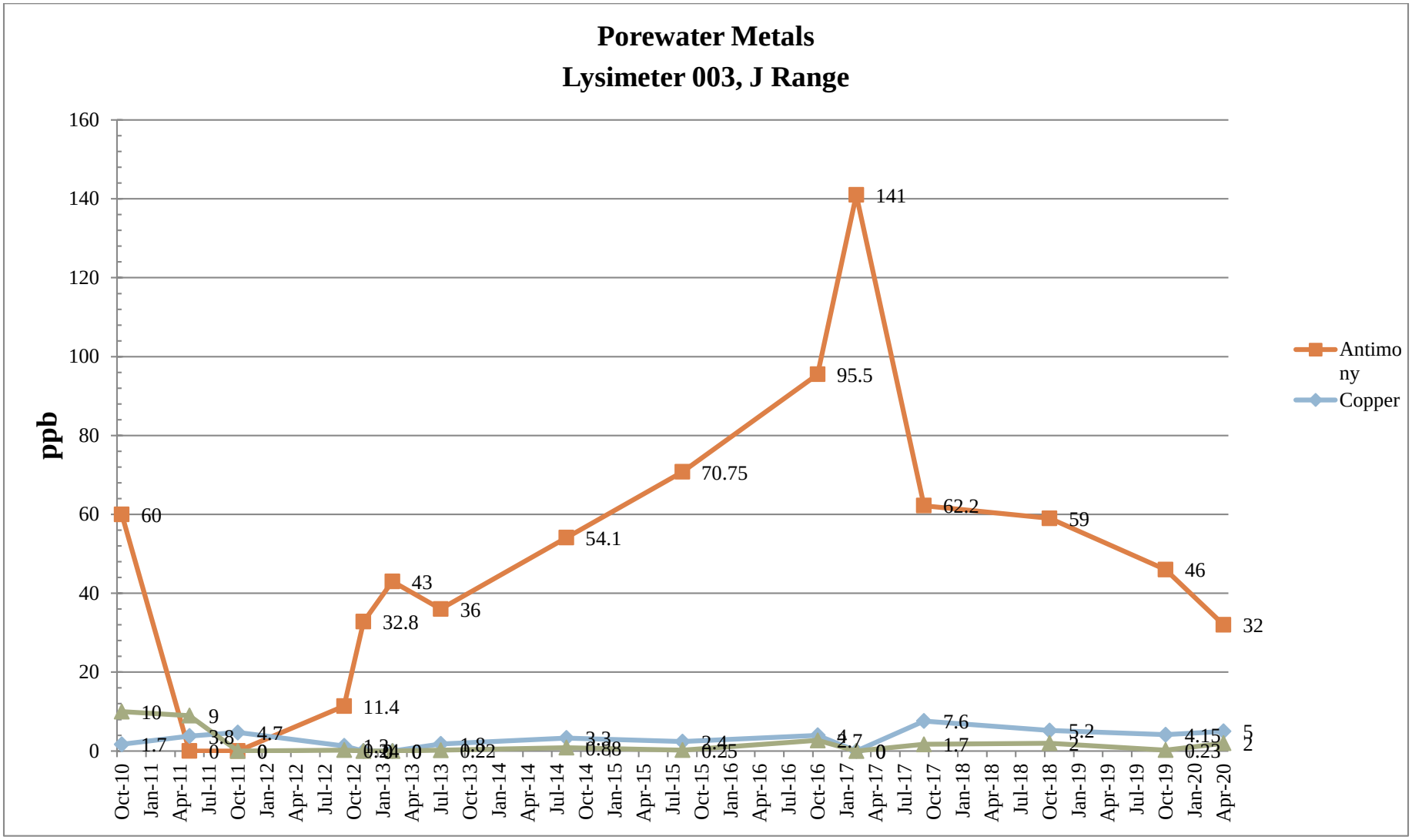
COPPER AMMUNITION USE HISTORY SIERRA AND RANGES			
Training Year	**Sierra Range 5.56 Copper**	**India Range 5.56 Copper**	**Total**
TY 2020	131,274	90,849	222,123
TY 2019	98,426	71,098	169,524
TY 2018	98,393	105,143	203,536
TY 2017	95,905	109,892	205,797
TY 2016	80,747	60,571	141,318
TY 2015	66,086	12,947	79,033
TY 2014	46,804	27,872	74,676
TY 2013	34,493	10,918	45,411
TY 2012	34,359	6,601	40,960
TOTAL	**686,487**	**491,098**	**1,182,378**

Note: Firing of copper ammunition began at Sierra Range on July 8, 2012 and at India Range on September 15, 2012.

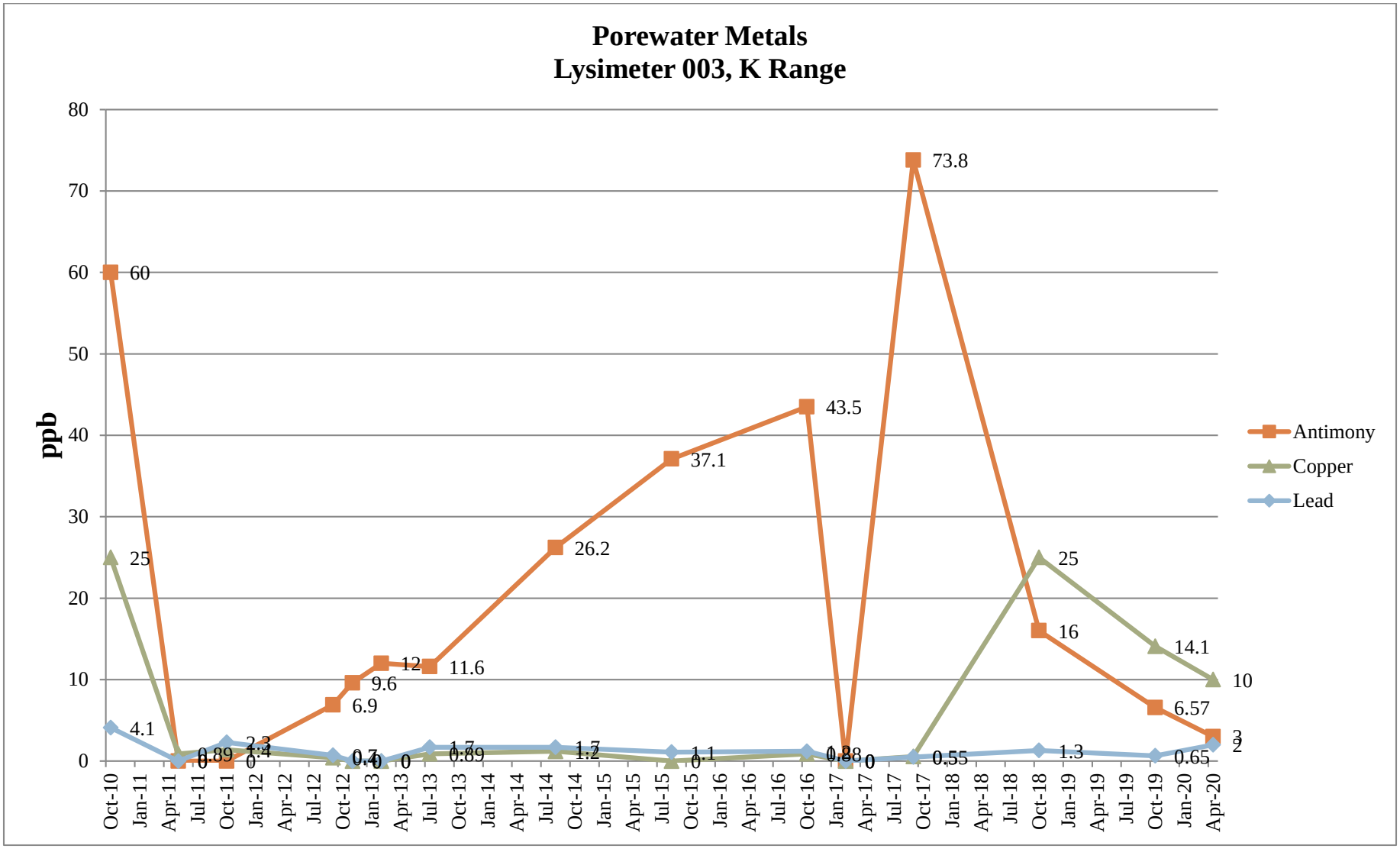
Juliet, Kilo, Tango and India Ranges

Porewater Graphs

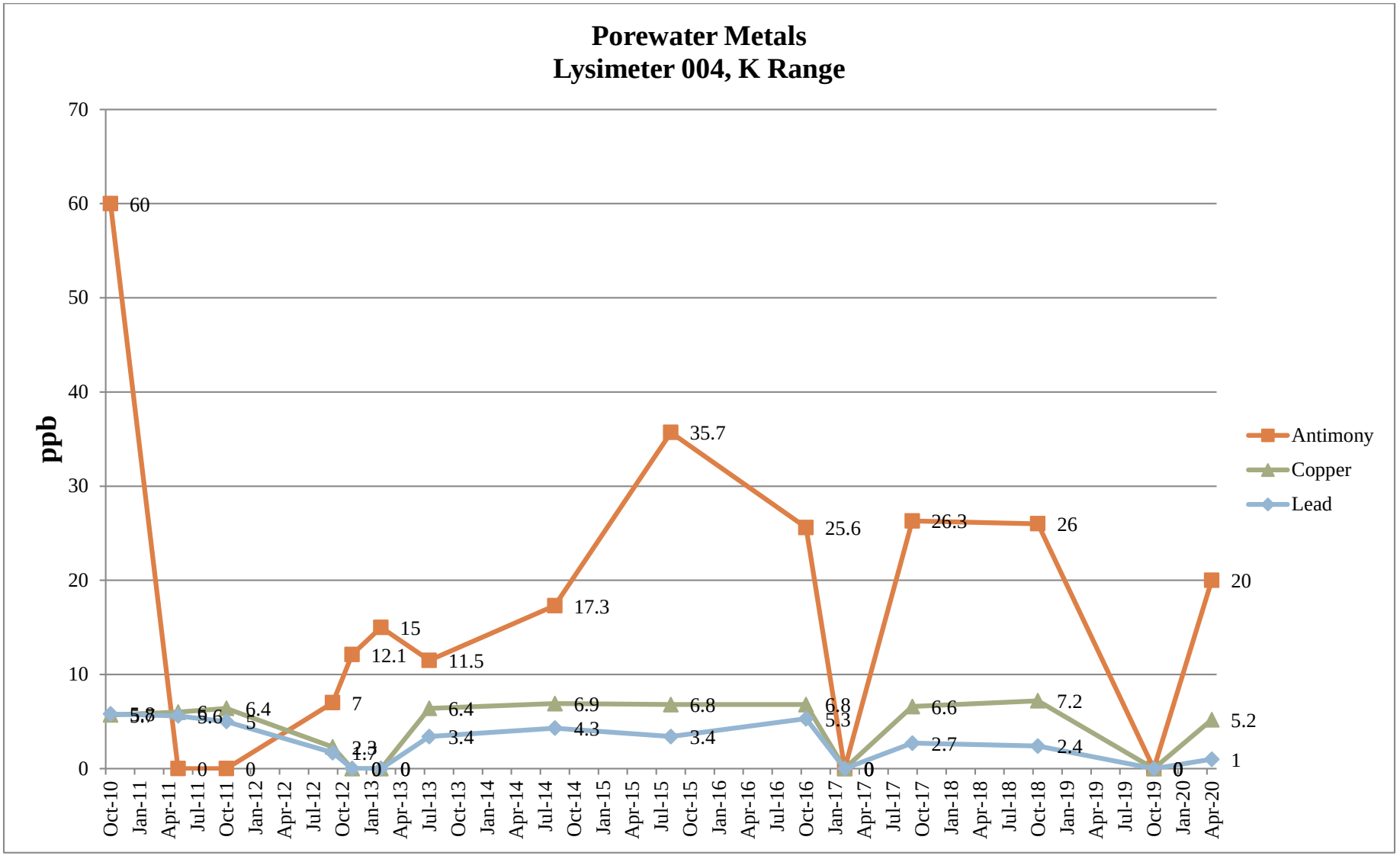
Porewater Metals, Lysimeter 003, J Range



Porewater Metals, Lysimeter 003, K Range

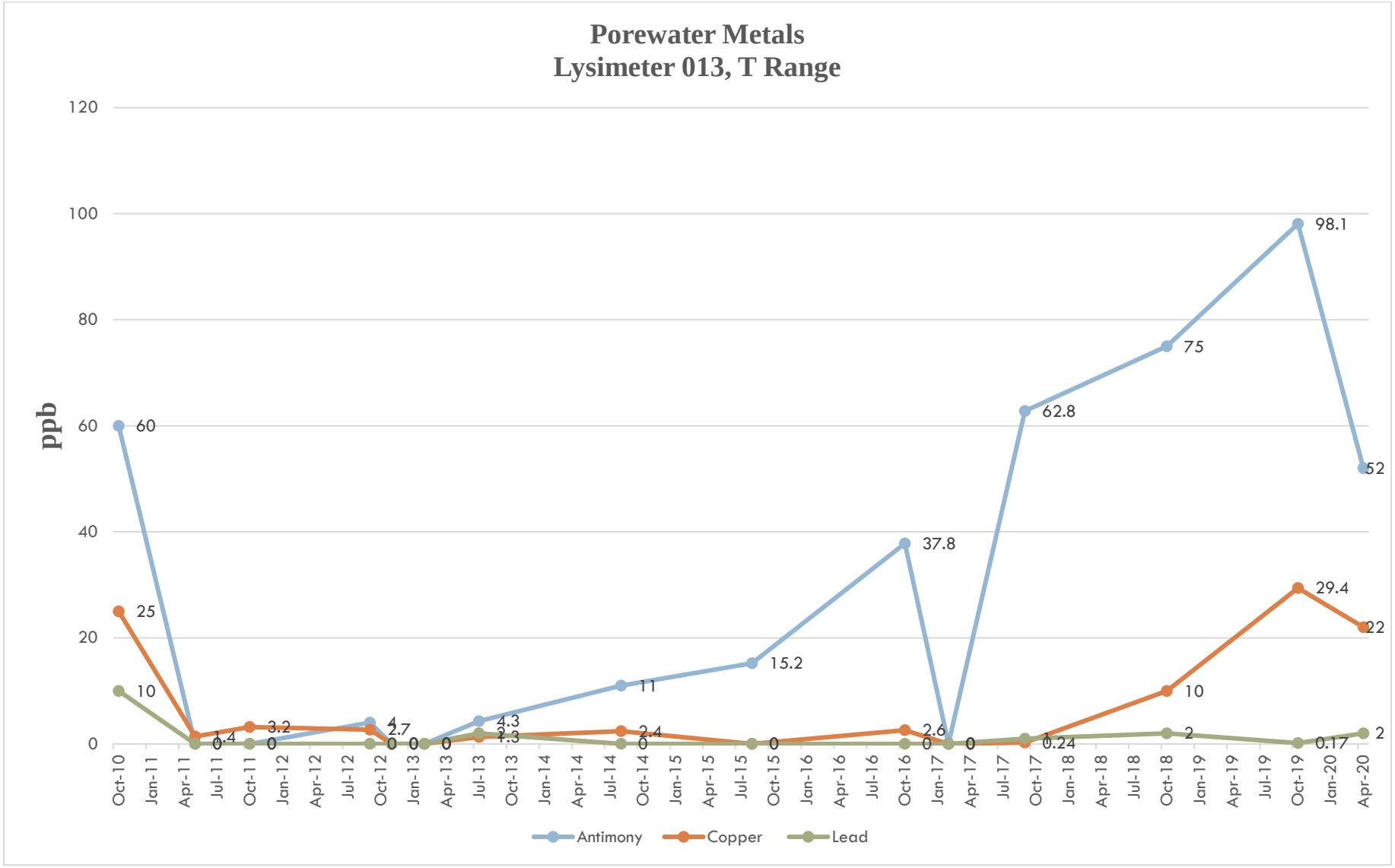


Porewater Metals, Lysimeter 004, K Range

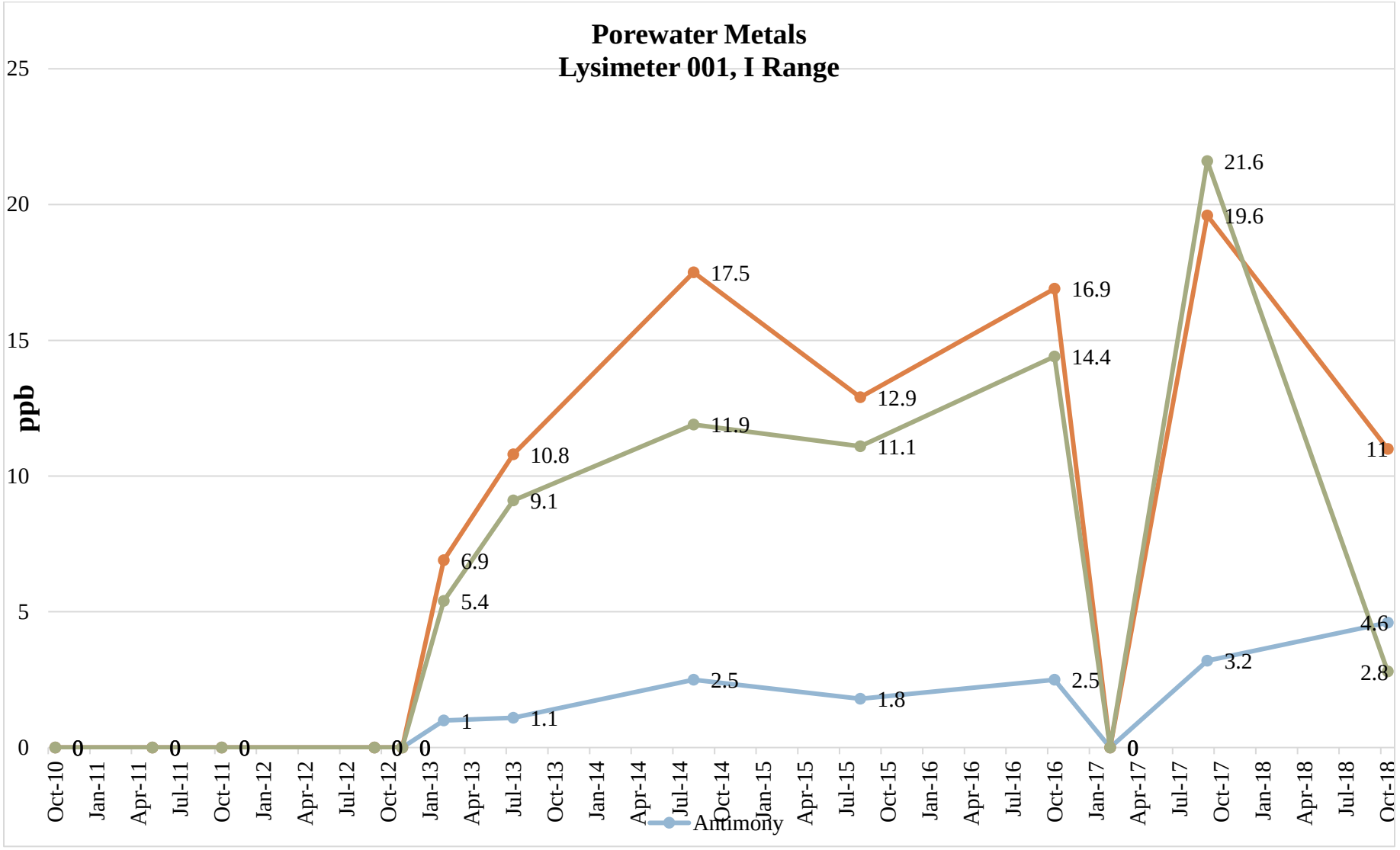


Note: October 2019, unable to obtain sample from the lysimeter.

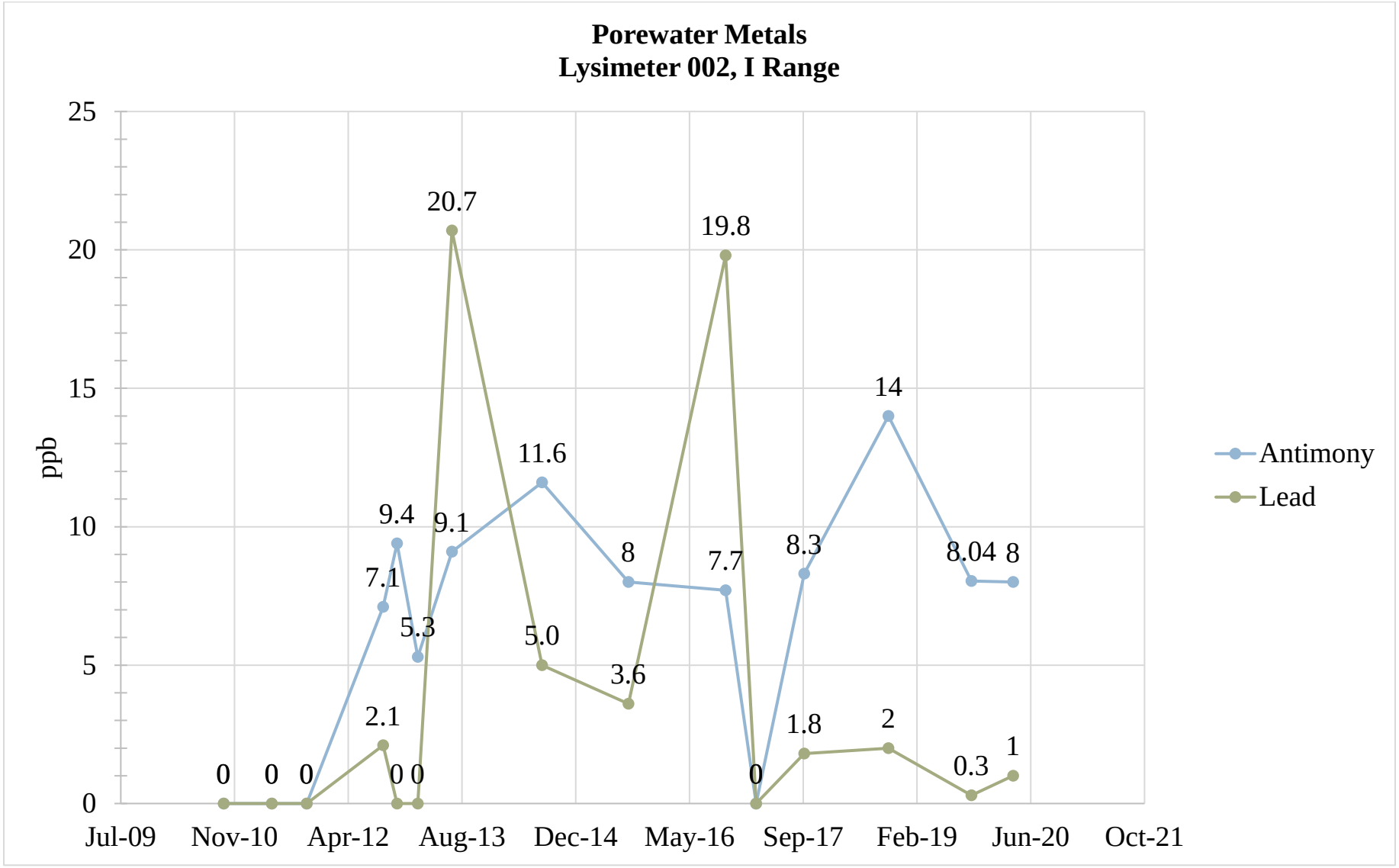
Porewater Metals, Lysimeter 013, T Range



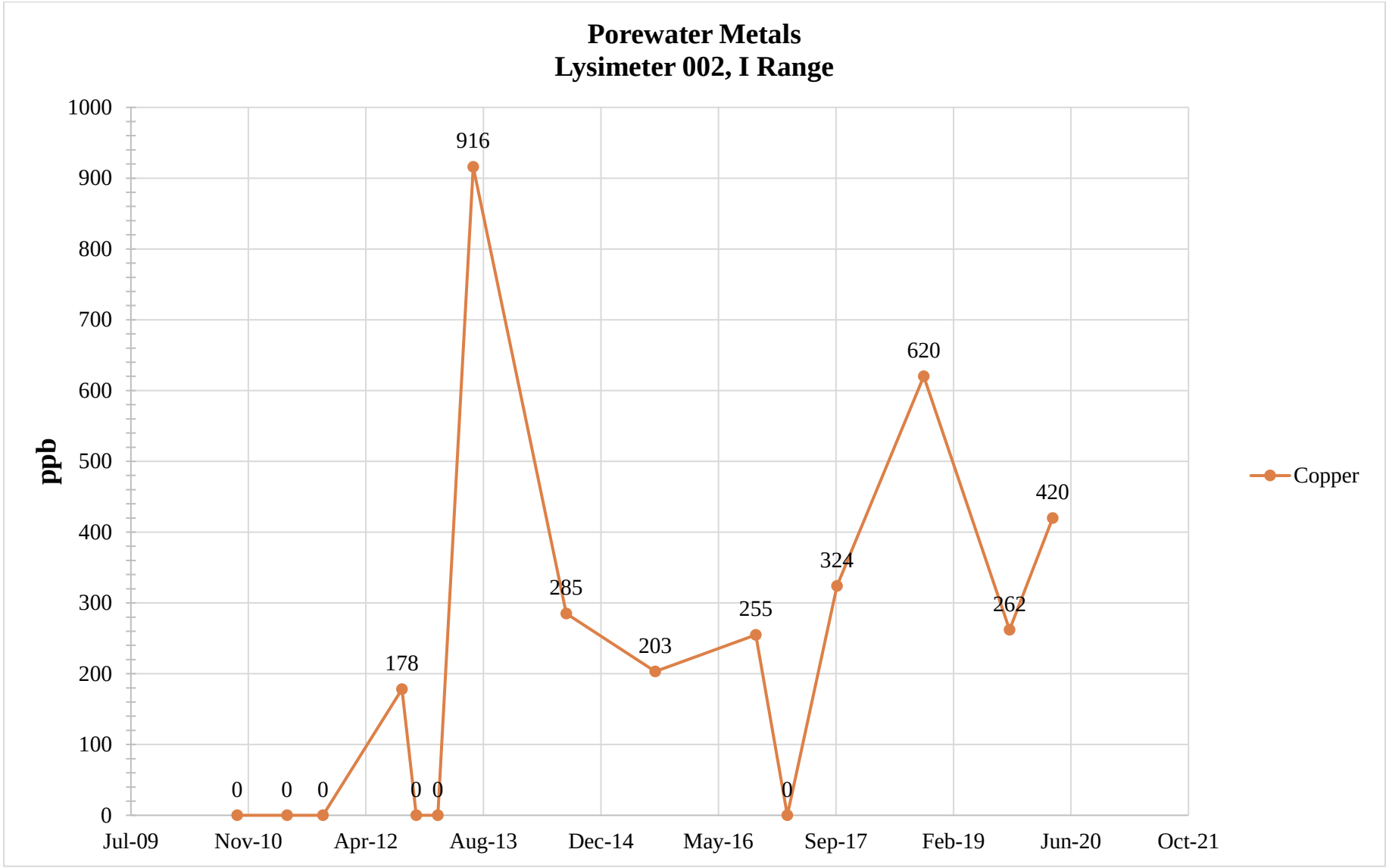
Porewater Metals, Lysimeter 001, I Range



Porewater metals, Lysimeter 002, I Range



Porewater Metals, Lysimeter 002, I Range



Small Arms Range Sampling Reports

Soil Sampling Results

Fall 2019

CAMP EDWARDS SMALL ARMS RANGE BASELINE SOIL MONITORING RESULTS 2019

Site List	Field Sample ID	Matrix	Analyte	Analytical Method	Units	Lab Result	LOQ	LOD	DL	Qualifier	Reason	OMMP Action Levels (mg/kg)
E Range	SSERNG001_OCT19	Soil	Antimony	SW6010C	mg/kg	0.43	0.69	0.43	0.06	UJ	ND, MS%R	300
E Range	SSERNG001_OCT19	Soil	Calcium	SW6010C	mg/kg	428	8.6	6.9	1.6	J	MS%R	
E Range	SSERNG001_OCT19	Soil	Chloride	SW9056A	mg/L	11	20	10	0.993	J	TR	
E Range	SSERNG001_OCT19	Soil	Copper	SW6010C	mg/kg	4.42	2.2	0.86	0.14			10,000
E Range	SSERNG001_OCT19	Soil	Lead	SW6010C	mg/kg	11.2	0.43	0.34	0.075			3,000
E Range	SSERNG001_OCT19	Soil	Magnesium	SW6010C	mg/kg	681	8.6	6.9	0.59	J	MS%R	
E Range	SSERNG001_OCT19	Soil	pH	SW9045D	pH units	5.4	0.1	--	0.1			
E Range	SSERNG001_OCT19	Soil	Phosphorus, total	E365.4	mg/kg	240	19	9.4	4.9			
E Range	SSERNG001_OCT19	Soil	Potassium	SW6010C	mg/kg	397	86	43	2.5			
E Range	SSERNG001_OCT19	Soil	Sodium	SW6010C	mg/kg	24.7	86	43	1.3	J	TR	
E Range	SSERNG001_OCT19	Soil	Sulfate	SW9056A	mg/L	8.7	10	5.0	0.637	J	TR	
E Range	SSERNG002_OCT19	Soil	Antimony	SW6010C	mg/kg	0.41	0.65	0.41	0.057	U	ND	300
E Range	SSERNG002_OCT19	Soil	Calcium	SW6010C	mg/kg	399	8.2	6.5	1.5			
E Range	SSERNG002_OCT19	Soil	Chloride	SW9056A	mg/L	14	20	10	0.993	J	TR	
E Range	SSERNG002_OCT19	Soil	Copper	SW6010C	mg/kg	5.26	2	0.82	0.13			10,000
E Range	SSERNG002_OCT19	Soil	Lead	SW6010C	mg/kg	11.8	0.41	0.33	0.071			3,000
E Range	SSERNG002_OCT19	Soil	Magnesium	SW6010C	mg/kg	718	8.2	6.5	0.55			
E Range	SSERNG002_OCT19	Soil	pH	SW9045D	pH units	5.4	0.1	--	0.1			
E Range	SSERNG002_OCT19	Soil	Phosphorus, total	E365.4	mg/kg	200	19	9.4	4.9			
E Range	SSERNG002_OCT19	Soil	Potassium	SW6010C	mg/kg	395	82	41	2.4			
E Range	SSERNG002_OCT19	Soil	Sodium	SW6010C	mg/kg	22.7	82	41	1.2	J	TR	
E Range	SSERNG002_OCT19	Soil	Sulfate	SW9056A	mg/L	11	10	5.0	0.637			
E Range	SSERNG003_OCT19	Soil	Antimony	SW6010C	mg/kg	0.33	0.52	0.33	0.046	U	ND	300
E Range	SSERNG003_OCT19	Soil	Calcium	SW6010C	mg/kg	506	6.6	5.2	1.2			
E Range	SSERNG003_OCT19	Soil	Chloride	SW9056A	mg/L	14	20	10	0.993	J	TR	
E Range	SSERNG003_OCT19	Soil	Copper	SW6010C	mg/kg	4.98	1.6	0.66	0.11			10,000
E Range	SSERNG003_OCT19	Soil	Lead	SW6010C	mg/kg	11.7	0.33	0.26	0.057			3,000
E Range	SSERNG003_OCT19	Soil	Magnesium	SW6010C	mg/kg	779	6.6	5.2	0.45			
E Range	SSERNG003_OCT19	Soil	pH	SW9045D	pH units	5.6	0.1	--	0.1			
E Range	SSERNG003_OCT19	Soil	Phosphorus, total	E365.4	mg/kg	200	15	7.5	3.9			
E Range	SSERNG003_OCT19	Soil	Potassium	SW6010C	mg/kg	388	66	33	1.9			
E Range	SSERNG003_OCT19	Soil	Sodium	SW6010C	mg/kg	22.9	66	33	0.98	J	TR	
E Range	SSERNG003_OCT19	Soil	Sulfate	SW9056A	mg/L	7.8	10	5.0	0.637	J	TR	
E Range	SSERNG003_OCT19EB	Water	Alkalinity, total	SM2320B	mg/L	2.3	5.0	4.0	0.23	J	TR	
E Range	SSERNG003_OCT19EB	FIELDQC	Antimony	SW6020A	µg/L	0.16	1.0	0.50	0.055	J	TR	300
E Range	SSERNG003_OCT19EB	FIELDQC	Calcium	SW6020A	µg/L	39	100	80	21	J	TR	

CAMP EDWARDS SMALL ARMS RANGE BASELINE SOIL MONITORING RESULTS 2019

Site List	Field Sample ID	Matrix	Analyte	Analytical Method	Units	Lab Result	LOQ	LOD	DL	Qualifier	Reason	OMMP Action Levels (mg/kg)
E Range	SSERNG003_OCT19EB	FIELDQC	Chloride	SW9056A	mg/L	1.0	2.0	1.0	0.0993	U	ND	
E Range	SSERNG003_OCT19EB	FIELDQC	Copper	SW6020A	µg/L	1.1	3.0	2.0	0.19	J	TR	10,000
E Range	SSERNG003_OCT19EB	FIELDQC	Lead	SW6020A	µg/L	0.12	1.0	0.50	0.075	J	TR	3,000
E Range	SSERNG003_OCT19EB	FIELDQC	Magnesium	SW6020A	µg/L	15	100	80	8	J	TR	
E Range	SSERNG003_OCT19EB	FIELDQC	Phosphorus, total	E365.4	mg/L	0.080	0.10	0.080	0.0461	U	ND	
E Range	SSERNG003_OCT19EB	FIELDQC	Potassium	SW6020A	µg/L	400	1,000	400	31	U	ND	
E Range	SSERNG003_OCT19EB	FIELDQC	Sodium	SW6020A	µg/L	130	1,000	400	19	J	TR	
E Range	SSERNG003_OCT19EB	FIELDQC	Sulfate	SW9056A	mg/L	0.50	1.0	0.50	0.064	U	ND	
E Range	SSERNG003_OCT19EB	FIELDQC	Sulfate	SW9056A	mg/L	0.50	1.0	0.50	0.064	U	ND	
E Range	SSERNG004_OCT19	Soil	Antimony	SW6010C	mg/kg	0.26	0.41	0.26	0.036	U	ND	300
E Range	SSERNG004_OCT19	Soil	Calcium	SW6010C	mg/kg	518	5.2	4.1	0.93			
E Range	SSERNG004_OCT19	Soil	Chloride	SW9056A	mg/L	24	20	10	0.993			
E Range	SSERNG004_OCT19	Soil	Copper	SW6010C	mg/kg	5.27	1.3	0.52	0.082			10,000
E Range	SSERNG004_OCT19	Soil	Lead	SW6010C	mg/kg	12.2	0.26	0.21	0.045			3,000
E Range	SSERNG004_OCT19	Soil	Magnesium	SW6010C	mg/kg	771	5.2	4.1	0.35			
E Range	SSERNG004_OCT19	Soil	pH	SW9045D	pH units	5.6	0.1	--	0.1			
E Range	SSERNG004_OCT19	Soil	Phosphorus, total	E365.4	mg/kg	280	21	11	5.5			
E Range	SSERNG004_OCT19	Soil	Potassium	SW6010C	mg/kg	423	52	26	1.5			
E Range	SSERNG004_OCT19	Soil	Sodium	SW6010C	mg/kg	25.4	52	26	0.77	J	TR	
E Range	SSERNG004_OCT19	Soil	Sulfate	SW9056A	mg/L	6.8	10	5.0	0.637	J	TR	
E Range	SSERNG005_OCT19	Soil	Antimony	SW6010C	mg/kg	0.044	0.5	0.32	0.044	J	TR	300
E Range	SSERNG005_OCT19	Soil	Calcium	SW6010C	mg/kg	657	6.3	5	1.1			
E Range	SSERNG005_OCT19	Soil	Chloride	SW9056A	mg/L	14	20	10	0.993	J	TR	
E Range	SSERNG005_OCT19	Soil	Copper	SW6010C	mg/kg	3.92	1.6	0.63	0.1			10,000
E Range	SSERNG005_OCT19	Soil	Lead	SW6010C	mg/kg	10.5	0.32	0.25	0.055			3,000
E Range	SSERNG005_OCT19	Soil	Magnesium	SW6010C	mg/kg	652	6.3	5	0.43			
E Range	SSERNG005_OCT19	Soil	pH	SW9045D	pH units	5.5	0.1	--	0.1			
E Range	SSERNG005_OCT19	Soil	Phosphorus, total	E365.4	mg/kg	240	18	8.8	4.6			
E Range	SSERNG005_OCT19	Soil	Potassium	SW6010C	mg/kg	367	63	32	1.8			
E Range	SSERNG005_OCT19	Soil	Sodium	SW6010C	mg/kg	23.2	63	32	0.95	J	TR	
E Range	SSERNG005_OCT19	Soil	Sulfate	SW9056A	mg/L	8.0	10	5.0	0.64	J	TR	
E Range	SSERNG006_OCT19	Soil	Antimony	SW6010C	mg/kg	0.42	0.67	0.42	0.059	U	ND	300
E Range	SSERNG006_OCT19	Soil	Calcium	SW6010C	mg/kg	574	8.4	6.7	1.5			
E Range	SSERNG006_OCT19	Soil	Chloride	SW9056A	mg/L	11	20	10	0.993	J	TR	
E Range	SSERNG006_OCT19	Soil	Copper	SW6010C	mg/kg	16.5	2.1	0.84	0.13			10,000
E Range	SSERNG006_OCT19	Soil	Lead	SW6010C	mg/kg	14.1	0.42	0.34	0.073			3,000

CAMP EDWARDS SMALL ARMS RANGE BASELINE SOIL MONITORING RESULTS 2019

Site List	Field Sample ID	Matrix	Analyte	Analytical Method	Units	Lab Result	LOQ	LOD	DL	Qualifier	Reason	OMMP Action Levels (mg/kg)
E Range	SSERNG006_OCT19	Soil	Magnesium	SW6010C	mg/kg	882	8.4	6.7	0.57			
E Range	SSERNG006_OCT19	Soil	pH	SW9045D	pH units	5.6	0.1	--	0.1			
E Range	SSERNG006_OCT19	Soil	Phosphorus, total	E365.4	mg/kg	230	16	8.1	4.2			
E Range	SSERNG006_OCT19	Soil	Potassium	SW6010C	mg/kg	422	84	42	2.4			
E Range	SSERNG006_OCT19	Soil	Sodium	SW6010C	mg/kg	26.8	84	42	1.3	J	TR	
E Range	SSERNG006_OCT19	Soil	Sulfate	SW9056A	mg/L	12	10	5.0	0.637			
I Range	SSIRNG001_OCT19	Soil	Antimony	SW6010C	mg/kg	0.45	0.57	0.36	0.05	J	TR	300
I Range	SSIRNG001_OCT19	Soil	Calcium	SW6010C	mg/kg	936	7.1	5.7	1.3			
I Range	SSIRNG001_OCT19	Soil	Chloride	SW9056A	mg/L	14	20	10	0.993	J	TR	
I Range	SSIRNG001_OCT19	Soil	Copper	SW6010C	mg/kg	27.9	1.8	0.71	0.11			10,000
I Range	SSIRNG001_OCT19	Soil	Lead	SW6010C	mg/kg	70.3	0.36	0.28	0.062			3,000
I Range	SSIRNG001_OCT19	Soil	Magnesium	SW6010C	mg/kg	1,130	7.1	5.7	0.48			
I Range	SSIRNG001_OCT19	Soil	pH	SW9045D	pH units	5.8	0.1	--	0.1			
I Range	SSIRNG001_OCT19	Soil	Phosphorus, total	E365.4	mg/kg	560	30	15	7.8			
I Range	SSIRNG001_OCT19	Soil	Potassium	SW6010C	mg/kg	559	71	36	2.1			
I Range	SSIRNG001_OCT19	Soil	Sodium	SW6010C	mg/kg	33.1	71	36	1.1	J	TR	
I Range	SSIRNG001_OCT19	Soil	Sulfate	SW9056A	mg/L	4.8	10	5.0	0.64	J	TR	
J Range	SSJRNG001_OCT19	Soil	Antimony	SW6010C	mg/kg	0.45	0.71	0.44	0.062	J	TR/MS%R	300
J Range	SSJRNG001_OCT19	Soil	Calcium	SW6010C	mg/kg	5,130	8.9	7.1	1.6			
J Range	SSJRNG001_OCT19	Soil	Chloride	SW9056A	mg/L	8.1	20	10	0.993	J	TR/MS%R	
J Range	SSJRNG001_OCT19	Soil	Copper	SW6010C	mg/kg	34.8	2.2	0.89	0.14			10,000
J Range	SSJRNG001_OCT19	Soil	Lead	SW6010C	mg/kg	32.1	0.44	0.36	0.078	J	MS%R	3,000
J Range	SSJRNG001_OCT19	Soil	Magnesium	SW6010C	mg/kg	7,250	8.9	7.1	0.61			
J Range	SSJRNG001_OCT19	Soil	pH	SW9045D	pH units	7.8	0.1	--	0.1			
J Range	SSJRNG001_OCT19	Soil	Phosphorus, total	E365.4	mg/kg	300	21	11	5.5			
J Range	SSJRNG001_OCT19	Soil	Potassium	SW6010C	mg/kg	2,760	89	44	2.6	J	MS%R	
J Range	SSJRNG001_OCT19	Soil	Sodium	SW6010C	mg/kg	80	89	44	1.3	J	TR	
J Range	SSJRNG001_OCT19	Soil	Sulfate	SW9056A	mg/L	18	10	5.0	0.64	J	MS%R	
J Range	SSJRNG002_OCT19	Soil	Antimony	SW6010C	mg/kg	0.47	0.78	0.49	0.068	J	TR	300
J Range	SSJRNG002_OCT19	Soil	Calcium	SW6010C	mg/kg	2,540	9.7	7.8	1.8			
J Range	SSJRNG002_OCT19	Soil	Chloride	SW9056A	mg/L	17	20	10	0.993	J	TR	
J Range	SSJRNG002_OCT19	Soil	Copper	SW6010C	mg/kg	15.5	2.4	0.97	0.16			10,000
J Range	SSJRNG002_OCT19	Soil	Lead	SW6010C	mg/kg	52.4	0.49	0.39	0.085			3,000
J Range	SSJRNG002_OCT19	Soil	Magnesium	SW6010C	mg/kg	2,160	9.7	7.8	0.66			
J Range	SSJRNG002_OCT19	Soil	pH	SW9045D	pH units	7.2	0.1	--	0.1			
J Range	SSJRNG002_OCT19	Soil	Phosphorus, total	E365.4	mg/kg	300	18	8.8	4.6			

CAMP EDWARDS SMALL ARMS RANGE BASELINE SOIL MONITORING RESULTS 2019

Site List	Field Sample ID	Matrix	Analyte	Analytical Method	Units	Lab Result	LOQ	LOD	DL	Qualifier	Reason	OMMP Action Levels (mg/kg)
J Range	SSJRNG002_OCT19	Soil	Potassium	SW6010C	mg/kg	677	97	49	2.8			
J Range	SSJRNG002_OCT19	Soil	Sodium	SW6010C	mg/kg	39.5	97	49	1.5	J	TR	
J Range	SSJRNG002_OCT19	Soil	Sulfate	SW9056A	mg/L	9.1	10	5.0	0.637	J	TR	
J Range	SSJRNG003_OCT19	Soil	Antimony	SW6010C	mg/kg	0.49	0.66	0.41	0.058	J	TR	300
J Range	SSJRNG003_OCT19	Soil	Calcium	SW6010C	mg/kg	2,260	8.2	6.6	1.5			
J Range	SSJRNG003_OCT19	Soil	Chloride	SW9056A	mg/L	13	20	10	0.993	J	TR	
J Range	SSJRNG003_OCT19	Soil	Copper	SW6010C	mg/kg	19.7	2.0	0.82	0.13			10,000
J Range	SSJRNG003_OCT19	Soil	Lead	SW6010C	mg/kg	79.3	0.41	0.33	0.072			3,000
J Range	SSJRNG003_OCT19	Soil	Magnesium	SW6010C	mg/kg	1,880	8.2	6.6	0.56			
J Range	SSJRNG003_OCT19	Soil	pH	SW9045D	pH units	7.1	0.1	--	0.1			
J Range	SSJRNG003_OCT19	Soil	Phosphorus, total	E365.4	mg/kg	280	15	7.5	3.9			
J Range	SSJRNG003_OCT19	Soil	Potassium	SW6010C	mg/kg	611	82	41	2.4			
J Range	SSJRNG003_OCT19	Soil	Sodium	SW6010C	mg/kg	40.2	82	41	1.2	J	TR	
J Range	SSJRNG003_OCT19	Soil	Sulfate	SW9056A	mg/L	7.8	10	5.0	0.64	J	TR	
J Range	SSJRNG004_OCT19	Soil	Antimony	SW6010C	mg/kg	0.58	0.72	0.45	0.063	J	TR	300
J Range	SSJRNG004_OCT19	Soil	Calcium	SW6010C	mg/kg	2,630	9.0	7.2	1.6			
J Range	SSJRNG004_OCT19	Soil	Chloride	SW9056A	mg/L	16	20	10	0.993	J	TR	
J Range	SSJRNG004_OCT19	Soil	Copper	SW6010C	mg/kg	23.2	2.2	0.90	0.14			10,000
J Range	SSJRNG004_OCT19	Soil	Lead	SW6010C	mg/kg	69.7	0.45	0.36	0.078			3,000
J Range	SSJRNG004_OCT19	Soil	Magnesium	SW6010C	mg/kg	2,270	9.0	7.2	0.61			
J Range	SSJRNG004_OCT19	Soil	pH	SW9045D	pH units	7.2	0.1	--	0.1			
J Range	SSJRNG004_OCT19	Soil	Phosphorus, total	E365.4	mg/kg	240	19	9.4	4.9			
J Range	SSJRNG004_OCT19	Soil	Potassium	SW6010C	mg/kg	724	90	45	2.6			
J Range	SSJRNG004_OCT19	Soil	Sodium	SW6010C	mg/kg	44.8	90	45	1.3	J	TR	
J Range	SSJRNG004_OCT19	Soil	Sulfate	SW9056A	mg/L	8.3	10	5.0	0.64	J	TR	
J Range	SSJRNG005_OCT19	Soil	Antimony	SW6010C	mg/kg	0.44	0.72	0.45	0.063	J	TR	300
J Range	SSJRNG005_OCT19	Soil	Calcium	SW6010C	mg/kg	2,590	9.0	7.2	1.6			
J Range	SSJRNG005_OCT19	Soil	Chloride	SW9056A	mg/L	20	20	10	0.993			
J Range	SSJRNG005_OCT19	Soil	Copper	SW6010C	mg/kg	30.6	2.2	0.9	0.14			10,000
J Range	SSJRNG005_OCT19	Soil	Lead	SW6010C	mg/kg	129	0.45	0.36	0.078			3,000
J Range	SSJRNG005_OCT19	Soil	Magnesium	SW6010C	mg/kg	2,460	9.0	7.2	0.61			
J Range	SSJRNG005_OCT19	Soil	pH	SW9045D	pH units	7.2	0.1	--	0.1			
J Range	SSJRNG005_OCT19	Soil	Phosphorus, total	E365.4	mg/kg	300	21	11	5.5			
J Range	SSJRNG005_OCT19	Soil	Potassium	SW6010C	mg/kg	727	90	45	2.6			
J Range	SSJRNG005_OCT19	Soil	Sodium	SW6010C	mg/kg	44.4	90	45	1.3	J	TR	
J Range	SSJRNG005_OCT19	Soil	Sulfate	SW9056A	mg/L	9.1	10	5.0	0.64	J	TR	

CAMP EDWARDS SMALL ARMS RANGE BASELINE SOIL MONITORING RESULTS 2019

Site List	Field Sample ID	Matrix	Analyte	Analytical Method	Units	Lab Result	LOQ	LOD	DL	Qualifier	Reason	OMMP Action Levels (mg/kg)
J Range	SSJRNG006_OCT19	Soil	Antimony	SW6010C	mg/kg	0.19	0.54	0.34	0.047	J	TR	300
J Range	SSJRNG006_OCT19	Soil	Calcium	SW6010C	mg/kg	1,190	6.8	5.4	1.2			
J Range	SSJRNG006_OCT19	Soil	Chloride	SW9056A	mg/L	11	20	10	0.993	J	TR	
J Range	SSJRNG006_OCT19	Soil	Copper	SW6010C	mg/kg	11.1	1.7	0.68	0.11			10,000
J Range	SSJRNG006_OCT19	Soil	Lead	SW6010C	mg/kg	69.2	0.34	0.27	0.059			3,000
J Range	SSJRNG006_OCT19	Soil	Magnesium	SW6010C	mg/kg	1,110	6.8	5.4	0.46			
J Range	SSJRNG006_OCT19	Soil	pH	SW9045D	pH units	6.9	0.1	--	0.1			
J Range	SSJRNG006_OCT19	Soil	Phosphorus, total	E365.4	mg/kg	260	14	6.9	3.6			
J Range	SSJRNG006_OCT19	Soil	Potassium	SW6010C	mg/kg	481	68	34	2			
J Range	SSJRNG006_OCT19	Soil	Sodium	SW6010C	mg/kg	25.8	68	34	1	J	TR	
J Range	SSJRNG006_OCT19	Soil	Sulfate	SW9056A	mg/L	3.7	10	5.0	0.64	J	TR	
K Range	SSKRNG001_OCT19	Soil	Antimony	SW6010C	mg/kg	0.704	0.6	0.38	0.053	J	MS%R	300
K Range	SSKRNG001_OCT19	Soil	Calcium	SW6010C	mg/kg	4,950	7.6	6.0	1.4	J	MS%R	
K Range	SSKRNG001_OCT19	Soil	Chloride	SW9056A	mg/L	8.8	20	10	0.993	J	TR	
K Range	SSKRNG001_OCT19	Soil	Copper	SW6010C	mg/kg	53.7	1.9	0.76	0.12	J	MS%R	10,000
K Range	SSKRNG001_OCT19	Soil	Lead	SW6010C	mg/kg	21.7	0.38	0.3	0.066	J	MS%R	3,000
K Range	SSKRNG001_OCT19	Soil	Magnesium	SW6010C	mg/kg	9,630	7.6	6.0	0.51			
K Range	SSKRNG001_OCT19	Soil	pH	SW9045D	pH units	7.8	0.1	--	0.1			
K Range	SSKRNG001_OCT19	Soil	Phosphorus, total	E365.4	mg/kg	510	48	24	12			
K Range	SSKRNG001_OCT19	Soil	Potassium	SW6010C	mg/kg	3,480	76	38	2.2			
K Range	SSKRNG001_OCT19	Soil	Sodium	SW6010C	mg/kg	116	76	38	1.1			
K Range	SSKRNG001_OCT19	Soil	Sulfate	SW9056A	mg/L	10	10	5.0	0.637			
K Range	SSKRNG002_OCT19	Soil	Antimony	SW6010C	mg/kg	0.49	0.62	0.39	0.055	J	TR	300
K Range	SSKRNG002_OCT19	Soil	Calcium	SW6010C	mg/kg	3,240	7.8	6.2	1.4			
K Range	SSKRNG002_OCT19	Soil	Chloride	SW9056A	mg/L	21	20	10	0.993			
K Range	SSKRNG002_OCT19	Soil	Copper	SW6010C	mg/kg	20.6	2.00	0.78	0.12			10,000
K Range	SSKRNG002_OCT19	Soil	Lead	SW6010C	mg/kg	30.8	0.39	0.31	0.068			3,000
K Range	SSKRNG002_OCT19	Soil	Magnesium	SW6010C	mg/kg	2,860	7.8	6.2	0.53			
K Range	SSKRNG002_OCT19	Soil	pH	SW9045D	pH units	7.3	0.1	--	0.1			
K Range	SSKRNG002_OCT19	Soil	Phosphorus, total	E365.4	mg/kg	310	19	9.4	4.9			
K Range	SSKRNG002_OCT19	Soil	Potassium	SW6010C	mg/kg	802	78	39	2.3			
K Range	SSKRNG002_OCT19	Soil	Sodium	SW6010C	mg/kg	40.8	78	39	1.2	J	TR	
K Range	SSKRNG002_OCT19	Soil	Sulfate	SW9056A	mg/L	4.0	10	5.0	0.637	J	TR	
K Range	SSKRNG003_OCT19	Soil	Antimony	SW6010C	mg/kg	0.31	0.50	0.31	0.044	J	TR	300
K Range	SSKRNG003_OCT19	Soil	Calcium	SW6010C	mg/kg	1,940	6.2	5.0	1.1			
K Range	SSKRNG003_OCT19	Soil	Chloride	SW9056A	mg/L	15	20	10	0.993	J	TR	

CAMP EDWARDS SMALL ARMS RANGE BASELINE SOIL MONITORING RESULTS 2019

Site List	Field Sample ID	Matrix	Analyte	Analytical Method	Units	Lab Result	LOQ	LOD	DL	Qualifier	Reason	OMMP Action Levels (mg/kg)
K Range	SSKRNG003_OCT19	Soil	Copper	SW6010C	mg/kg	11.3	1.6	0.62	0.1			10,000
K Range	SSKRNG003_OCT19	Soil	Lead	SW6010C	mg/kg	52.6	0.31	0.25	0.054			3,000
K Range	SSKRNG003_OCT19	Soil	Magnesium	SW6010C	mg/kg	1,970	6.2	5	0.43			
K Range	SSKRNG003_OCT19	Soil	pH	SW9045D	pH units	7.1	0.1	--	0.1			
K Range	SSKRNG003_OCT19	Soil	Phosphorus, total	E365.4	mg/kg	290	21	11	5.5			
K Range	SSKRNG003_OCT19	Soil	Potassium	SW6010C	mg/kg	629	62	31	1.8			
K Range	SSKRNG003_OCT19	Soil	Sodium	SW6010C	mg/kg	33.6	62	31	0.94	J	TR	
K Range	SSKRNG003_OCT19	Soil	Sulfate	SW9056A	mg/L	4.4	10	5.0	0.64	J	TR	
K Range	SSKRNG004_OCT19	Soil	Antimony	SW6010C	mg/kg	0.29	0.45	0.28	0.04	J	TR	300
K Range	SSKRNG004_OCT19	Soil	Calcium	SW6010C	mg/kg	2,200	5.7	4.5	1.0			
K Range	SSKRNG004_OCT19	Soil	Chloride	SW9056A	mg/L	13	20	10	0.993	J	TR	
K Range	SSKRNG004_OCT19	Soil	Copper	SW6010C	mg/kg	13.1	1.4	0.57	0.091			10,000
K Range	SSKRNG004_OCT19	Soil	Lead	SW6010C	mg/kg	28.6	0.28	0.23	0.049			3,000
K Range	SSKRNG004_OCT19	Soil	Magnesium	SW6010C	mg/kg	2,120	5.7	4.5	0.39			
K Range	SSKRNG004_OCT19	Soil	pH	SW9045D	pH units	7.1	0.1	--	0.1			
K Range	SSKRNG004_OCT19	Soil	Phosphorus, total	E365.4	mg/kg	230	19	9.4	4.9			
K Range	SSKRNG004_OCT19	Soil	Potassium	SW6010C	mg/kg	617	57	28	1.6			
K Range	SSKRNG004_OCT19	Soil	Sodium	SW6010C	mg/kg	32.6	57	28	0.85	J	TR	
K Range	SSKRNG004_OCT19	Soil	Sulfate	SW9056A	mg/L	4.6	10	5.0	0.64	J	TR	
K Range	SSKRNG004_OCT19	Soil	Sulfate	SW9056A	mg/L	4.6	10	5.0	0.64	J	TR	
K Range	SSKRNG005_OCT19	Soil	Antimony	SW6010C	mg/kg	0.29	0.73	0.46	0.064	J	TR	300
K Range	SSKRNG005_OCT19	Soil	Calcium	SW6010C	mg/kg	2,240	9.1	7.3	1.6			
K Range	SSKRNG005_OCT19	Soil	Chloride	SW9056A	mg/L	14	20	10	0.993	J	TR	
K Range	SSKRNG005_OCT19	Soil	Copper	SW6010C	mg/kg	14.1	2.3	0.91	0.15			10,000
K Range	SSKRNG005_OCT19	Soil	Lead	SW6010C	mg/kg	36.9	0.46	0.36	0.079			3,000
K Range	SSKRNG005_OCT19	Soil	Magnesium	SW6010C	mg/kg	2,080	9.1	7.3	0.62			
K Range	SSKRNG005_OCT19	Soil	pH	SW9045D	pH units	7.3	0.1	--	0.1			
K Range	SSKRNG005_OCT19	Soil	Phosphorus, total	E365.4	mg/kg	280	19	9.4	4.9			
K Range	SSKRNG005_OCT19	Soil	Potassium	SW6010C	mg/kg	681	91	46	2.6			
K Range	SSKRNG005_OCT19	Soil	Sodium	SW6010C	mg/kg	34.7	91	46	1.4	J	TR	
K Range	SSKRNG005_OCT19	Soil	Sulfate	SW9056A	mg/L	5.5	10	5.0	0.637	J	TR	
K Range	SSKRNG005_OCT19	Soil	Sulfate	SW9056A	mg/L	5.5	10	5.0	0.637	J	TR	
K Range	SSKRNG006_OCT19	Soil	Antimony	SW6010C	mg/kg	0.11	0.64	0.4	0.057	J	TR	300
K Range	SSKRNG006_OCT19	Soil	Calcium	SW6010C	mg/kg	1,180	8.1	6.4	1.5			
K Range	SSKRNG006_OCT19	Soil	Chloride	SW9056A	mg/L	18	20	10	0.993	J	TR	
K Range	SSKRNG006_OCT19	Soil	Copper	SW6010C	mg/kg	11	2	0.81	0.13			10,000

CAMP EDWARDS SMALL ARMS RANGE BASELINE SOIL MONITORING RESULTS 2019

Site List	Field Sample ID	Matrix	Analyte	Analytical Method	Units	Lab Result	LOQ	LOD	DL	Qualifier	Reason	OMMP Action Levels (mg/kg)
K Range	SSKRNG006_OCT19	Soil	Lead	SW6010C	mg/kg	24.5	0.4	0.32	0.07			3,000
K Range	SSKRNG006_OCT19	Soil	Magnesium	SW6010C	mg/kg	1,060	8.1	6.4	0.55			
K Range	SSKRNG006_OCT19	Soil	pH	SW9045D	pH units	6.8	0.1	--	0.1			
K Range	SSKRNG006_OCT19	Soil	Phosphorus, total	E365.4	mg/kg	200	15	7.5	3.9			
K Range	SSKRNG006_OCT19	Soil	Potassium	SW6010C	mg/kg	455	81	40	2.3			
K Range	SSKRNG006_OCT19	Soil	Sodium	SW6010C	mg/kg	24.8	81	40	1.2	J	TR	
K Range	SSKRNG006_OCT19	Soil	Sulfate	SW9056A	mg/L	9.9	10	5.0	0.637	J	TR	
L Range	SSLRNG001_OCT19	Soil	Antimony	SW6010C	mg/kg	0.094	0.57	0.35	0.05	J	TR	300
L Range	SSLRNG001_OCT19	Soil	Calcium	SW6010C	mg/kg	1,990	7.1	5.7	1.3			
L Range	SSLRNG001_OCT19	Soil	Chloride	SW9056A	mg/L	35	20	10	0.993			
L Range	SSLRNG001_OCT19	Soil	Copper	SW6010C	mg/kg	13.3	1.8	0.71	0.11			10,000
L Range	SSLRNG001_OCT19	Soil	Lead	SW6010C	mg/kg	13.2	0.35	0.28	0.062			3,000
L Range	SSLRNG001_OCT19	Soil	Magnesium	SW6010C	mg/kg	1,440	7.1	5.7	0.48			
L Range	SSLRNG001_OCT19	Soil	pH	SW9045D	pH units	5.5	0.1	--	0.1			
L Range	SSLRNG001_OCT19	Soil	Phosphorus, total	E365.4	mg/kg	530	48	24	12			
L Range	SSLRNG001_OCT19	Soil	Potassium	SW6010C	mg/kg	741	71	35	2.1			
L Range	SSLRNG001_OCT19	Soil	Sodium	SW6010C	mg/kg	42.6	71	35	1.1	J	TR	
L Range	SSLRNG001_OCT19	Soil	Sulfate	SW9056A	mg/L	4.2	10	5.0	0.64	J	TR	
L Range	SSLRNG002_OCT19	Soil	Antimony	SW6010C	mg/kg	0.42	0.68	0.42	0.059	U	ND	300
L Range	SSLRNG002_OCT19	Soil	Calcium	SW6010C	mg/kg	6,020	8.4	6.8	1.5			
L Range	SSLRNG002_OCT19	Soil	Chloride	SW9056A	mg/L	46	20	10	0.993			
L Range	SSLRNG002_OCT19	Soil	Copper	SW6010C	mg/kg	15.3	2.1	0.84	0.14			10,000
L Range	SSLRNG002_OCT19	Soil	Lead	SW6010C	mg/kg	12	0.42	0.34	0.074			3,000
L Range	SSLRNG002_OCT19	Soil	Magnesium	SW6010C	mg/kg	1,530	8.4	6.8	0.57			
L Range	SSLRNG002_OCT19	Soil	pH	SW9045D	pH units	7.8	0.1	--	0.1			
L Range	SSLRNG002_OCT19	Soil	Phosphorus, total	E365.4	mg/kg	370	35	18	9.1			
L Range	SSLRNG002_OCT19	Soil	Potassium	SW6010C	mg/kg	724	84	42	2.5			
L Range	SSLRNG002_OCT19	Soil	Sodium	SW6010C	mg/kg	47.4	84	42	1.3	J	TR	
L Range	SSLRNG002_OCT19	Soil	Sulfate	SW9056A	mg/L	13	10	5.0	0.637			
S Range	SSSRNG001_OCT19	Soil	Antimony	SW6010C	mg/kg	0.648	0.43	0.27	0.038			300
S Range	SSSRNG001_OCT19	Soil	Calcium	SW6010C	mg/kg	976	5.4	4.3	0.97			
S Range	SSSRNG001_OCT19	Soil	Chloride	SW9056A	mg/L	23	20	10	0.993			
S Range	SSSRNG001_OCT19	Soil	Copper	SW6010C	mg/kg	50.6	1.3	0.54	0.086			10,000
S Range	SSSRNG001_OCT19	Soil	Lead	SW6010C	mg/kg	17.8	0.27	0.21	0.047			3,000
S Range	SSSRNG001_OCT19	Soil	Magnesium	SW6010C	mg/kg	1,020	5.4	4.3	0.36			
S Range	SSSRNG001_OCT19	Soil	pH	SW9045D	pH units	6.1	0.1	--	0.1			

CAMP EDWARDS SMALL ARMS RANGE BASELINE SOIL MONITORING RESULTS 2019

Site List	Field Sample ID	Matrix	Analyte	Analytical Method	Units	Lab Result	LOQ	LOD	DL	Qualifier	Reason	OMMP Action Levels (mg/kg)
S Range	SSSRNG001_OCT19	Soil	Phosphorus, total	E365.4	mg/kg	290	15	7.5	3.9			
S Range	SSSRNG001_OCT19	Soil	Potassium	SW6010C	mg/kg	497	54	27	1.6			
S Range	SSSRNG001_OCT19	Soil	Sodium	SW6010C	mg/kg	27.6	54	27	0.8	J	TR	
S Range	SSSRNG001_OCT19	Soil	Sulfate	SW9056A	mg/L	8.2	10	5.0	0.637	J	TR	
T Range	SSTRNG001_OCT19	Soil	Antimony	SW6010C	mg/kg	0.089	0.78	0.49	0.068	J	TR/MS%R	300
T Range	SSTRNG001_OCT19	Soil	Calcium	SW6010C	mg/kg	3,130	9.8	7.8	1.8			
T Range	SSTRNG001_OCT19	Soil	Chloride	SW9056A	mg/L	34	20	10	0.993	J	MS%R	
T Range	SSTRNG001_OCT19	Soil	Copper	SW6010C	mg/kg	17.5	2.4	0.98	0.16			10,000
T Range	SSTRNG001_OCT19	Soil	Lead	SW6010C	mg/kg	17.3	0.49	0.39	0.085	J	MS%R	3,000
T Range	SSTRNG001_OCT19	Soil	Magnesium	SW6010C	mg/kg	3,550	9.8	7.8	0.66			
T Range	SSTRNG001_OCT19	Soil	pH	SW9045D	pH units	7.4	0.1	--	0.1			
T Range	SSTRNG001_OCT19	Soil	Phosphorus, total	E365.4	mg/kg	340	32	16	8.4			
T Range	SSTRNG001_OCT19	Soil	Potassium	SW6010C	mg/kg	1,600	98	49	2.8			
T Range	SSTRNG001_OCT19	Soil	Sodium	SW6010C	mg/kg	67	98	49	1.5	J	TR	
T Range	SSTRNG001_OCT19	Soil	Sulfate	SW9056A	mg/L	24	10	5.0	0.637			
T Range	SSTRNG002_OCT19	Soil	Antimony	SW6010C	mg/kg	0.15	0.74	0.46	0.065	J	TR	300
T Range	SSTRNG002_OCT19	Soil	Calcium	SW6010C	mg/kg	2,030	9.3	7.4	1.7			
T Range	SSTRNG002_OCT19	Soil	Chloride	SW9056A	mg/L	66	20	10	0.993			
T Range	SSTRNG002_OCT19	Soil	Copper	SW6010C	mg/kg	14.4	2.3	0.93	0.15			10,000
T Range	SSTRNG002_OCT19	Soil	Lead	SW6010C	mg/kg	39.6	0.46	0.37	0.081			3,000
T Range	SSTRNG002_OCT19	Soil	Magnesium	SW6010C	mg/kg	1,540	9.3	7.4	0.63			
T Range	SSTRNG002_OCT19	Soil	pH	SW9045D	pH units	6.8	0.1	--	0.1			
T Range	SSTRNG002_OCT19	Soil	Phosphorus, total	E365.4	mg/kg	460	29	14	7.5			
T Range	SSTRNG002_OCT19	Soil	Potassium	SW6010C	mg/kg	713	93	46	2.7			
T Range	SSTRNG002_OCT19	Soil	Sodium	SW6010C	mg/kg	41.6	93	46	1.4	J	TR	
T Range	SSTRNG002_OCT19	Soil	Sulfate	SW9056A	mg/L	8.9	10	5.0	0.64	J	TR	
T Range	SSTRNG003_OCT19	Soil	Antimony	SW6010C	mg/kg	0.618	0.7	0.43	0.061	J	TR	300
T Range	SSTRNG003_OCT19	Soil	Calcium	SW6010C	mg/kg	3,640	8.7	7	1.6			
T Range	SSTRNG003_OCT19	Soil	Chloride	SW9056A	mg/L	33	20	10	0.993			
T Range	SSTRNG003_OCT19	Soil	Copper	SW6010C	mg/kg	75.8	2.2	0.87	0.14			10,000
T Range	SSTRNG003_OCT19	Soil	Lead	SW6010C	mg/kg	176	0.43	0.35	0.076			3,000
T Range	SSTRNG003_OCT19	Soil	Magnesium	SW6010C	mg/kg	2,010	8.7	7	0.59			
T Range	SSTRNG003_OCT19	Soil	pH	SW9045D	pH units	7	0.1	--	0.1			
T Range	SSTRNG003_OCT19	Soil	Phosphorus, total	E365.4	mg/kg	1,400	85	42	22			
T Range	SSTRNG003_OCT19	Soil	Potassium	SW6010C	mg/kg	767	87	43	2.5			
T Range	SSTRNG003_OCT19	Soil	Sodium	SW6010C	mg/kg	50.5	87	43	1.3	J	TR	

CAMP EDWARDS SMALL ARMS RANGE BASELINE SOIL MONITORING RESULTS 2019

Site List	Field Sample ID	Matrix	Analyte	Analytical Method	Units	Lab Result	LOQ	LOD	DL	Qualifier	Reason	OMMP Action Levels (mg/kg)
T Range	SSTRNG003_OCT19	Soil	Sulfate	SW9056A	mg/L	4.7	10	5.0	0.64	J	TR	
T Range	SSTRNG004_OCT19	Soil	Antimony	SW6010C	mg/kg	0.32	0.81	0.51	0.071	J	TR	300
T Range	SSTRNG004_OCT19	Soil	Calcium	SW6010C	mg/kg	2,430	10	8.1	1.8			
T Range	SSTRNG004_OCT19	Soil	Chloride	SW9056A	mg/L	30	20	10	0.993			
T Range	SSTRNG004_OCT19	Soil	Copper	SW6010C	mg/kg	174	2.5	1	0.16			10,000
T Range	SSTRNG004_OCT19	Soil	Lead	SW6010C	mg/kg	113	0.51	0.41	0.089			3,000
T Range	SSTRNG004_OCT19	Soil	Magnesium	SW6010C	mg/kg	1,760	10	8.1	0.69			
T Range	SSTRNG004_OCT19	Soil	pH	SW9045D	pH units	7	0.1	--	0.1			
T Range	SSTRNG004_OCT19	Soil	Phosphorus, total	E365.4	mg/kg	700	40	20	10			
T Range	SSTRNG004_OCT19	Soil	Potassium	SW6010C	mg/kg	702	100	51	3			
T Range	SSTRNG004_OCT19	Soil	Sodium	SW6010C	mg/kg	50.9	100	51	1.5	J	TR	
T Range	SSTRNG004_OCT19	Soil	Sulfate	SW9056A	mg/L	6.4	10	5.0	0.64	J	TR	
T Range	SSTRNG005_OCT19	Soil	Antimony	SW6010C	mg/kg	0.24	0.41	0.26	0.036	J	TR	300
T Range	SSTRNG005_OCT19	Soil	Calcium	SW6010C	mg/kg	2,940	5.1	4.1	0.92			
T Range	SSTRNG005_OCT19	Soil	Chloride	SW9056A	mg/L	26	20	10	0.993			
T Range	SSTRNG005_OCT19	Soil	Copper	SW6010C	mg/kg	29.1	1.3	0.51	0.082			10,000
T Range	SSTRNG005_OCT19	Soil	Lead	SW6010C	mg/kg	119	0.26	0.2	0.045			3,000
T Range	SSTRNG005_OCT19	Soil	Magnesium	SW6010C	mg/kg	1,560	5.1	4.1	0.35			
T Range	SSTRNG005_OCT19	Soil	pH	SW9045D	pH units	7.1	0.1	--	0.1			
T Range	SSTRNG005_OCT19	Soil	Phosphorus, total	E365.4	mg/kg	720	40	20	10			
T Range	SSTRNG005_OCT19	Soil	Potassium	SW6010C	mg/kg	634	51	26	1.5			
T Range	SSTRNG005_OCT19	Soil	Sodium	SW6010C	mg/kg	43.2	51	26	0.77	J		
T Range	SSTRNG005_OCT19	Soil	Sulfate	SW9056A	mg/L	2.6	10	5.0	0.637	J	TR	
T Range	SSTRNG006_OCT19	Soil	Antimony	SW6010C	mg/kg	0.22	0.73	0.46	0.064	J		300
T Range	SSTRNG006_OCT19	Soil	Calcium	SW6010C	mg/kg	5,020	9.2	7.3	1.7			
T Range	SSTRNG006_OCT19	Soil	Chloride	SW9056A	mg/L	16	20	10	0.993	J		
T Range	SSTRNG006_OCT19	Soil	Copper	SW6010C	mg/kg	33.3	2.3	0.92	0.15			10,000
T Range	SSTRNG006_OCT19	Soil	Lead	SW6010C	mg/kg	178	0.46	0.37	0.08			3,000
T Range	SSTRNG006_OCT19	Soil	Magnesium	SW6010C	mg/kg	2,620	9.2	7.3	0.62			
T Range	SSTRNG006_OCT19	Soil	pH	SW9045D	pH units	7.3	0.1	--	0.1			
T Range	SSTRNG006_OCT19	Soil	Phosphorus, total	E365.4	mg/kg	920	76	38	20			
T Range	SSTRNG006_OCT19	Soil	Potassium	SW6010C	mg/kg	1,040	92	46	2.7			
T Range	SSTRNG006_OCT19	Soil	Sodium	SW6010C	mg/kg	88.9	92	46	1.4	J	TR	
T Range	SSTRNG006_OCT19	Soil	Sulfate	SW9056A	mg/L	9.4	10	5.0	0.637	J	TR	

Notes:
µg/L = microgram(s) per liter ND = nondetectable

CAMP EDWARDS SMALL ARMS RANGE BASELINE SOIL MONITORING RESULTS 2019

Site List	Field Sample ID	Matrix	Analyte	Analytical Method	Units	Lab Result	LOQ	LOD	DL	Qualifier	Reason	OMMP Action Levels (mg/kg)
DL = detection limit			LOQ = limit of quantitation									
ID = identifier			TR = trace result (<LOQ and >DL)									
J = estimated value			U = not detected									

Small Arms Range Sampling Reports

Soil Sampling Results

Spring 2020

Soil Sample Results Spring 2020

Field Sample ID	Matrix	Sample Type	Analyte	Analytical Method	Lab Result	MDL	LOD	LOQ	Units	OMMP Action Level (mg/kg)	Dilution Factor	Qualifier	Reason
SSERNG001_APR20A	Soil	N	Antimony	SW6010C	0.61	0.43	1.3	1.7	mg/kg	300	2	J	TR
SSERNG001_APR20A	Soil	N	Calcium	SW6010C	310	130	390	430	mg/kg		2	J	TR
SSERNG001_APR20A	Soil	N	Chloride	SW9056A	9.0	0.20	0.20	2.0	mg/kg		1	J	H
SSERNG001_APR20A	Soil	N	Copper	SW6010C	3.3	1.3	3.9	4.3	mg/kg	10,000	2	J	TR
SSERNG001_APR20A	Soil	N	Iron	SW6010C	8,200	4.3	13	17	mg/kg		2		
SSERNG001_APR20A	Soil	N	Lead	SW6010C	10	0.43	1.3	1.7	mg/kg	3,000	2		
SSERNG001_APR20A	Soil	N	Magnesium	SW6010C	1,200	43	130	170	mg/kg		2		
SSERNG001_APR20A	Soil	N	pH	SW9045D	5.6	0.10	0.10	0.10	pH units		1		
SSERNG001_APR20A	Soil	N	Phosphorus, total	E365.4	220	11	19	19	mg/kg		1		
SSERNG001_APR20A	Soil	N	Potassium	SW6010C	780	260	780	870	mg/kg		2	U	ND
SSERNG001_APR20A	Soil	N	Sodium	SW6010C	130	43	130	170	mg/kg		2	U	ND
SSERNG001_APR20A	Soil	N	Sulfate	SW9056A	4.2	1.5	4.5	5	mg/kg		1	J	TR,H
SSERNG001_APR20A EB	FIELDQC	EB	Antimony	SW6020A	4.0	2	4	5	µg/L	300	2	U	ND
SSERNG001_APR20A EB	FIELDQC	EB	Calcium	SW6020A	180	96	180	200	µg/L		2	U	ND
SSERNG001_APR20A EB	FIELDQC	EB	Chloride	SW9056A	0.15	0.060	0.15	0.20	mg/L		1	U	ND
SSERNG001_APR20A EB	FIELDQC	EB	Copper	SW6020A	2.5	1.9	2.5	3.0	µg/L	10,000	2	U	ND
SSERNG001_APR20A EB	FIELDQC	EB	Iron	SW6020A	40	20	40	50	µg/L		2	U	ND
SSERNG001_APR20A EB	FIELDQC	EB	Lead	SW6020A	2.0	1.0	2.0	3.0	µg/L	3,000	2	U	ND
SSERNG001_APR20A EB	FIELDQC	EB	Magnesium	SW6020A	40	20	40	50	µg/L		2	U	ND
SSERNG001_APR20A EB	FIELDQC	EB	Phosphorus, total	E365.4	1.6	0.82	1.1	2	mg/L		1	J	TR
SSERNG001_APR20A EB	FIELDQC	EB	Potassium	SW6020A	90	45	90	100	µg/L		2	U	ND
SSERNG001_APR20A EB	FIELDQC	EB	Sodium	SW6020A	57	50	90	100	µg/L		2	J	TR
SSERNG001_APR20A EB	FIELDQC	EB	Sulfate	SW9056A	0.15	0.050	0.15	0.50	mg/L		1	U	ND
SSERNG001_APR20B	Soil	FR	Antimony	SW6010C	1.0	0.45	1.3	1.8	mg/kg	300	2	J	TR
SSERNG001_APR20B	Soil	FR	Calcium	SW6010C	350	130	400	450	mg/kg		2	J	TR
SSERNG001_APR20B	Soil	FR	Chloride	SW9056A	10	0.20	0.20	2.0	mg/kg		1	J	H
SSERNG001_APR20B	Soil	FR	Copper	SW6010C	3.1	1.3	4.0	4.5	mg/kg	10,000	2	J	TR
SSERNG001_APR20B	Soil	FR	Iron	SW6010C	7,000	4.5	13	18	mg/kg		2		
SSERNG001_APR20B	Soil	FR	Lead	SW6010C	11	0.45	1.3	1.8	mg/kg	3,000	2		
SSERNG001_APR20B	Soil	FR	Magnesium	SW6010C	570	45	130	180	mg/kg		2		
SSERNG001_APR20B	Soil	FR	pH	SW9045D	5.5	0.10	0.10	0.10	pH units		1		
SSERNG001_APR20B	Soil	FR	Phosphorus, total	E365.4	260	11	20	20	mg/kg		1		
SSERNG001_APR20B	Soil	FR	Potassium	SW6010C	320	270	800	890	mg/kg		2	J	TR
SSERNG001_APR20B	Soil	FR	Sodium	SW6010C	130	45	130	180	mg/kg		2	U	ND
SSERNG001_APR20B	Soil	FR	Sulfate	SW9056A	6.1	1.5	4.5	5	mg/kg		1	J	H
SSERNG001_APR20C	Soil	FR	Antimony	SW6010C	0.62	0.44	1.3	1.8	mg/kg	300	2	J	TR
SSERNG001_APR20C	Soil	FR	Calcium	SW6010C	350	130	400	440	mg/kg		2	J	TR
SSERNG001_APR20C	Soil	FR	Chloride	SW9056A	12	0.20	0.20	2.0	mg/kg		1	J	H
SSERNG001_APR20C	Soil	FR	Copper	SW6010C	3.7	1.3	4.0	4.4	mg/kg	10,000	2	J	TR
SSERNG001_APR20C	Soil	FR	Iron	SW6010C	7,500	4.4	13	18	mg/kg		2		
SSERNG001_APR20C	Soil	FR	Lead	SW6010C	11	0.44	1.3	1.8	mg/kg	3,000	2		
SSERNG001_APR20C	Soil	FR	Magnesium	SW6010C	620	44	130	180	mg/kg		2		
SSERNG001_APR20C	Soil	FR	pH	SW9045D	5.6	0.10	0.10	0.10	pH units		1		
SSERNG001_APR20C	Soil	FR	Phosphorus, total	E365.4	280	11	19	19	mg/kg		1		
SSERNG001_APR20C	Soil	FR	Potassium	SW6010C	300	270	800	890	mg/kg		2	J	TR,MS%R

Soil Sample Results Spring 2020

Field Sample ID	Matrix	Sample Type	Analyte	Analytical Method	Lab Result	MDL	LOD	LOQ	Units	OMMP Action Level (mg/kg)	Dilution Factor	Qualifier	Reason
SSERNG001_APR20C	Soil	FR	Sodium	SW6010C	130	44	130	180	mg/kg		2	U	ND
SSERNG001_APR20C	Soil	FR	Sulfate	SW9056A	5.3	1.5	4.5	5	mg/kg		1	J	H
SSERNG002_APR20	Soil	N	Antimony	SW6010C	0.64	0.44	1.3	1.8	mg/kg	300	2	J	TR
SSERNG002_APR20	Soil	N	Calcium	SW6010C	330	130	400	440	mg/kg		2	J	TR
SSERNG002_APR20	Soil	N	Chloride	SW9056A	12	0.20	0.20	2.0	mg/kg		1	J	H
SSERNG002_APR20	Soil	N	Copper	SW6010C	3.1	1.3	4.0	4.4	mg/kg	10,000	2	J	TR
SSERNG002_APR20	Soil	N	Iron	SW6010C	6,000	4.4	13	18	mg/kg		2		
SSERNG002_APR20	Soil	N	Lead	SW6010C	11	0.44	1.3	1.8	mg/kg	3,000	2		
SSERNG002_APR20	Soil	N	Magnesium	SW6010C	530	44	130	180	mg/kg		2		
SSERNG002_APR20	Soil	N	pH	SW9045D	5.6	0.10	0.10	0.10	pH units		1		
SSERNG002_APR20	Soil	N	Phosphorus, total	E365.4	350	11	20	20	mg/kg		1		
SSERNG002_APR20	Soil	N	Potassium	SW6010C	280	270	800	890	mg/kg		2	J	TR
SSERNG002_APR20	Soil	N	Sodium	SW6010C	130	44	130	180	mg/kg		2	U	ND
SSERNG002_APR20	Soil	N	Sulfate	SW9056A	5.8	1.5	4.5	5	mg/kg		1	J	H
SSERNG003_APR20	Soil	N	Antimony	SW6010C	0.89	0.46	1.4	1.9	mg/kg	300	2	J	TR
SSERNG003_APR20	Soil	N	Calcium	SW6010C	390	140	420	460	mg/kg		2	J	TR
SSERNG003_APR20	Soil	N	Chloride	SW9056A	11	0.20	0.20	2.0	mg/kg		1	J	H
SSERNG003_APR20	Soil	N	Copper	SW6010C	3.9	1.4	4.2	4.6	mg/kg	10,000	2	J	TR
SSERNG003_APR20	Soil	N	Iron	SW6010C	7,100	4.6	14	19	mg/kg		2		
SSERNG003_APR20	Soil	N	Lead	SW6010C	11	0.46	1.4	1.9	mg/kg	3,000	2		
SSERNG003_APR20	Soil	N	Magnesium	SW6010C	620	46	140	190	mg/kg		2		
SSERNG003_APR20	Soil	N	pH	SW9045D	5.6	0.10	0.10	0.10	pH units		1		
SSERNG003_APR20	Soil	N	Phosphorus, total	E365.4	360	11	20	20	mg/kg		1		
SSERNG003_APR20	Soil	N	Potassium	SW6010C	300	280	840	930	mg/kg		2	J	TR
SSERNG003_APR20	Soil	N	Sodium	SW6010C	140	46	140	190	mg/kg		2	U	ND
SSERNG003_APR20	Soil	N	Sulfate	SW9056A	4.9	1.5	4.5	5	mg/kg		1	J	TR,H
SSERNG004_APR20	Soil	N	Antimony	SW6010C	0.80	0.48	1.4	1.9	mg/kg	300	2	J	TR
SSERNG004_APR20	Soil	N	Calcium	SW6010C	350	140	430	480	mg/kg		2	J	TR
SSERNG004_APR20	Soil	N	Chloride	SW9056A	11	0.20	0.20	2.0	mg/kg		1	J	H
SSERNG004_APR20	Soil	N	Copper	SW6010C	8.0	1.4	4.3	4.8	mg/kg	10,000	2		
SSERNG004_APR20	Soil	N	Iron	SW6010C	6,300	4.8	14	19	mg/kg		2		
SSERNG004_APR20	Soil	N	Lead	SW6010C	11	0.48	1.4	1.9	mg/kg	3,000	2		
SSERNG004_APR20	Soil	N	Magnesium	SW6010C	580	48	140	190	mg/kg		2		
SSERNG004_APR20	Soil	N	pH	SW9045D	5.7	0.10	0.10	0.10	pH units		1		
SSERNG004_APR20	Soil	N	Phosphorus, total	E365.4	220	11	19	19	mg/kg		1		
SSERNG004_APR20	Soil	N	Potassium	SW6010C	860	290	860	960	mg/kg		2	U	ND
SSERNG004_APR20	Soil	N	Sodium	SW6010C	140	48	140	190	mg/kg		2	U	ND
SSERNG004_APR20	Soil	N	Sulfate	SW9056A	5.1	1.5	4.5	5	mg/kg		1	J	H
SSERNG005_APR20	Soil	N	Antimony	SW6010C	0.49	0.45	1.4	1.8	mg/kg	300	2	J	TR
SSERNG005_APR20	Soil	N	Calcium	SW6010C	340	140	410	450	mg/kg		2	J	TR
SSERNG005_APR20	Soil	N	Chloride	SW9056A	11	0.20	0.20	2.0	mg/kg		1	J	H
SSERNG005_APR20	Soil	N	Copper	SW6010C	3.7	1.4	4.1	4.5	mg/kg	10,000	2	J	TR
SSERNG005_APR20	Soil	N	Iron	SW6010C	7,300	4.5	14	18	mg/kg		2		
SSERNG005_APR20	Soil	N	Lead	SW6010C	11	0.45	1.4	1.8	mg/kg	3,000	2		
SSERNG005_APR20	Soil	N	Magnesium	SW6010C	650	45	140	180	mg/kg		2		

Soil Sample Results Spring 2020

Field Sample ID	Matrix	Sample Type	Analyte	Analytical Method	Lab Result	MDL	LOD	LOQ	Units	OMMP Action Level (mg/kg)	Dilution Factor	Qualifier	Reason
SSERNG005_APR20	Soil	N	pH	SW9045D	5.7	0.10	0.10	0.10	pH units		1		
SSERNG005_APR20	Soil	N	Phosphorus, total	E365.4	340	11	20	20	mg/kg		1		
SSERNG005_APR20	Soil	N	Potassium	SW6010C	810	270	810	900	mg/kg		2	U	ND
SSERNG005_APR20	Soil	N	Sodium	SW6010C	140	45	140	180	mg/kg		2	U	ND
SSERNG005_APR20	Soil	N	Sulfate	SW9056A	4.2	1.5	4.5	5	mg/kg		1	J	TR,H
SSERNG006_APR20	Soil	N	Antimony	SW6010C	0.87	0.45	1.4	1.8	mg/kg	300	2	J	TR
SSERNG006_APR20	Soil	N	Calcium	SW6010C	390	140	410	450	mg/kg		2	J	TR
SSERNG006_APR20	Soil	N	Chloride	SW9056A	13	0.20	0.20	2.0	mg/kg		1	J	H
SSERNG006_APR20	Soil	N	Copper	SW6010C	3.6	1.4	4.1	4.5	mg/kg	10,000	2	J	TR
SSERNG006_APR20	Soil	N	Iron	SW6010C	7,600	4.5	14	18	mg/kg		2		
SSERNG006_APR20	Soil	N	Lead	SW6010C	13	0.45	1.4	1.8	mg/kg	3,000	2		
SSERNG006_APR20	Soil	N	Magnesium	SW6010C	630	45	140	180	mg/kg		2		
SSERNG006_APR20	Soil	N	pH	SW9045D	5.7	0.10	0.10	0.10	pH units		1		
SSERNG006_APR20	Soil	N	Phosphorus, total	E365.4	350	11	19	19	mg/kg		1		
SSERNG006_APR20	Soil	N	Potassium	SW6010C	820	270	820	910	mg/kg		2	U	ND
SSERNG006_APR20	Soil	N	Sodium	SW6010C	140	45	140	180	mg/kg		2	U	ND
SSERNG006_APR20	Soil	N	Sulfate	SW9056A	6.5	1.5	4.5	5	mg/kg		1	J	H
SSIRNG001_APR20	Soil	N	Antimony	SW6010C	1.5	0.46	1.4	1.8	mg/kg	300	2	J	TR
SSIRNG001_APR20	Soil	N	Calcium	SW6010C	570	140	410	460	mg/kg		2		
SSIRNG001_APR20	Soil	N	Chloride	SW9056A	7.9	0.20	0.20	2.0	mg/kg		1	J	H
SSIRNG001_APR20	Soil	N	Copper	SW6010C	26	1.4	4.1	4.6	mg/kg	10,000	2		
SSIRNG001_APR20	Soil	N	Iron	SW6010C	8,000	4.6	14	18	mg/kg		2		
SSIRNG001_APR20	Soil	N	Lead	SW6010C	62	0.46	1.4	1.8	mg/kg	3,000	2		
SSIRNG001_APR20	Soil	N	Magnesium	SW6010C	920	46	140	180	mg/kg		2		
SSIRNG001_APR20	Soil	N	pH	SW9045D	5.4	0.10	0.10	0.10	pH units		1		
SSIRNG001_APR20	Soil	N	Phosphorus, total	E365.4	580	11	19	19	mg/kg		1		
SSIRNG001_APR20	Soil	N	Potassium	SW6010C	330	280	830	920	mg/kg		2	J	TR
SSIRNG001_APR20	Soil	N	Sodium	SW6010C	140	46	140	180	mg/kg		2	U	ND
SSIRNG001_APR20	Soil	N	Sulfate	SW9056A	3.1	1.5	4.5	5	mg/kg		1	J	TR,H
SSJRNG001_APR20A	Soil	N	Antimony	SW6010C	1.0	0.48	1.4	1.9	mg/kg	300	2	J	TR
SSJRNG001_APR20A	Soil	N	Calcium	SW6010C	4,800	140	430	480	mg/kg		2		
SSJRNG001_APR20A	Soil	N	Chloride	SW9056A	6.7	0.20	0.20	2.0	mg/kg		1	J	H
SSJRNG001_APR20A	Soil	N	Copper	SW6010C	31	1.4	4.3	4.8	mg/kg	10,000	2		
SSJRNG001_APR20A	Soil	N	Iron	SW6010C	15,000	4.8	14	19	mg/kg		2		
SSJRNG001_APR20A	Soil	N	Lead	SW6010C	18	0.48	1.4	1.9	mg/kg	3,000	2		
SSJRNG001_APR20A	Soil	N	Magnesium	SW6010C	8,500	48	140	190	mg/kg		2		
SSJRNG001_APR20A	Soil	N	pH	SW9045D	7.3	0.10	0.10	0.10	pH units		1		
SSJRNG001_APR20A	Soil	N	Phosphorus, total	E365.4	370	11	19	19	mg/kg		1		
SSJRNG001_APR20A	Soil	N	Potassium	SW6010C	3,600	290	860	960	mg/kg		2		
SSJRNG001_APR20A	Soil	N	Sodium	SW6010C	110	48	140	190	mg/kg		2	J	TR
SSJRNG001_APR20A	Soil	N	Sulfate	SW9056A	3.4	1.5	4.5	5	mg/kg		1	J	TR,H
SSJRNG001_APR20B	Soil	FR	Antimony	SW6010C	1.4	0.46	1.4	1.9	mg/kg	300	2	J	TR
SSJRNG001_APR20B	Soil	FR	Calcium	SW6010C	4,700	140	420	460	mg/kg		2		
SSJRNG001_APR20B	Soil	FR	Chloride	SW9056A	6.4	0.20	0.20	2.0	mg/kg		1	J	H
SSJRNG001_APR20B	Soil	FR	Copper	SW6010C	31	1.4	4.2	4.6	mg/kg	10,000	2		

Soil Sample Results Spring 2020

Field Sample ID	Matrix	Sample Type	Analyte	Analytical Method	Lab Result	MDL	LOD	LOQ	Units	OMMP Action Level (mg/kg)	Dilution Factor	Qualifier	Reason
SSJRNG001_APR20B	Soil	FR	Iron	SW6010C	15,000	4.6	14	19	mg/kg		2		
SSJRNG001_APR20B	Soil	FR	Lead	SW6010C	20	0.46	1.4	1.9	mg/kg	3,000	2		
SSJRNG001_APR20B	Soil	FR	Magnesium	SW6010C	8,000	46	140	190	mg/kg		2		
SSJRNG001_APR20B	Soil	FR	pH	SW9045D	7.3	0.10	0.10	0.10	pH units		1		
SSJRNG001_APR20B	Soil	FR	Phosphorus, total	E365.4	370	11	19	19	mg/kg		1		
SSJRNG001_APR20B	Soil	FR	Potassium	SW6010C	3,100	280	840	930	mg/kg		2		
SSJRNG001_APR20B	Soil	FR	Sodium	SW6010C	97	46	140	190	mg/kg		2	J	TR
SSJRNG001_APR20B	Soil	FR	Sulfate	SW9056A	3.2	1.5	4.5	5	mg/kg		1	J	TR,H
SSJRNG001_APR20C	Soil	FR	Antimony	SW6010C	1.2	0.46	1.4	1.8	mg/kg	300	2	J	TR
SSJRNG001_APR20C	Soil	FR	Calcium	SW6010C	4,400	140	410	460	mg/kg		2		
SSJRNG001_APR20C	Soil	FR	Chloride	SW9056A	7.7	0.20	0.20	2.0	mg/kg		1	J	H
SSJRNG001_APR20C	Soil	FR	Copper	SW6010C	28	1.4	4.1	4.6	mg/kg	10,000	2		
SSJRNG001_APR20C	Soil	FR	Iron	SW6010C	13,000	4.6	14	18	mg/kg		2		
SSJRNG001_APR20C	Soil	FR	Lead	SW6010C	22	0.46	1.4	1.8	mg/kg	3,000	2		
SSJRNG001_APR20C	Soil	FR	Magnesium	SW6010C	7,500	46	140	180	mg/kg		2		
SSJRNG001_APR20C	Soil	FR	pH	SW9045D	7.3	0.10	0.10	0.10	pH units		1		
SSJRNG001_APR20C	Soil	FR	Phosphorus, total	E365.4	390	11	20	20	mg/kg		1		
SSJRNG001_APR20C	Soil	FR	Potassium	SW6010C	2,800	270	820	920	mg/kg		2		
SSJRNG001_APR20C	Soil	FR	Sodium	SW6010C	80	46	140	180	mg/kg		2	J	TR
SSJRNG001_APR20C	Soil	FR	Sulfate	SW9056A	3.9	1.5	4.5	5	mg/kg		1	J	TR,H
SSJRNG002_APR20	Soil	N	Antimony	SW6010C	1.4	0.47	1.4	1.9	mg/kg	300	2	J	TR
SSJRNG002_APR20	Soil	N	Calcium	SW6010C	1,800	140	420	470	mg/kg		2		
SSJRNG002_APR20	Soil	N	Chloride	SW9056A	10	0.20	0.20	2.0	mg/kg		1	J	H
SSJRNG002_APR20	Soil	N	Copper	SW6010C	12	1.4	4.2	4.7	mg/kg	10,000	2		
SSJRNG002_APR20	Soil	N	Iron	SW6010C	7,700	4.7	14	19	mg/kg		2		
SSJRNG002_APR20	Soil	N	Lead	SW6010C	42	0.47	1.4	1.9	mg/kg	3,000	2		
SSJRNG002_APR20	Soil	N	Magnesium	SW6010C	1,500	47	140	190	mg/kg		2		
SSJRNG002_APR20	Soil	N	pH	SW9045D	6.9	0.10	0.10	0.10	pH units		1		
SSJRNG002_APR20	Soil	N	Phosphorus, total	E365.4	240	11	20	20	mg/kg		1		
SSJRNG002_APR20	Soil	N	Potassium	SW6010C	380	280	850	940	mg/kg		2	J	TR
SSJRNG002_APR20	Soil	N	Sodium	SW6010C	140	47	140	190	mg/kg		2	U	ND
SSJRNG002_APR20	Soil	N	Sulfate	SW9056A	2.9	1.5	4.5	5	mg/kg		1	J	TR,H
SSJRNG003_APR20	Soil	N	Antimony	SW6010C	1.1	0.46	1.4	1.8	mg/kg	300	2	J	TR
SSJRNG003_APR20	Soil	N	Calcium	SW6010C	1,500	140	410	460	mg/kg		2		
SSJRNG003_APR20	Soil	N	Chloride	SW9056A	12	0.20	0.20	2.0	mg/kg		1	J	H
SSJRNG003_APR20	Soil	N	Copper	SW6010C	11	1.4	4.1	4.6	mg/kg	10,000	2		
SSJRNG003_APR20	Soil	N	Iron	SW6010C	7,200	4.6	14	18	mg/kg		2		
SSJRNG003_APR20	Soil	N	Lead	SW6010C	63	0.46	1.4	1.8	mg/kg	3,000	2		
SSJRNG003_APR20	Soil	N	Magnesium	SW6010C	1,600	46	140	180	mg/kg		2		
SSJRNG003_APR20	Soil	N	pH	SW9045D	6.7	0.10	0.10	0.10	pH units		1		
SSJRNG003_APR20	Soil	N	Phosphorus, total	E365.4	260	11	19	19	mg/kg		1		
SSJRNG003_APR20	Soil	N	Potassium	SW6010C	310	280	830	920	mg/kg		2	J	TR
SSJRNG003_APR20	Soil	N	Sodium	SW6010C	140	46	140	180	mg/kg		2	U	ND
SSJRNG003_APR20	Soil	N	Sulfate	SW9056A	3.5	1.5	4.5	5	mg/kg		1	J	TR,H
SSJRNG004_APR20	Soil	N	Antimony	SW6010C	1.4	0.46	1.4	1.8	mg/kg	300	2	J	TR

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Field Sample ID	Matrix	Sample Type	Analyte	Analytical Method	Lab Result	MDL	LOD	LOQ	Units	OMMP Action Level (mg/kg)	Dilution Factor	Qualifier	Reason
SSJRNG004_APR20	Soil	N	Calcium	SW6010C	1,600	140	420	460	mg/kg		2		
SSJRNG004_APR20	Soil	N	Chloride	SW9056A	11	0.20	0.20	2.0	mg/kg		1	J	H
SSJRNG004_APR20	Soil	N	Copper	SW6010C	12.0	1.4	4.2	4.6	mg/kg	10,000	2		
SSJRNG004_APR20	Soil	N	Iron	SW6010C	7,500	4.6	14	18	mg/kg		2		
SSJRNG004_APR20	Soil	N	Lead	SW6010C	55	0.46	1.4	1.8	mg/kg	3,000	2		
SSJRNG004_APR20	Soil	N	Magnesium	SW6010C	1,400	46	140	180	mg/kg		2		
SSJRNG004_APR20	Soil	N	pH	SW9045D	6.3	0.10	0.10	0.10	pH units		1		
SSJRNG004_APR20	Soil	N	Phosphorus, total	E365.4	200	11	20	20	mg/kg		1		
SSJRNG004_APR20	Soil	N	Potassium	SW6010C	290	280	830	920	mg/kg		2	J	TR
SSJRNG004_APR20	Soil	N	Sodium	SW6010C	140	46	140	180	mg/kg		2	U	ND
SSJRNG004_APR20	Soil	N	Sulfate	SW9056A	3.7	1.5	4.5	5	mg/kg		1	J	TR,H
SSJRNG005_APR20	Soil	N	Antimony	SW6010C	1.1	0.46	1.4	1.8	mg/kg	300	2	J	TR
SSJRNG005_APR20	Soil	N	Calcium	SW6010C	1,300	140	410	460	mg/kg		2		
SSJRNG005_APR20	Soil	N	Chloride	SW9056A	8.3	0.20	0.20	2.0	mg/kg		1	J	H
SSJRNG005_APR20	Soil	N	Copper	SW6010C	9.6	1.4	4.1	4.6	mg/kg	10,000	2		
SSJRNG005_APR20	Soil	N	Iron	SW6010C	6,200	4.6	14	18	mg/kg		2		
SSJRNG005_APR20	Soil	N	Lead	SW6010C	43	0.46	1.4	1.8	mg/kg	3,000	2		
SSJRNG005_APR20	Soil	N	Magnesium	SW6010C	1,100	46	140	180	mg/kg		2		
SSJRNG005_APR20	Soil	N	pH	SW9045D	6.5	0.10	0.10	0.10	pH units		1		
SSJRNG005_APR20	Soil	N	Phosphorus, total	E365.4	250	11	20	20	mg/kg		1		
SSJRNG005_APR20	Soil	N	Potassium	SW6010C	830	280	830	920	mg/kg		2	U	ND
SSJRNG005_APR20	Soil	N	Sodium	SW6010C	140	46	140	180	mg/kg		2	U	ND
SSJRNG005_APR20	Soil	N	Sulfate	SW9056A	4.5	1.5	4.5	5	mg/kg		1	UJ	ND,H
SSJRNG006_APR20	Soil	N	Antimony	SW6010C	1.0	0.44	1.3	1.7	mg/kg	300	2	J	TR
SSJRNG006_APR20	Soil	N	Calcium	SW6010C	960	130	390	440	mg/kg		2		
SSJRNG006_APR20	Soil	N	Chloride	SW9056A	11	0.20	0.20	2.0	mg/kg		1	J	H
SSJRNG006_APR20	Soil	N	Copper	SW6010C	10	1.3	3.9	4.4	mg/kg	10,000	2		
SSJRNG006_APR20	Soil	N	Iron	SW6010C	6,200	4.4	13	17	mg/kg		2		
SSJRNG006_APR20	Soil	N	Lead	SW6010C	57	0.44	1.3	1.7	mg/kg	3,000	2		
SSJRNG006_APR20	Soil	N	Magnesium	SW6010C	830	44	130	170	mg/kg		2		
SSJRNG006_APR20	Soil	N	pH	SW9045D	6.3	0.10	0.10	0.10	pH units		1		
SSJRNG006_APR20	Soil	N	Phosphorus, total	E365.4	260	11	20	20	mg/kg		1		
SSJRNG006_APR20	Soil	N	Potassium	SW6010C	300	260	780	870	mg/kg		2	J	TR
SSJRNG006_APR20	Soil	N	Sodium	SW6010C	130	44	130	170	mg/kg		2	U	ND
SSJRNG006_APR20	Soil	N	Sulfate	SW9056A	1.7	1.5	4.5	5	mg/kg		1	J	TR,H
SSKRNG001_APR20A	Soil	N	Antimony	SW6010C	1.6	0.47	1.4	1.9	mg/kg	300	2	J	TR
SSKRNG001_APR20A	Soil	N	Calcium	SW6010C	3,800	140	420	470	mg/kg		2		
SSKRNG001_APR20A	Soil	N	Chloride	SW9056A	5.8	0.20	0.20	2.0	mg/kg		1	J	H
SSKRNG001_APR20A	Soil	N	Copper	SW6010C	39	1.4	4.2	4.7	mg/kg	10,000	2		
SSKRNG001_APR20A	Soil	N	Iron	SW6010C	14,000	4.7	14	19	mg/kg		2		
SSKRNG001_APR20A	Soil	N	Lead	SW6010C	20	0.47	1.4	1.9	mg/kg	3,000	2		
SSKRNG001_APR20A	Soil	N	Magnesium	SW6010C	7,400	47	140	190	mg/kg		2		
SSKRNG001_APR20A	Soil	N	pH	SW9045D	7.0	0.10	0.10	0.10	pH units		1		
SSKRNG001_APR20A	Soil	N	Phosphorus, total	E365.4	400	11	20	20	mg/kg		1		
SSKRNG001_APR20A	Soil	N	Potassium	SW6010C	2,700	280	840	930	mg/kg		2		

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Field Sample ID	Matrix	Sample Type	Analyte	Analytical Method	Lab Result	MDL	LOD	LOQ	Units	OMMP Action Level (mg/kg)	Dilution Factor	Qualifier	Reason
SSKRNG001_APR20A	Soil	N	Sodium	SW6010C	100	47	140	190	mg/kg		2	J	TR
SSKRNG001_APR20A	Soil	N	Sulfate	SW9056A	3.0	1.5	4.5	5	mg/kg		1	J	TR,H
SSKRNG001_APR20B	Soil	FR	Antimony	SW6010C	1.7	0.48	1.5	1.9	mg/kg	300	2	J	TR
SSKRNG001_APR20B	Soil	FR	Calcium	SW6010C	4,700	150	440	480	mg/kg		2		
SSKRNG001_APR20B	Soil	FR	Chloride	SW9056A	5.9	0.20	0.20	2.0	mg/kg		1	J	H
SSKRNG001_APR20B	Soil	FR	Copper	SW6010C	47	1.5	4.4	4.8	mg/kg	10,000	2		
SSKRNG001_APR20B	Soil	FR	Iron	SW6010C	16,000	4.8	15	19	mg/kg		2		
SSKRNG001_APR20B	Soil	FR	Lead	SW6010C	22	0.48	1.5	1.9	mg/kg	3,000	2		
SSKRNG001_APR20B	Soil	FR	Magnesium	SW6010C	8,600	48	150	190	mg/kg		2		
SSKRNG001_APR20B	Soil	FR	pH	SW9045D	7.0	0.10	0.10	0.10	pH units		1		
SSKRNG001_APR20B	Soil	FR	Phosphorus, total	E365.4	340	11	20	20	mg/kg		1		
SSKRNG001_APR20B	Soil	FR	Potassium	SW6010C	2,900	290	870	970	mg/kg		2		
SSKRNG001_APR20B	Soil	FR	Sodium	SW6010C	93	48	150	190	mg/kg		2	J	TR
SSKRNG001_APR20B	Soil	FR	Sulfate	SW9056A	2.8	1.5	4.5	5	mg/kg		1	J	TR,H
SSKRNG001_APR20C	Soil	FR	Antimony	SW6010C	1	0.48	1.4	1.9	mg/kg	300	2	J	TR
SSKRNG001_APR20C	Soil	FR	Calcium	SW6010C	3,800	140	430	480	mg/kg		2		
SSKRNG001_APR20C	Soil	FR	Chloride	SW9056A	6.5	0.20	0.20	2.0	mg/kg		1	J	H
SSKRNG001_APR20C	Soil	FR	Copper	SW6010C	41	1.4	4.3	4.8	mg/kg	10,000	2		
SSKRNG001_APR20C	Soil	FR	Iron	SW6010C	14,000	4.8	14	19	mg/kg		2		
SSKRNG001_APR20C	Soil	FR	Lead	SW6010C	20	0.48	1.4	1.9	mg/kg	3,000	2		
SSKRNG001_APR20C	Soil	FR	Magnesium	SW6010C	8,000	48	140	190	mg/kg		2		
SSKRNG001_APR20C	Soil	FR	pH	SW9045D	7.2	0.10	0.10	0.10	pH units		1		
SSKRNG001_APR20C	Soil	FR	Phosphorus, total	E365.4	450	11	20	20	mg/kg		1		
SSKRNG001_APR20C	Soil	FR	Potassium	SW6010C	2,700	290	870	960	mg/kg		2		
SSKRNG001_APR20C	Soil	FR	Sodium	SW6010C	87	48	140	190	mg/kg		2	J	TR
SSKRNG001_APR20C	Soil	FR	Sulfate	SW9056A	2.8	1.5	4.5	5	mg/kg		1	J	TR,H
SSKRNG002_APR20	Soil	N	Antimony	SW6010C	1	0.46	1.4	1.8	mg/kg	300	2	J	TR
SSKRNG002_APR20	Soil	N	Calcium	SW6010C	2,400	140	420	460	mg/kg		2		
SSKRNG002_APR20	Soil	N	Chloride	SW9056A	6.6	0.20	0.20	2.0	mg/kg		1	J	H
SSKRNG002_APR20	Soil	N	Copper	SW6010C	14	1.4	4.2	4.6	mg/kg	10,000	2		
SSKRNG002_APR20	Soil	N	Iron	SW6010C	8,600	4.6	14	18	mg/kg		2		
SSKRNG002_APR20	Soil	N	Lead	SW6010C	25	0.46	1.4	1.8	mg/kg	3,000	2		
SSKRNG002_APR20	Soil	N	Magnesium	SW6010C	2,000	46	140	180	mg/kg		2		
SSKRNG002_APR20	Soil	N	pH	SW9045D	6.8	0.10	0.10	0.10	pH units		1		
SSKRNG002_APR20	Soil	N	Phosphorus, total	E365.4	260	11	19	19	mg/kg		1		
SSKRNG002_APR20	Soil	N	Potassium	SW6010C	410	280	830	920	mg/kg		2	J	TR
SSKRNG002_APR20	Soil	N	Sodium	SW6010C	140	46	140	180	mg/kg		2	U	ND
SSKRNG002_APR20	Soil	N	Sulfate	SW9056A	2.3	1.5	4.5	5	mg/kg		1	J	TR,H
SSKRNG003_APR20	Soil	N	Antimony	SW6010C	1.1	0.46	1.4	1.8	mg/kg	300	2	J	TR
SSKRNG003_APR20	Soil	N	Calcium	SW6010C	1,400	140	410	460	mg/kg		2		
SSKRNG003_APR20	Soil	N	Chloride	SW9056A	6.1	0.20	0.20	2.0	mg/kg		1	J	H
SSKRNG003_APR20	Soil	N	Copper	SW6010C	10	1.4	4.1	4.6	mg/kg	10,000	2		
SSKRNG003_APR20	Soil	N	Iron	SW6010C	8,800	4.6	14	18	mg/kg		2		
SSKRNG003_APR20	Soil	N	Lead	SW6010C	24	0.46	1.4	1.8	mg/kg	3,000	2		
SSKRNG003_APR20	Soil	N	Magnesium	SW6010C	1,500	46	140	180	mg/kg		2		

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Field Sample ID	Matrix	Sample Type	Analyte	Analytical Method	Lab Result	MDL	LOD	LOQ	Units	OMMP Action Level (mg/kg)	Dilution Factor	Qualifier	Reason
SSKRNG003_APR20	Soil	N	pH	SW9045D	6.7	0.10	0.10	0.10	pH units		1		
SSKRNG003_APR20	Soil	N	Phosphorus, total	E365.4	210	11	19	19	mg/kg		1		
SSKRNG003_APR20	Soil	N	Potassium	SW6010C	360	280	830	920	mg/kg		2	J	TR
SSKRNG003_APR20	Soil	N	Sodium	SW6010C	140	46	140	180	mg/kg		2	U	ND
SSKRNG003_APR20	Soil	N	Sulfate	SW9056A	3.4	1.5	4.5	5	mg/kg		1	J	TR,H
SSKRNG004_APR20	Soil	N	Antimony	SW6010C	1.8	0.47	1.4	1.9	mg/kg	300	2	J	TR
SSKRNG004_APR20	Soil	N	Calcium	SW6010C	1,500	140	420	470	mg/kg		2		
SSKRNG004_APR20	Soil	N	Chloride	SW9056A	7.0	0.20	0.20	2.0	mg/kg		1	J	H
SSKRNG004_APR20	Soil	N	Copper	SW6010C	10	1.4	4.2	4.7	mg/kg	10,000	2		
SSKRNG004_APR20	Soil	N	Iron	SW6010C	8,700	4.7	14	19	mg/kg		2		
SSKRNG004_APR20	Soil	N	Lead	SW6010C	140	0.47	1.4	1.9	mg/kg	3,000	2		
SSKRNG004_APR20	Soil	N	Magnesium	SW6010C	1,500	47	140	190	mg/kg		2		
SSKRNG004_APR20	Soil	N	pH	SW9045D	6.8	0.10	0.10	0.10	pH units		1		
SSKRNG004_APR20	Soil	N	Phosphorus, total	E365.4	220	11	19	19	mg/kg		1		
SSKRNG004_APR20	Soil	N	Potassium	SW6010C	370	280	840	930	mg/kg		2	J	TR
SSKRNG004_APR20	Soil	N	Sodium	SW6010C	140	47	140	190	mg/kg		2	U	ND
SSKRNG004_APR20	Soil	N	Sulfate	SW9056A	2.9	1.5	4.5	5	mg/kg		1	J	TR,H
SSKRNG005_APR20	Soil	N	Antimony	SW6010C	0.94	0.47	1.4	1.9	mg/kg	300	2	J	TR
SSKRNG005_APR20	Soil	N	Calcium	SW6010C	1,700	140	420	470	mg/kg		2		
SSKRNG005_APR20	Soil	N	Chloride	SW9056A	9.1	0.20	0.20	2.0	mg/kg		1	J	H
SSKRNG005_APR20	Soil	N	Copper	SW6010C	10	1.4	4.2	4.7	mg/kg	10,000	2		
SSKRNG005_APR20	Soil	N	Iron	SW6010C	8,200	4.7	14	19	mg/kg		2		
SSKRNG005_APR20	Soil	N	Lead	SW6010C	32	0.47	1.4	1.9	mg/kg	3,000	2		
SSKRNG005_APR20	Soil	N	Magnesium	SW6010C	1,600	47	140	190	mg/kg		2		
SSKRNG005_APR20	Soil	N	pH	SW9045D	6.8	0.10	0.10	0.10	pH units		1		
SSKRNG005_APR20	Soil	N	Phosphorus, total	E365.4	210	11	20	20	mg/kg		1		
SSKRNG005_APR20	Soil	N	Potassium	SW6010C	390	280	850	940	mg/kg		2	J	TR
SSKRNG005_APR20	Soil	N	Sodium	SW6010C	140	47	140	190	mg/kg		2	U	ND
SSKRNG005_APR20	Soil	N	Sulfate	SW9056A	2.4	1.5	4.5	5	mg/kg		1	J	TR,H
SSKRNG006_APR20	Soil	N	Antimony	SW6010C	1.1	0.45	1.3	1.8	mg/kg	300	2	J	TR
SSKRNG006_APR20	Soil	N	Calcium	SW6010C	1,100	130	400	450	mg/kg		2		
SSKRNG006_APR20	Soil	N	Chloride	SW9056A	8.8	0.20	0.20	2.0	mg/kg		1	J	H
SSKRNG006_APR20	Soil	N	Copper	SW6010C	11	1.3	4.0	4.5	mg/kg	10,000	2		
SSKRNG006_APR20	Soil	N	Iron	SW6010C	8,000	4.5	13	18	mg/kg		2		
SSKRNG006_APR20	Soil	N	Lead	SW6010C	27	0.45	1.3	1.8	mg/kg	3,000	2		
SSKRNG006_APR20	Soil	N	Magnesium	SW6010C	910	45	130	180	mg/kg		2		
SSKRNG006_APR20	Soil	N	pH	SW9045D	6.3	0.10	0.10	0.10	pH units		1		
SSKRNG006_APR20	Soil	N	Phosphorus, total	E365.4	210	11	20	20	mg/kg		1		
SSKRNG006_APR20	Soil	N	Potassium	SW6010C	350	270	810	900	mg/kg		2	J	TR
SSKRNG006_APR20	Soil	N	Sodium	SW6010C	130	45	130	180	mg/kg		2	U	ND
SSKRNG006_APR20	Soil	N	Sulfate	SW9056A	3.5	1.5	4.5	5	mg/kg		1	J	TR,H
SSLRNG001_APR20	Soil	N	Antimony	SW6010C	0.75	0.43	1.3	1.7	mg/kg	300	2	J	TR
SSLRNG001_APR20	Soil	N	Calcium	SW6010C	870.00	130	390	430	mg/kg		2		
SSLRNG001_APR20	Soil	N	Chloride	SW9056A	12	0.20	0.20	2.0	mg/kg		1	J	H
SSLRNG001_APR20	Soil	N	Copper	SW6010C	9.5	1.3	3.9	4.3	mg/kg	10,000	2		

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Field Sample ID	Matrix	Sample Type	Analyte	Analytical Method	Lab Result	MDL	LOD	LOQ	Units	OMMP Action Level (mg/kg)	Dilution Factor	Qualifier	Reason
SSLRNG001_APR20	Soil	N	Iron	SW6010C	8,900	4.3	13	17	mg/kg		2		
SSLRNG001_APR20	Soil	N	Lead	SW6010C	9.4	0.43	1.3	1.7	mg/kg	3,000	2		
SSLRNG001_APR20	Soil	N	Magnesium	SW6010C	1,300	43	130	170	mg/kg		2		
SSLRNG001_APR20	Soil	N	pH	SW9045D	5.3	0.10	0.10	0.10	pH units		1		
SSLRNG001_APR20	Soil	N	Phosphorus, total	E365.4	270	11	19	19	mg/kg		1		
SSLRNG001_APR20	Soil	N	Potassium	SW6010C	450	260	770	860	mg/kg		2	J	TR
SSLRNG001_APR20	Soil	N	Sodium	SW6010C	130	43	130	170	mg/kg		2	U	ND
SSLRNG001_APR20	Soil	N	Sulfate	SW9056A	4.6	1.5	4.5	5	mg/kg		1	J	TR,H
SSLRNG002_APR20	Soil	N	Antimony	SW6010C	0.74	0.47	1.4	1.9	mg/kg	300	2	J	TR,MS%R
SSLRNG002_APR20	Soil	N	Calcium	SW6010C	4,600	140	430	470	mg/kg		2		
SSLRNG002_APR20	Soil	N	Chloride	SW9056A	19	0.20	0.20	2.0	mg/kg		1	J	H
SSLRNG002_APR20	Soil	N	Copper	SW6010C	12	1.4	4.3	4.7	mg/kg	10,000	2		
SSLRNG002_APR20	Soil	N	Iron	SW6010C	10,000	4.7	14	19	mg/kg		2		
SSLRNG002_APR20	Soil	N	Lead	SW6010C	10	0.47	1.4	1.9	mg/kg	3,000	2		
SSLRNG002_APR20	Soil	N	Magnesium	SW6010C	1,200	47	140	190	mg/kg		2		
SSLRNG002_APR20	Soil	N	pH	SW9045D	7.3	0.10	0.10	0.10	pH units		1		
SSLRNG002_APR20	Soil	N	Phosphorus, total	E365.4	220	11	19	19	mg/kg		1		
SSLRNG002_APR20	Soil	N	Potassium	SW6010C	410	280	850	950	mg/kg		2	J	TR,MS%R
SSLRNG002_APR20	Soil	N	Sodium	SW6010C	140	47	140	190	mg/kg		2	U	ND
SSLRNG002_APR20	Soil	N	Sulfate	SW9056A	5.9	1.5	4.5	5	mg/kg		1	J	H
SSSRNG001_APR20	Soil	N	Antimony	SW6010C	0.93	0.46	1.4	1.8	mg/kg	300	2	J	TR
SSSRNG001_APR20	Soil	N	Calcium	SW6010C	790.00	140	410	460	mg/kg		2		
SSSRNG001_APR20	Soil	N	Chloride	SW9056A	17	0.20	0.20	2.0	mg/kg		1		
SSSRNG001_APR20	Soil	N	Copper	SW6010C	23.00	1.4	4.1	4.6	mg/kg	10,000	2		
SSSRNG001_APR20	Soil	N	Iron	SW6010C	7,300	4.6	14	18	mg/kg		2		
SSSRNG001_APR20	Soil	N	Lead	SW6010C	16	0.46	1.4	1.8	mg/kg	3,000	2		
SSSRNG001_APR20	Soil	N	Magnesium	SW6010C	860	46	140	180	mg/kg		2		
SSSRNG001_APR20	Soil	N	pH	SW9045D	6.2	0.10	0.10	0.10	pH units		1		
SSSRNG001_APR20	Soil	N	Phosphorus, total	E365.4	380	11	20	20	mg/kg		1		
SSSRNG001_APR20	Soil	N	Potassium	SW6010C	310	270	820	920	mg/kg		2	J	TR
SSSRNG001_APR20	Soil	N	Sodium	SW6010C	140	46	140	180	mg/kg		2	U	ND
SSSRNG001_APR20	Soil	N	Sulfate	SW9056A	3.7	1.5	4.5	5	mg/kg		1	J	TR
SSTRNG001_APR20A	Soil	N	Antimony	SW6010C	1.4	0.46	1.4	1.8	mg/kg	300	2	J	TR
SSTRNG001_APR20A	Soil	N	Calcium	SW6010C	2,900	140	420	460	mg/kg		2		
SSTRNG001_APR20A	Soil	N	Chloride	SW9056A	18	0.20	0.20	2.0	mg/kg		1		
SSTRNG001_APR20A	Soil	N	Copper	SW6010C	14	1.4	4.2	4.6	mg/kg	10,000	2		
SSTRNG001_APR20A	Soil	N	Iron	SW6010C	14,000	4.6	14	18	mg/kg		2		
SSTRNG001_APR20A	Soil	N	Lead	SW6010C	16	0.46	1.4	1.8	mg/kg	3,000	2		
SSTRNG001_APR20A	Soil	N	Magnesium	SW6010C	3,000	46	140	180	mg/kg		2		
SSTRNG001_APR20A	Soil	N	pH	SW9045D	6.9	0.10	0.10	0.10	pH units		1		
SSTRNG001_APR20A	Soil	N	Phosphorus, total	E365.4	420	11	20	20	mg/kg		1		
SSTRNG001_APR20A	Soil	N	Potassium	SW6010C	1,000	280	830	920	mg/kg		2		
SSTRNG001_APR20A	Soil	N	Sodium	SW6010C	100	46	140	180	mg/kg		2	J	TR
SSTRNG001_APR20A	Soil	N	Sulfate	SW9056A	14	1.5	4.5	5	mg/kg		1		
SSTRNG001_APR20B	Soil	FR	Antimony	SW6010C	1.6	0.47	1.4	1.9	mg/kg	300	2	J	TR

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Field Sample ID	Matrix	Sample Type	Analyte	Analytical Method	Lab Result	MDL	LOD	LOQ	Units	OMMP Action Level (mg/kg)	Dilution Factor	Qualifier	Reason
SSTRNG001_APR20B	Soil	FR	Calcium	SW6010C	2,700	140	420	470	mg/kg		2		
SSTRNG001_APR20B	Soil	FR	Chloride	SW9056A	16	0.20	0.20	2.0	mg/kg		1		
SSTRNG001_APR20B	Soil	FR	Copper	SW6010C	16	1.4	4.2	4.7	mg/kg	10,000	2		
SSTRNG001_APR20B	Soil	FR	Iron	SW6010C	15,000	4.7	14	19	mg/kg		2		
SSTRNG001_APR20B	Soil	FR	Lead	SW6010C	17	0.47	1.4	1.9	mg/kg	3,000	2		
SSTRNG001_APR20B	Soil	FR	Magnesium	SW6010C	2,800	47	140	190	mg/kg		2		
SSTRNG001_APR20B	Soil	FR	pH	SW9045D	6.8	0.10	0.10	0.10	pH units		1		
SSTRNG001_APR20B	Soil	FR	Phosphorus, total	E365.4	450	11	20	20	mg/kg		1		
SSTRNG001_APR20B	Soil	FR	Potassium	SW6010C	1,100	280	840	930	mg/kg		2		
SSTRNG001_APR20B	Soil	FR	Sodium	SW6010C	94	47	140	190	mg/kg		2	J	TR
SSTRNG001_APR20B	Soil	FR	Sulfate	SW9056A	12	1.5	4.5	5	mg/kg		1		
SSTRNG001_APR20C	Soil	FR	Antimony	SW6010C	1.3	0.43	1.3	1.7	mg/kg	300	2	J	TR
SSTRNG001_APR20C	Soil	FR	Calcium	SW6010C	2,700	130	380	430	mg/kg		2		
SSTRNG001_APR20C	Soil	FR	Chloride	SW9056A	21	0.20	0.20	2.0	mg/kg		1		
SSTRNG001_APR20C	Soil	FR	Copper	SW6010C	15	1.3	3.8	4.3	mg/kg	10,000	2		
SSTRNG001_APR20C	Soil	FR	Iron	SW6010C	14,000	4.3	13	17	mg/kg		2		
SSTRNG001_APR20C	Soil	FR	Lead	SW6010C	17	0.43	1.3	1.7	mg/kg	3,000	2		
SSTRNG001_APR20C	Soil	FR	Magnesium	SW6010C	2,800	43	130	170	mg/kg		2		
SSTRNG001_APR20C	Soil	FR	pH	SW9045D	6.8	0.10	0.10	0.10	pH units		1		
SSTRNG001_APR20C	Soil	FR	Phosphorus, total	E365.4	380	11	19	19	mg/kg		1		
SSTRNG001_APR20C	Soil	FR	Potassium	SW6010C	1,100	260	770	850	mg/kg		2		
SSTRNG001_APR20C	Soil	FR	Sodium	SW6010C	93	43	130	170	mg/kg		2	J	TR
SSTRNG001_APR20C	Soil	FR	Sulfate	SW9056A	12	1.5	4.5	5	mg/kg		1		
SSTRNG002_APR20	Soil	N	Antimony	SW6010C	0.73	0.47	1.4	1.9	mg/kg	300	2	J	TR
SSTRNG002_APR20	Soil	N	Calcium	SW6010C	1,800	140	420	470	mg/kg		2		
SSTRNG002_APR20	Soil	N	Chloride	SW9056A	29	0.20	0.20	2.0	mg/kg		1		
SSTRNG002_APR20	Soil	N	Copper	SW6010C	11	1.4	4.2	4.7	mg/kg	10,000	2		
SSTRNG002_APR20	Soil	N	Iron	SW6010C	7,900	4.7	14	19	mg/kg		2		
SSTRNG002_APR20	Soil	N	Lead	SW6010C	26	0.47	1.4	1.9	mg/kg	3,000	2		
SSTRNG002_APR20	Soil	N	Magnesium	SW6010C	1,300	47	140	190	mg/kg		2		
SSTRNG002_APR20	Soil	N	pH	SW9045D	6.7	0.10	0.10	0.10	pH units		1		
SSTRNG002_APR20	Soil	N	Phosphorus, total	E365.4	380	11	20	20	mg/kg		1		
SSTRNG002_APR20	Soil	N	Potassium	SW6010C	530	280	840	940	mg/kg		2	J	TR
SSTRNG002_APR20	Soil	N	Sodium	SW6010C	140	47	140	190	mg/kg		2	U	ND
SSTRNG002_APR20	Soil	N	Sulfate	SW9056A	6.8	1.5	4.5	5	mg/kg		1		
SSTRNG003_APR20	Soil	N	Antimony	SW6010C	1.5	0.46	1.4	1.8	mg/kg	300	2	J	TR
SSTRNG003_APR20	Soil	N	Calcium	SW6010C	2,700	140	410	460	mg/kg		2		
SSTRNG003_APR20	Soil	N	Chloride	SW9056A	25	0.20	0.20	2.0	mg/kg		1		
SSTRNG003_APR20	Soil	N	Copper	SW6010C	56	1.4	4.1	4.6	mg/kg	10,000	2		
SSTRNG003_APR20	Soil	N	Iron	SW6010C	11,000	4.6	14	18	mg/kg		2		
SSTRNG003_APR20	Soil	N	Lead	SW6010C	180	0.46	1.4	1.8	mg/kg	3,000	2		
SSTRNG003_APR20	Soil	N	Magnesium	SW6010C	1,500	46	140	180	mg/kg		2		
SSTRNG003_APR20	Soil	N	pH	SW9045D	6.6	0.10	0.10	0.10	pH units		1		
SSTRNG003_APR20	Soil	N	Phosphorus, total	E365.4	1,100	110	200	200	mg/kg		10		
SSTRNG003_APR20	Soil	N	Potassium	SW6010C	420	270	820	910	mg/kg		2	J	TR

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Field Sample ID	Matrix	Sample Type	Analyte	Analytical Method	Lab Result	MDL	LOD	LOQ	Units	OMMP Action Level (mg/kg)	Dilution Factor	Qualifier	Reason
SSTRNG003_APR20	Soil	N	Sodium	SW6010C	140	46	140	180	mg/kg		2	U	ND
SSTRNG003_APR20	Soil	N	Sulfate	SW9056A	3.9	1.5	4.5	5	mg/kg		1	J	TR
SSTRNG004_APR20	Soil	N	Antimony	SW6010C	1.3	0.44	1.3	1.7	mg/kg	300	2	J	TR
SSTRNG004_APR20	Soil	N	Calcium	SW6010C	2,000	130	390	440	mg/kg		2		
SSTRNG004_APR20	Soil	N	Chloride	SW9056A	27	0.20	0.20	2.0	mg/kg		1		
SSTRNG004_APR20	Soil	N	Copper	SW6010C	110	1.3	3.9	4.4	mg/kg	10,000	2		
SSTRNG004_APR20	Soil	N	Iron	SW6010C	12,000	4.4	13	17	mg/kg		2		
SSTRNG004_APR20	Soil	N	Lead	SW6010C	110	0.44	1.3	1.7	mg/kg	3,000	2		
SSTRNG004_APR20	Soil	N	Magnesium	SW6010C	1,800	44	130	170	mg/kg		2		
SSTRNG004_APR20	Soil	N	pH	SW9045D	6.6	0.10	0.10	0.10	pH units		1		
SSTRNG004_APR20	Soil	N	Phosphorus, total	E365.4	750	11	20	20	mg/kg		1		
SSTRNG004_APR20	Soil	N	Potassium	SW6010C	510	260	780	870	mg/kg		2	J	TR
SSTRNG004_APR20	Soil	N	Sodium	SW6010C	130	44	130	170	mg/kg		2	U	ND
SSTRNG004_APR20	Soil	N	Sulfate	SW9056A	5.8	1.5	4.5	5	mg/kg		1		
SSTRNG005_APR20	Soil	N	Antimony	SW6010C	1	0.42	1.3	1.7	mg/kg	300	2	J	TR
SSTRNG005_APR20	Soil	N	Calcium	SW6010C	3,100	130	380	420	mg/kg		2		
SSTRNG005_APR20	Soil	N	Chloride	SW9056A	22	0.20	0.20	2.0	mg/kg		1		
SSTRNG005_APR20	Soil	N	Copper	SW6010C	37	1.3	3.8	4.2	mg/kg	10,000	2		
SSTRNG005_APR20	Soil	N	Iron	SW6010C	9,100	4.2	13	17	mg/kg		2		
SSTRNG005_APR20	Soil	N	Lead	SW6010C	160	0.42	1.3	1.7	mg/kg	3,000	2		
SSTRNG005_APR20	Soil	N	Magnesium	SW6010C	1,400	42	130	170	mg/kg		2		
SSTRNG005_APR20	Soil	N	pH	SW9045D	6.7	0.10	0.10	0.10	pH units		1		
SSTRNG005_APR20	Soil	N	Phosphorus, total	E365.4	970	11	20	20	mg/kg		1		
SSTRNG005_APR20	Soil	N	Potassium	SW6010C	450	250	750	840	mg/kg		2	J	TR, MS%R
SSTRNG005_APR20	Soil	N	Sodium	SW6010C	130	42	130	170	mg/kg		2	U	ND
SSTRNG005_APR20	Soil	N	Sulfate	SW9056A	6.2	1.5	4.5	5	mg/kg		1		
SSTRNG006_APR20	Soil	N	Antimony	SW6010C	1	0.45	1.3	1.8	mg/kg	300	2	J	TR
SSTRNG006_APR20	Soil	N	Calcium	SW6010C	3,400	130	400	450	mg/kg		2		
SSTRNG006_APR20	Soil	N	Chloride	SW9056A	19	0.20	0.20	2.0	mg/kg		1		
SSTRNG006_APR20	Soil	N	Copper	SW6010C	21	1.3	4.0	4.5	mg/kg	10,000	2		
SSTRNG006_APR20	Soil	N	Iron	SW6010C	11,000	4.5	13	18	mg/kg		2		
SSTRNG006_APR20	Soil	N	Lead	SW6010C	110	0.45	1.3	1.8	mg/kg	3,000	2		
SSTRNG006_APR20	Soil	N	Magnesium	SW6010C	2,000	45	130	180	mg/kg		2		
SSTRNG006_APR20	Soil	N	pH	SW9045D	6.9	0.10	0.10	0.10	pH units		1		
SSTRNG006_APR20	Soil	N	Phosphorus, total	E365.4	730	11	20	20	mg/kg		1		
SSTRNG006_APR20	Soil	N	Potassium	SW6010C	580	270	810	900	mg/kg		2	J	TR
SSTRNG006_APR20	Soil	N	Sodium	SW6010C	73	45	130	180	mg/kg		2	J	TR
SSTRNG006_APR20	Soil	N	Sulfate	SW9056A	8.8	1.5	4.5	5	mg/kg		1		

Notes:

µg/L = microgram(s) per liter
EB = equipment blank
FR= field replicate
ID = identifier
J = estimated value
mg/kg = milligram(s) per kilogram
mg/L = milligram(s) per liter
MDL = method detection limit
MS%R = matrix spike % recov
N = normal (primary) sample
ND = nondetectable
LOQ = limit of quantitation
LOD = limit of detection
TR = trace result (<LOQ and >MDL)
U = not detected

Small Arms Range Sampling Reports

Lysimeter Sampling Results

Fall 2019

CAMP EDWARDS SMALL ARMS RANGE BASELINE POREWATER MONITORING RESULTS 2019

Site List	Field Sample ID	Matrix	Analyte	Analytical Method	Units	Lab Result	LOQ	LOD	DL	Qualifier	Reason	OMMP Action Levels (µg/L)
I Range	LYIRNG001_OCT19	Water	Alkalinity, total	SM2320B	mg/L	4.0	5.0	4.0	0.23	U	ND	
I Range	LYIRNG001_OCT19	Water	Antimony	SW6020A	µg/L	3.1	1.0	0.055	0.50			6
I Range	LYIRNG001_OCT19	Water	Calcium	SW6020A	µg/L	2,140	100	21	80			
I Range	LYIRNG001_OCT19	Water	Chloride	SW9056A	mg/L	2.3	2.0	1.0	0.0993			
I Range	LYIRNG001_OCT19	Water	Copper	SW6020A	µg/L	9.18	3.0	0.19	2.0			1300
I Range	LYIRNG001_OCT19	Water	Lead	SW6020A	µg/L	2.79	1.0	0.075	0.50			15
I Range	LYIRNG001_OCT19	Water	Magnesium	SW6020A	µg/L	596	100	8.0	80			
I Range	LYIRNG001_OCT19	Water	Potassium	SW6020A	µg/L	2,490	1,000	31	400			
I Range	LYIRNG001_OCT19	Water	Sodium	SW6020A	µg/L	1,700	1,000	19	400			
I Range	LYIRNG001_OCT19	Water	Sulfate	SW9056A	mg/L	32	1.0	0.50	0.064			
I Range	LYIRNG002_OCT19	Water	Alkalinity, total	SM2320B	mg/L	22	5.0	4.0	0.23			
I Range	**LYIRNG002_OCT19**	**Water**	**Antimony**	**SW6020A**	**µg/L**	**8.04**	**1.0**	**0.055**	**0.50**			**6**
I Range	LYIRNG002_OCT19	Water	Calcium	SW6020A	µg/L	20400	100	21	80			
I Range	LYIRNG002_OCT19	Water	Chloride	SW9056A	mg/L	18	2.0	1.0	0.0993			
I Range	LYIRNG002_OCT19	Water	Copper	SW6020A	µg/L	262	3.0	0.19	2.0			1300
I Range	LYIRNG002_OCT19	Water	Lead	SW6020A	µg/L	0.30	1.0	0.075	0.50	J	TR	15
I Range	LYIRNG002_OCT19	Water	Magnesium	SW6020A	µg/L	4960	100	8.0	80			
I Range	LYIRNG002_OCT19	Water	Potassium	SW6020A	µg/L	2,560	1,000	31	400			
I Range	LYIRNG002_OCT19	Water	Sodium	SW6020A	µg/L	6,420	1,000	19	400			
I Range	LYIRNG002_OCT19	Water	Sulfate	SW9056A	mg/L	12	1.0	0.50	0.064			
J Range	LYJRNG001_OCT19	Water	Alkalinity, total	SM2320B	mg/L	45	5.0	4.0	0.23			
J Range	LYJRNG001_OCT19	Water	Antimony	SW6020A	µg/L	0.994	1.0	0.055	0.50	J	TR	6
J Range	LYJRNG001_OCT19	Water	Calcium	SW6020A	µg/L	9410	100	21	80			
J Range	LYJRNG001_OCT19	Water	Chloride	SW9056A	mg/L	2.4	2.0	1.0	0.0993			
J Range	LYJRNG001_OCT19	Water	Copper	SW6020A	µg/L	2.53	3.0	0.19	2.0	J	TR	1300
J Range	LYJRNG001_OCT19	Water	Lead	SW6020A	µg/L	0.14	1.0	0.075	0.50	J	TR	15
J Range	LYJRNG001_OCT19	Water	Magnesium	SW6020A	µg/L	4900	100	8.0	80			
J Range	LYJRNG001_OCT19	Water	Potassium	SW6020A	µg/L	3,630	1,000	31	400			
J Range	LYJRNG001_OCT19	Water	Sodium	SW6020A	µg/L	2,260	1,000	19	400			
J Range	LYJRNG001_OCT19	Water	Sulfate	SW9056A	mg/L	1.1	1.0	0.50	0.064			
J Range	LYJRNG002_OCT19	Water	Alkalinity, total	SM2320B	mg/L	64	5.0	4.0	0.23			
J Range	LYJRNG002_OCT19	Water	Antimony	SW6020A	µg/L	1.35	1.0	0.055	0.50			6
J Range	LYJRNG002_OCT19	Water	Calcium	SW6020A	µg/L	14,600	100	21	80			
J Range	LYJRNG002_OCT19	Water	Chloride	SW9056A	mg/L	3.4	2.0	1.0	0.0993			
J Range	LYJRNG002_OCT19	Water	Copper	SW6020A	µg/L	3.27	3.0	0.19	2.0			1300
J Range	LYJRNG002_OCT19	Water	Lead	SW6020A	µg/L	0.46	1.0	0.075	0.50	J	TR	15
J Range	LYJRNG002_OCT19	Water	Magnesium	SW6020A	µg/L	7830	100	8.0	80			
J Range	LYJRNG002_OCT19	Water	Potassium	SW6020A	µg/L	2,910	1,000	31	400			

CAMP EDWARDS SMALL ARMS RANGE BASELINE POREWATER MONITORING RESULTS 2019

Site List	Field Sample ID	Matrix	Analyte	Analytical Method	Units	Lab Result	LOQ	LOD	DL	Qualifier	Reason	OMMP Action Levels (µg/L)
J Range	LYJRNG002_OCT19	Water	Sodium	SW6020A	µg/L	2,200	1,000	19	400			
J Range	LYJRNG002_OCT19	Water	Sulfate	SW9056A	mg/L	1.6	1.0	0.50	0.064			
J Range	LYJRNG003_OCT19	Water	Alkalinity, total	SM2320B	mg/L	130	5.0	4.0	0.23			
J Range	**LYJRNG003_OCT19**	**Water**	**Antimony**	**SW6020A**	**µg/L**	**46**	**1.0**	**0.055**	**0.50**			**6**
J Range	LYJRNG003_OCT19	Water	Calcium	SW6020A	µg/L	47700	100	21	80			
J Range	LYJRNG003_OCT19	Water	Chloride	SW9056A	mg/L	2.6	2.0	1.0	0.0993			
J Range	LYJRNG003_OCT19	Water	Copper	SW6020A	µg/L	4.15	3.0	0.19	2.0			1300
J Range	LYJRNG003_OCT19	Water	Lead	SW6020A	µg/L	0.23	1.0	0.075	0.50	J	TR	15
J Range	LYJRNG003_OCT19	Water	Magnesium	SW6020A	µg/L	3380	100	8.0	80			
J Range	LYJRNG003_OCT19	Water	Potassium	SW6020A	µg/L	91	1,000	31	400	J	TR	
J Range	LYJRNG003_OCT19	Water	Sodium	SW6020A	µg/L	3,660	1,000	19	400			
J Range	LYJRNG003_OCT19	Water	Sulfate	SW9056A	mg/L	3.5	1.0	0.50	0.064			
K Range	LYKRNG001_OCT19	Water	Alkalinity, total	SM2320B	mg/L	40	5.0	4.0	0.23			
K Range	LYKRNG001_OCT19	Water	Antimony	SW6020A	µg/L	0.574	1.0	0.055	0.50	J	TR	6
K Range	LYKRNG001_OCT19	Water	Calcium	SW6020A	µg/L	9,020	100	21	80			
K Range	LYKRNG001_OCT19	Water	Chloride	SW9056A	mg/L	3.8	2.0	1.0	0.0993			
K Range	LYKRNG001_OCT19	Water	Copper	SW6020A	µg/L	1.2	3.0	0.19	2.0	J	TR	1300
K Range	LYKRNG001_OCT19	Water	Lead	SW6020A	µg/L	0.50	1.0	0.075	0.50	U	ND	15
K Range	LYKRNG001_OCT19	Water	Magnesium	SW6020A	µg/L	4900	100	8.0	80			
K Range	LYKRNG001_OCT19	Water	Potassium	SW6020A	µg/L	727	1,000	31	400	J	TR	
K Range	LYKRNG001_OCT19	Water	Sodium	SW6020A	µg/L	3,840	1,000	19	400			
K Range	LYKRNG001_OCT19	Water	Sulfate	SW9056A	mg/L	2.7	1.0	0.50	0.064			
K Range	LYKRNG002_OCT19	Water	Alkalinity, total	SM2320B	mg/L	35	5.0	4.0	0.23			
K Range	LYKRNG002_OCT19	Water	Antimony	SW6020A	µg/L	0.25	1.0	0.055	0.50	J	TR	6
K Range	LYKRNG002_OCT19	Water	Calcium	SW6020A	µg/L	7200	100	21	80			
K Range	LYKRNG002_OCT19	Water	Chloride	SW9056A	mg/L	2.6	2.0	1.0	0.0993			
K Range	LYKRNG002_OCT19	Water	Copper	SW6020A	µg/L	1.0	3.0	0.19	2.0	J	TR	1300
K Range	LYKRNG002_OCT19	Water	Lead	SW6020A	µg/L	0.090	1.0	0.075	0.50			15
K Range	LYKRNG002_OCT19	Water	Magnesium	SW6020A	µg/L	4840	100	8.0	80			
K Range	LYKRNG002_OCT19	Water	Potassium	SW6020A	µg/L	419	1,000	31	400	J	TR	
K Range	LYKRNG002_OCT19	Water	Sodium	SW6020A	µg/L	2,400	1,000	19	400			
K Range	LYKRNG002_OCT19	Water	Sulfate	SW9056A	mg/L	0.88	1.0	0.50	0.064	J	TR	
K Range	LYKRNG003_OCT19	Water	Alkalinity, total	SM2320B	mg/L	9.7	5.0	4.0	0.23			
K Range	**LYKRNG003_OCT19**	**Water**	**Antimony**	**SW6020A**	**µg/L**	**6.57**	**1.0**	**0.055**	**0.50**			**6**
K Range	LYKRNG003_OCT19	Water	Calcium	SW6020A	µg/L	3,100	100	21	80			
K Range	LYKRNG003_OCT19	Water	Chloride	SW9056A	mg/L	3.5	2.0	1.0	0.0993			
K Range	LYKRNG003_OCT19	Water	Copper	SW6020A	µg/L	14.1	3.0	0.19	2.0			1300
K Range	LYKRNG003_OCT19	Water	Lead	SW6020A	µg/L	0.65	1.0	0.075	0.50	J	TR	15

CAMP EDWARDS SMALL ARMS RANGE BASELINE POREWATER MONITORING RESULTS 2019

Site List	Field Sample ID	Matrix	Analyte	Analytical Method	Units	Lab Result	LOQ	LOD	DL	Qualifier	Reason	OMMP Action Levels (µg/L)
K Range	LYKRNG003_OCT19	Water	Magnesium	SW6020A	µg/L	498	100	8.0	80			
K Range	LYKRNG003_OCT19	Water	Potassium	SW6020A	µg/L	785	1,000	31	400	J	TR	
K Range	LYKRNG003_OCT19	Water	Sodium	SW6020A	µg/L	2,810	1,000	19	400			
K Range	LYKRNG003_OCT19	Water	Sulfate	SW9056A	mg/L	1.3	1.0	0.50	0.064			
L Range	LYLRNG001_OCT19	Water	Alkalinity, total	SM2320B	mg/L	6.5	5.0	4.0	0.23			
L Range	LYLRNG001_OCT19	Water	Antimony	SW6020A	µg/L	0.076	1.0	0.50	0.055	J	TR	6
L Range	LYLRNG001_OCT19	Water	Calcium	SW6020A	µg/L	1550	100	80	21			
L Range	LYLRNG001_OCT19	Water	Chloride	SW9056A	mg/L	1.9	2.0	1.0	0.0993	J	TR	
L Range	LYLRNG001_OCT19	Water	Copper	SW6020A	µg/L	12	3.0	2.0	0.19			1300
L Range	LYLRNG001_OCT19	Water	Lead	SW6020A	µg/L	1.12	1.0	0.50	0.075			15
L Range	LYLRNG001_OCT19	Water	Magnesium	SW6020A	µg/L	323	100	80	8			
L Range	LYLRNG001_OCT19	Water	Phosphorus, total	E365.4	mg/L	0.080	0.10	0.080	0.0461	U	ND	
L Range	LYLRNG001_OCT19	Water	Potassium	SW6020A	µg/L	1,880	1,000	400	31			
L Range	LYLRNG001_OCT19	Water	Sodium	SW6020A	µg/L	1,300	1,000	400	19			
L Range	LYLRNG001_OCT19	Water	Sulfate	SW9056A	mg/L	1.6	1.0	0.50	0.064			
L Range	LYLRNG001_OCT19	Water	Sulfate	SW9056A	mg/L	1.6	1.0	0.50	0.064			
L Range	LYLRNG002_OCT19	Water	Alkalinity, total	SM2320B	mg/L	100	5.0	4.0	0.23			
L Range	LYLRNG002_OCT19	Water	Antimony	SW6020A	µg/L	0.14	1	0.5	0.055	J	TR	6
L Range	LYLRNG002_OCT19	Water	Calcium	SW6020A	µg/L	43,900	100	80	21			
L Range	LYLRNG002_OCT19	Water	Chloride	SW9056A	mg/L	2.0	2.0	1.0	0.0993	J	TR	
L Range	LYLRNG002_OCT19	Water	Copper	SW6020A	µg/L	1.8	3.0	2.0	0.19	J	TR	1300
L Range	LYLRNG002_OCT19	Water	Lead	SW6020A	µg/L	0.50	1.0	0.50	0.075	U	ND	15
L Range	LYLRNG002_OCT19	Water	Magnesium	SW6020A	µg/L	488	100	80	8			
L Range	LYLRNG002_OCT19	Water	Phosphorus, total	E365.4	mg/L	0.080	0.10	0.080	0.0461	U	ND	
L Range	LYLRNG002_OCT19	Water	Potassium	SW6020A	µg/L	697	1,000	400	31	J	TR	
L Range	LYLRNG002_OCT19	Water	Sodium	SW6020A	µg/L	2,090	1,000	400	19			
L Range	LYLRNG002_OCT19	Water	Sulfate	SW9056A	mg/L	0.13	1.0	0.50	0.064	J	TR	
L Range	LYLRNG002_OCT19	Water	Sulfate	SW9056A	mg/L	0.13	1.0	0.50	0.064	J	TR	
S Range	LYSBGD01_OCT19	Water	Alkalinity, total	SM2320B	mg/L	2.9	5.0	4.0	0.23	J	TR, Background Sample	
S Range	LYSBGD01_OCT19	Water	Antimony	SW6020A	µg/L	0.39	1.0	0.055	0.50	J	TR, Background Sample	6
S Range	LYSBGD01_OCT19	Water	Calcium	SW6020A	µg/L	12400	100	21	80		Background Sample	
S Range	LYSBGD01_OCT19	Water	Chloride	SW9056A	mg/L	59	10	5.0	0.50		Background Sample	
S Range	LYSBGD01_OCT19	Water	Copper	SW6020A	µg/L	1.8	3.0	0.19	2.0	J	TR, Background Sample	1300
S Range	LYSBGD01_OCT19	Water	Lead	SW6020A	µg/L	0.21	1.0	0.075	0.50	J	TR, Background Sample	15
S Range	LYSBGD01_OCT19	Water	Magnesium	SW6020A	µg/L	3050	100	8	80		Background Sample	
S Range	LYSBGD01_OCT19	Water	Potassium	SW6020A	µg/L	2,080	1,000	31	400		Background Sample	
S Range	LYSBGD01_OCT19	Water	Sodium	SW6020A	µg/L	24,700	1,000	19	400		Background Sample	
S Range	LYSBGD01_OCT19	Water	Sulfate	SW9056A	mg/L	12	1.0	0.50	0.064		Background Sample	

CAMP EDWARDS SMALL ARMS RANGE BASELINE POREWATER MONITORING RESULTS 2019

Site List	Field Sample ID	Matrix	Analyte	Analytical Method	Units	Lab Result	LOQ	LOD	DL	Qualifier	Reason	OMMP Action Levels (µg/L)
S Range	LYSRNG001_OCT19	Water	Alkalinity, total	SM2320B	mg/L	71	5.0	4.0	0.23			
S Range	LYSRNG001_OCT19	Water	Antimony	SW6020A	µg/L	1.29	1.0	0.055	0.5			6
S Range	LYSRNG001_OCT19	Water	Calcium	SW6020A	µg/L	27,400	100	21	80			
S Range	LYSRNG001_OCT19	Water	Chloride	SW9056A	mg/L	5.4	2.0	1.0	0.0993			
S Range	LYSRNG001_OCT19	Water	Copper	SW6020A	µg/L	4.33	3.0	0.19	2.0			1300
S Range	LYSRNG001_OCT19	Water	Lead	SW6020A	µg/L	0.13	1.0	0.075	0.50	J	TR	15
S Range	LYSRNG001_OCT19	Water	Magnesium	SW6020A	µg/L	2480	100	8.0	80			
S Range	LYSRNG001_OCT19	Water	Potassium	SW6020A	µg/L	861	1,000	31	400	J	TR	
S Range	LYSRNG001_OCT19	Water	Sodium	SW6020A	µg/L	5,800	1,000	19	400			
S Range	LYSRNG001_OCT19	Water	Sulfate	SW9056A	mg/L	3.0	1.0	0.50	0.064			
S Range	LYSRNG002_OCT19	Water	Alkalinity, total	SM2320B	mg/L	3.6	5.0	4.0	0.23	J	TR	
S Range	LYSRNG002_OCT19	Water	Antimony	SW6020A	µg/L	0.14	1.0	0.055	0.50	J	TR	6
S Range	LYSRNG002_OCT19	Water	Calcium	SW6020A	µg/L	912	100	21	80			
S Range	LYSRNG002_OCT19	Water	Chloride	SW9056A	mg/L	3.1	2.0	1.0	0.0993			
S Range	LYSRNG002_OCT19	Water	Copper	SW6020A	µg/L	1.2	3.0	0.19	2.0	J	TR	1300
S Range	LYSRNG002_OCT19	Water	Lead	SW6020A	µg/L	0.22	1.0	0.075	0.50	J	TR	15
S Range	LYSRNG002_OCT19	Water	Magnesium	SW6020A	µg/L	228	100	8.0	80			
S Range	LYSRNG002_OCT19	Water	Potassium	SW6020A	µg/L	2,480	1,000	31	400			
S Range	LYSRNG002_OCT19	Water	Sodium	SW6020A	µg/L	1,560	1,000	19	400			
S Range	LYSRNG002_OCT19	Water	Sulfate	SW9056A	mg/L	0.93	1.0	0.50	0.064	J	TR	
T Range	LYTBGD01_OCT19	Water	Alkalinity, total	SM2320B	mg/L	3.6	5.0	4.0	0.23	J	TR, Background Sample	
T Range	LYTBGD01_OCT19	Water	Antimony	SW6020A	µg/L	0.080	1.0	0.055	0.50	J	TR, Background Sample	6
T Range	LYTBGD01_OCT19	Water	Calcium	SW6020A	µg/L	633	100	21	80		Background Sample	
T Range	LYTBGD01_OCT19	Water	Chloride	SW9056A	mg/L	9.5	2.0	1.0	0.0993		Background Sample	
T Range	LYTBGD01_OCT19	Water	Copper	SW6020A	µg/L	1.3	3.0	0.19	2.0	J	TR, Background Sample	1300
T Range	LYTBGD01_OCT19	Water	Lead	SW6020A	µg/L	0.11	1.0	0.075	0.50	J	TR, Background Sample	15
T Range	LYTBGD01_OCT19	Water	Magnesium	SW6020A	µg/L	1240	100	8.0	80		Background Sample	
T Range	LYTBGD01_OCT19	Water	Potassium	SW6020A	µg/L	180	1,000	31	400	J	TR, Background Sample	
T Range	LYTBGD01_OCT19	Water	Sodium	SW6020A	µg/L	6,000	1,000	19	400		Background Sample	
T Range	LYTBGD01_OCT19	Water	Sulfate	SW9056A	mg/L	4.7	1.0	0.50	0.064		Background Sample	
T Range	LYTRNG012_OCT19	Water	Alkalinity, total	SM2320B	mg/L	6.1	5.0	4.0	0.23			
T Range	LYTRNG012_OCT19	Water	Antimony	SW6020A	µg/L	0.22	1.0	0.055	0.50	J	TR	6
T Range	LYTRNG012_OCT19	Water	Calcium	SW6020A	µg/L	706	100	21	80			
T Range	LYTRNG012_OCT19	Water	Chloride	SW9056A	mg/L	0.42	2.0	1.0	0.0993	J	TR	
T Range	LYTRNG012_OCT19	Water	Copper	SW6020A	µg/L	4.68	3.0	0.19	2.0			1300
T Range	LYTRNG012_OCT19	Water	Lead	SW6020A	µg/L	0.39	1.0	0.075	0.50	J	TR	15
T Range	LYTRNG012_OCT19	Water	Magnesium	SW6020A	µg/L	420	100	8.0	80			
T Range	LYTRNG012_OCT19	Water	Potassium	SW6020A	µg/L	300	1,000	31	400	J	TR	

CAMP EDWARDS SMALL ARMS RANGE BASELINE POREWATER MONITORING RESULTS 2019

Site List	Field Sample ID	Matrix	Analyte	Analytical Method	Units	Lab Result	LOQ	LOD	DL	Qualifier	Reason	OMMP Action Levels (µg/L)
T Range	LYTRNG012_OCT19	Water	Sodium	SW6020A	µg/L	1,100	1,000	19	400			
T Range	LYTRNG012_OCT19	Water	Sulfate	SW9056A	mg/L	0.076	1.0	0.50	0.064	J	TR	
T Range	LYTRNG013_OCT19	Water	Alkalinity, total	SM2320B	mg/L	39	5.0	4.0	0.23			
T Range	**LYTRNG013_OCT19**	**Water**	**Antimony**	**SW6020A**	**µg/L**	**98.1**	**1.0**	**0.055**	**0.50**			**6**
T Range	LYTRNG013_OCT19	Water	Calcium	SW6020A	µg/L	10,200	100	21	80			
T Range	LYTRNG013_OCT19	Water	Chloride	SW9056A	mg/L	4.0	2.0	1.0	0.0993			
T Range	LYTRNG013_OCT19	Water	Copper	SW6020A	µg/L	29.4	3.0	0.19	2.0			1300
T Range	LYTRNG013_OCT19	Water	Lead	SW6020A	µg/L	0.17	1.0	0.075	0.50	J	TR	15
T Range	LYTRNG013_OCT19	Water	Magnesium	SW6020A	µg/L	2700	100	8.0	80			
T Range	LYTRNG013_OCT19	Water	Potassium	SW6020A	µg/L	11,000	1,000	31	400			
T Range	LYTRNG013_OCT19	Water	Sodium	SW6020A	µg/L	5,430	1,000	19	400			
T Range	LYTRNG013_OCT19	Water	Sulfate	SW9056A	mg/L	8.8	1.0	0.50	0.064			
T Range	LYTRNG013_OCT19 FD	Water	Alkalinity, total	SM2320B	mg/L	40	5.0	4.0	0.23			
T Range	**LYTRNG013_OCT19 FD**	**Water**	**Antimony**	**SW6020A**	**µg/L**	**93.7**	**1.0**	**0.055**	**0.50**			**6**
T Range	LYTRNG013_OCT19 FD	Water	Calcium	SW6020A	µg/L	9460	100	21	80			
T Range	LYTRNG013_OCT19 FD	Water	Chloride	SW9056A	mg/L	4.0	2.0	1.0	0.0993			
T Range	LYTRNG013_OCT19 FD	Water	Copper	SW6020A	µg/L	28.5	3.0	0.19	2.0			1300
T Range	LYTRNG013_OCT19 FD	Water	Lead	SW6020A	µg/L	0.18	1.0	0.075	0.50	J	TR	15
T Range	LYTRNG013_OCT19 FD	Water	Magnesium	SW6020A	µg/L	2590	100	8.0	80			
T Range	LYTRNG013_OCT19 FD	Water	Potassium	SW6020A	µg/L	10,600	1,000	31	400			
T Range	LYTRNG013_OCT19 FD	Water	Sodium	SW6020A	µg/L	5,210	1,000	19	400			
T Range	LYTRNG013_OCT19 FD	Water	Sulfate	SW9056A	mg/L	9.0	1.0	0.50	0.064			

Notes:

µg/L = microgram(s) per liter
DL = detection limit
ID = identifier
J = estimated value
ND = nondetectable
LOQ = limit of quantitation
TR = trace result (<LOQ and >DL)
U = not detected

Small Arms Range Sampling Reports

Lysimeter Sampling Results

Spring 2020

Porewater Sample Results Spring 2020

Field Sample ID	Matrix	Sample Type	Analyte	Analytical Method	Extraction Method	Lab Result	MDL	LOD	LOQ	Units	OMMP Action Level (mg/L)	Dilution Factor	Qualifier	Reason
LYIRNG001_APR20	GW	N	Alkalinity, total	SM2320B	Total	9	5	5	5	mg/L		1		
LYIRNG001_APR20	GW	N	Antimony	SW6020A	Dissolved	3	2	4	5	µg/L	6	2	J	TR
LYIRNG001_APR20	GW	N	Calcium	SW6020A	Dissolved	2,400	96	180	200	µg/L		2		
LYIRNG001_APR20	GW	N	Chloride	SW9056A	Total	2.6	0.060	0.15	0.20	mg/L		1		
LYIRNG001_APR20	GW	N	Copper	SW6020A	Dissolved	12	1.9	2.5	3	µg/L	1300	2		
LYIRNG001_APR20	GW	N	Iron	SW6020A	Dissolved	51	20	40	50	µg/L		2		
LYIRNG001_APR20	GW	N	Lead	SW6020A	Dissolved	3	1	2	3	µg/L	15	2	J	TR
LYIRNG001_APR20	GW	N	Magnesium	SW6020A	Dissolved	720	20	40	50	µg/L		2		
LYIRNG001_APR20	GW	N	Phosphorus, total	E365.4	Total	0.048	0.041	0.057	0.10	mg/L		1	J	TR
LYIRNG001_APR20	GW	N	Potassium	SW6020A	Dissolved	1,800	45	90	100	µg/L		2		
LYIRNG001_APR20	GW	N	Sodium	SW6020A	Dissolved	2,200	50	90	100	µg/L		2		
LYIRNG001_APR20	GW	N	Sulfate	SW9056A	Total	0.63	0.050	0.15	0.50	mg/L		1		
LYIRNG001_APR20	GW	N	Total Carbon	E415.1	Dissolved	3.0	0.50	0.50	1.0	mg/L		1		
LYIRNG002_APR20	GW	N	Alkalinity, total	SM2320B	Total	16	5	5	5	mg/L		1		
LYIRNG002_APR20	**GW**	**N**	**Antimony**	**SW6020A**	**Dissolved**	**8**	**2**	**4**	**5**	**µg/L**	6	**1**		
LYIRNG002_APR20	GW	N	Calcium	SW6020A	Dissolved	11,000	96	180	200	µg/L		1		
LYIRNG002_APR20	GW	N	Chloride	SW9056A	Total	6.5	0.30	0.75	1.0	mg/L		1		
LYIRNG002_APR20	GW	N	Copper	SW6020A	Dissolved	420	1.9	2.5	3	µg/L	1300	1		
LYIRNG002_APR20	GW	N	Iron	SW6020A	Dissolved	93	20	40	50	µg/L		1		
LYIRNG002_APR20	GW	N	Lead	SW6020A	Dissolved	1	1	2	3	µg/L	15	1	J	TR
LYIRNG002_APR20	GW	N	Magnesium	SW6020A	Dissolved	2,700	20	40	50	µg/L		1		
LYIRNG002_APR20	GW	N	Phosphorus, total	E365.4	Total	7.1	0.41	0.57	1.0	mg/L		10		
LYIRNG002_APR20	GW	N	Potassium	SW6020A	Dissolved	1,900	45	90	100	µg/L		1		
LYIRNG002_APR20	GW	N	Sodium	SW6020A	Dissolved	4,000	50	90	100	µg/L		1		
LYIRNG002_APR20	GW	N	Sulfate	SW9056A	Total	4.6	0.050	0.15	0.50	mg/L		1		
LYIRNG002_APR20	GW	N	Total Carbon	E415.1	Dissolved	16	0.50	0.50	1.0	mg/L		1		
LYJRNG001_APR20	GW	N	Alkalinity, total	SM2320B	Total	41	5	5	5	mg/L		1		
LYJRNG001_APR20	GW	N	Antimony	SW6020A	Dissolved	4	2	4	5	µg/L	6	2	U	ND
LYJRNG001_APR20	GW	N	Calcium	SW6020A	Dissolved	9,500	96	180	200	µg/L		2		
LYJRNG001_APR20	GW	N	Chloride	SW9056A	Total	3.2	0.060	0.15	0.20	mg/L		1		
LYJRNG001_APR20	GW	N	Copper	SW6020A	Dissolved	2	1.9	2.5	3	µg/L	1300	2	J	TR
LYJRNG001_APR20	GW	N	Iron	SW6020A	Dissolved	42	20	40	50	µg/L		2	J	TR
LYJRNG001_APR20	GW	N	Lead	SW6020A	Dissolved	2	1	2	3	µg/L	15	2	U	ND
LYJRNG001_APR20	GW	N	Magnesium	SW6020A	Dissolved	4,600	20	40	50	µg/L		2		
LYJRNG001_APR20	GW	N	Phosphorus, total	E365.4	Total	0.057	0.041	0.057	0.10	mg/L		1	U	ND
LYJRNG001_APR20	GW	N	Potassium	SW6020A	Dissolved	2,900	45	90	100	µg/L		2		
LYJRNG001_APR20	GW	N	Sodium	SW6020A	Dissolved	3,200	50	90	100	µg/L		2		

Porewater Sample Results Spring 2020

Field Sample ID	Matrix	Sample Type	Analyte	Analytical Method	Extraction Method	Lab Result	MDL	LOD	LOQ	Units	OMMP Action Level (mg/L)	Dilution Factor	Qualifier	Reason
LYJRNG001_APR20	GW	N	Sulfate	SW9056A	Total	0.98	0.050	0.15	0.50	mg/L		1		
LYJRNG001_APR20	GW	N	Total Carbon	E415.1	Dissolved	2.8	0.50	0.50	1.0	mg/L		1		
LYJRNG002_APR20	GW	N	Alkalinity, total	SM2320B	Total	14	5	5	5	mg/L		1		
LYJRNG002_APR20	GW	N	Antimony	SW6020A	Dissolved	4	2	4	5	µg/L	6	2	U	ND
LYJRNG002_APR20	GW	N	Calcium	SW6020A	Dissolved	3,400	96	180	200	µg/L		2		
LYJRNG002_APR20	GW	N	Chloride	SW9056A	Total	1.1	0.060	0.15	0.20	mg/L		1		
LYJRNG002_APR20	GW	N	Copper	SW6020A	Dissolved	3	1.9	2.5	3	µg/L	1300	2		
LYJRNG002_APR20	GW	N	Iron	SW6020A	Dissolved	75	20	40	50	µg/L		2		
LYJRNG002_APR20	GW	N	Lead	SW6020A	Dissolved	2	1	2	3	µg/L	15	2	U	ND
LYJRNG002_APR20	GW	N	Magnesium	SW6020A	Dissolved	2,000	20	40	50	µg/L		2		
LYJRNG002_APR20	GW	N	Phosphorus, total	E365.4	Total	0.072	0.041	0.057	0.10	mg/L		1	J	TR
LYJRNG002_APR20	GW	N	Potassium	SW6020A	Dissolved	1,000	45	90	100	µg/L		2		
LYJRNG002_APR20	GW	N	Sodium	SW6020A	Dissolved	1,000	50	90	100	µg/L		2		
LYJRNG002_APR20	GW	N	Sulfate	SW9056A	Total	0.43	0.050	0.15	0.50	mg/L		1	J	TR
LYJRNG002_APR20	GW	N	Total Carbon	E415.1	Dissolved	3.5	0.50	0.50	1.0	mg/L		1		
LYJRNG003_APR20	GW	N	Alkalinity, total	SM2320B	Total	90	5	5	5	mg/L		1		
LYJRNG003_APR20	**GW**	**N**	**Antimony**	**SW6020A**	**Dissolved**	**32**	**2**	**4**	**5**	**µg/L**	6	**2**		
LYJRNG003_APR20	GW	N	Calcium	SW6020A	Dissolved	30,000	96	180	200	µg/L		2		
LYJRNG003_APR20	GW	N	Chloride	SW9056A	Total	1.9	0.060	0.15	0.20	mg/L		1		
LYJRNG003_APR20	GW	N	Copper	SW6020A	Dissolved	5	1.9	2.5	3	µg/L	1300	2		
LYJRNG003_APR20	GW	N	Iron	SW6020A	Dissolved	40	20	40	50	µg/L		2	U	ND
LYJRNG003_APR20	GW	N	Lead	SW6020A	Dissolved	2	1	2	3	µg/L	15	2	U	ND
LYJRNG003_APR20	GW	N	Magnesium	SW6020A	Dissolved	2,000	20	40	50	µg/L		2		
LYJRNG003_APR20	GW	N	Phosphorus, total	E365.4	Total	0.057	0.041	0.057	0.10	mg/L		1	U	ND
LYJRNG003_APR20	GW	N	Potassium	SW6020A	Dissolved	1,100	45	90	100	µg/L		2		
LYJRNG003_APR20	GW	N	Sodium	SW6020A	Dissolved	3,400	50	90	100	µg/L		2		
LYJRNG003_APR20	GW	N	Sulfate	SW9056A	Total	2.1	0.050	0.15	0.50	mg/L		1		
LYJRNG003_APR20	GW	N	Total Carbon	E415.1	Dissolved	2.8	0.50	0.50	1.0	mg/L		1		
LYKRNG001_APR20	GW	N	Alkalinity, total	SM2320B	Total	55	5	5	5	mg/L		1		
LYKRNG001_APR20	GW	N	Antimony	SW6020A	Dissolved	4	2	4	5	µg/L	6	2	U	ND
LYKRNG001_APR20	GW	N	Calcium	SW6020A	Dissolved	12,000	96	180	200	µg/L		2		
LYKRNG001_APR20	GW	N	Chloride	SW9056A	Total	4.4	0.060	0.15	0.20	mg/L		1		
LYKRNG001_APR20	GW	N	Copper	SW6020A	Dissolved	3	1.9	2.5	3	µg/L	1300	2	U	ND
LYKRNG001_APR20	GW	N	Iron	SW6020A	Dissolved	32	20	40	50	µg/L		2	J	TR
LYKRNG001_APR20	GW	N	Lead	SW6020A	Dissolved	2	1	2	3	µg/L	15	2	U	ND
LYKRNG001_APR20	GW	N	Magnesium	SW6020A	Dissolved	6,300	20	40	50	µg/L		2		
LYKRNG001_APR20	GW	N	Phosphorus, total	E365.4	Total	0.057	0.041	0.057	0.10	mg/L		1	U	ND

Porewater Sample Results Spring 2020

Field Sample ID	Matrix	Sample Type	Analyte	Analytical Method	Extraction Method	Lab Result	MDL	LOD	LOQ	Units	OMMP Action Level (mg/L)	Dilution Factor	Qualifier	Reason
LYKRNG001_APR20	GW	N	Potassium	SW6020A	Dissolved	890	45	90	100	µg/L		2		
LYKRNG001_APR20	GW	N	Sodium	SW6020A	Dissolved	3,600	50	90	100	µg/L		2		
LYKRNG001_APR20	GW	N	Sulfate	SW9056A	Total	4.1	0.050	0.15	0.50	mg/L		1		
LYKRNG001_APR20	GW	N	Total Carbon	E415.1	Dissolved	2.7	0.50	0.50	1.0	mg/L		1		
LYKRNG002_APR20	GW	N	Alkalinity, total	SM2320B	Total	44	5	5	5	mg/L		1		
LYKRNG002_APR20	GW	N	Antimony	SW6020A	Dissolved	4	2	4	5	µg/L	6	2	U	ND
LYKRNG002_APR20	GW	N	Calcium	SW6020A	Dissolved	8,900	96	180	200	µg/L		2		
LYKRNG002_APR20	GW	N	Chloride	SW9056A	Total	3.1	0.060	0.15	0.20	mg/L		1		
LYKRNG002_APR20	GW	N	Copper	SW6020A	Dissolved	3	1.9	2.5	3	µg/L	1300	2	U	ND
LYKRNG002_APR20	GW	N	Iron	SW6020A	Dissolved	22	20	40	50	µg/L		2	J	TR
LYKRNG002_APR20	GW	N	Lead	SW6020A	Dissolved	2	1	2	3	µg/L	15	2	U	ND
LYKRNG002_APR20	GW	N	Magnesium	SW6020A	Dissolved	5,900	20	40	50	µg/L		2		
LYKRNG002_APR20	GW	N	Phosphorus, total	E365.4	Total	0.057	0.041	0.057	0.10	mg/L		1	U	ND
LYKRNG002_APR20	GW	N	Potassium	SW6020A	Dissolved	390	45	90	100	µg/L		2		
LYKRNG002_APR20	GW	N	Sodium	SW6020A	Dissolved	2,100	50	90	100	µg/L		2		
LYKRNG002_APR20	GW	N	Sulfate	SW9056A	Total	0.62	0.050	0.15	0.50	mg/L		1		
LYKRNG002_APR20	GW	N	Total Carbon	E415.1	Dissolved	1.3	0.50	0.50	1.0	mg/L		1		
LYKRNG003_APR20	GW	N	Alkalinity, total	SM2320B	Total	8	5	5	5	mg/L		1		
LYKRNG003_APR20	GW	N	Antimony	SW6020A	Dissolved	3	2	4	5	µg/L	6	2	J	TR
LYKRNG003_APR20	GW	N	Calcium	SW6020A	Dissolved	3,900	96	180	200	µg/L		2		
LYKRNG003_APR20	GW	N	Chloride	SW9056A	Total	8	0.12	0.30	0.40	mg/L		2		
LYKRNG003_APR20	GW	N	Copper	SW6020A	Dissolved	10	1.9	2.5	3	µg/L	1300	2		
LYKRNG003_APR20	GW	N	Iron	SW6020A	Dissolved	58	20	40	50	µg/L		2		
LYKRNG003_APR20	GW	N	Lead	SW6020A	Dissolved	2	1	2	3	µg/L	15	2	U	ND
LYKRNG003_APR20	GW	N	Magnesium	SW6020A	Dissolved	530	20	40	50	µg/L		2		
LYKRNG003_APR20	GW	N	Phosphorus, total	E365.4	Total	0.049	0.041	0.057	0.10	mg/L		1	J	TR
LYKRNG003_APR20	GW	N	Potassium	SW6020A	Dissolved	500	45	90	100	µg/L		2		
LYKRNG003_APR20	GW	N	Sodium	SW6020A	Dissolved	4,200	50	90	100	µg/L		2		
LYKRNG003_APR20	GW	N	Sulfate	SW9056A	Total	0.88	0.050	0.15	0.50	mg/L		1		
LYKRNG003_APR20	GW	N	Total Carbon	E415.1	Dissolved	1.6	0.50	0.50	1.0	mg/L		1		
LYKRNG004_APR20	**GW**	**N**	**Antimony**	**SW6020A**	**Dissolved**	**20**	**2.0**	**4.0**	**5.0**	**µg/L**	6	**2**		
LYKRNG004_APR20	GW	N	Calcium	SW6020A	Dissolved	5,800	96	180	200	µg/L		2	Q	Q
LYKRNG004_APR20	GW	N	Chloride	SW9056A	Total	1.9	0.060	0.15	0.20	mg/L		1		
LYKRNG004_APR20	GW	N	Copper	SW6020A	Dissolved	5.2	1.9	2.5	3.0	µg/L	1300	2	UJ	B
LYKRNG004_APR20	GW	N	Iron	SW6020A	Dissolved	25	20	40	50	µg/L		2	J	TR
LYKRNG004_APR20	GW	N	Lead	SW6020A	Dissolved	1	1	2	3	µg/L	15	2	J	TR
LYKRNG004_APR20	GW	N	Magnesium	SW6020A	Dissolved	490	20	40	50	µg/L		2		

Porewater Sample Results Spring 2020

Field Sample ID	Matrix	Sample Type	Analyte	Analytical Method	Extraction Method	Lab Result	MDL	LOD	LOQ	Units	OMMP Action Level (mg/L)	Dilution Factor	Qualifier	Reason
LYKRNG004_APR20	GW	N	Phosphorus, total	E365.4	Total	0.057	0.041	0.057	0.10	mg/L		1	U	ND
LYKRNG004_APR20	GW	N	Potassium	SW6020A	Dissolved	93	45	90	100	µg/L		2	J	TR
LYKRNG004_APR20	GW	N	Sodium	SW6020A	Dissolved	1,800	50	90	100	µg/L		2		
LYKRNG004_APR20	GW	N	Sulfate	SW9056A	Total	1.2	0.050	0.15	0.50	mg/L		1		
LYLRNG001_APR20	GW	N	Alkalinity, total	SM2320B	Total	5	5	5	5	mg/L		1	U	ND
LYLRNG001_APR20	GW	N	Antimony	SW6020A	Dissolved	4	2	4	5	µg/L	6	2	U	ND
LYLRNG001_APR20	GW	N	Calcium	SW6020A	Dissolved	1,800	96	180	200	µg/L		2		
LYLRNG001_APR20	GW	N	Chloride	SW9056A	Total	4.8	0.060	0.15	0.20	mg/L		1		
LYLRNG001_APR20	GW	N	Copper	SW6020A	Dissolved	6	1.9	2.5	3	µg/L	1300	2		
LYLRNG001_APR20	GW	N	Iron	SW6020A	Dissolved	31	20	40	50	µg/L		2	J	TR
LYLRNG001_APR20	GW	N	Lead	SW6020A	Dissolved	2	1	2	3	µg/L	15	2	U	ND
LYLRNG001_APR20	GW	N	Magnesium	SW6020A	Dissolved	390	20	40	50	µg/L		2		
LYLRNG001_APR20	GW	N	Phosphorus, total	E365.4	Total	0.053	0.041	0.057	0.10	mg/L		1	J	TR
LYLRNG001_APR20	GW	N	Potassium	SW6020A	Dissolved	1,500	45	90	100	µg/L		2		
LYLRNG001_APR20	GW	N	Sodium	SW6020A	Dissolved	2,200	50	90	100	µg/L		2		
LYLRNG001_APR20	GW	N	Sulfate	SW9056A	Total	2.8	0.050	0.15	0.50	mg/L		1		
LYLRNG001_APR20	GW	N	Total Carbon	E415.1	Dissolved	2.7	0.50	0.50	1.0	mg/L		1		
LYLRNG002_APR20	GW	N	Alkalinity, total	SM2320B	Total	70	5	5	5	mg/L		1		
LYLRNG002_APR20	GW	N	Antimony	SW6020A	Dissolved	4	2	4	5	µg/L	6	2	U	ND
LYLRNG002_APR20	GW	N	Calcium	SW6020A	Dissolved	26,000	96	180	200	µg/L		2		
LYLRNG002_APR20	GW	N	Chloride	SW9056A	Total	7.6	0.12	0.30	0.40	mg/L		2		
LYLRNG002_APR20	GW	N	Copper	SW6020A	Dissolved	3	1.9	2.5	3	µg/L	1300	2	U	ND
LYLRNG002_APR20	GW	N	Iron	SW6020A	Dissolved	23	20	40	50	µg/L		2	J	TR
LYLRNG002_APR20	GW	N	Lead	SW6020A	Dissolved	2	1	2	3	µg/L	15	2	U	ND
LYLRNG002_APR20	GW	N	Magnesium	SW6020A	Dissolved	960	20	40	50	µg/L		2		
LYLRNG002_APR20	GW	N	Phosphorus, total	E365.4	Total	0.057	0.041	0.057	0.10	mg/L		1	U	ND
LYLRNG002_APR20	GW	N	Potassium	SW6020A	Dissolved	1,500	45	90	100	µg/L		2		
LYLRNG002_APR20	GW	N	Sodium	SW6020A	Dissolved	4,200	50	90	100	µg/L		2		
LYLRNG002_APR20	GW	N	Sulfate	SW9056A	Total	0.12	0.050	0.15	0.50	mg/L		1	J	TR
LYLRNG002_APR20	GW	N	Total Carbon	E415.1	Dissolved	4.5	0.50	0.50	1.0	mg/L		1		
LYSBGD01_APR20	GW	N	Alkalinity, total	SM2320B	Total	5	5	5	5	mg/L		1	U	ND
LYSBGD01_APR20	GW	N	Antimony	SW6020A	Dissolved	4.0	2.0	4.0	5.0	µg/L	6	2	U	ND
LYSBGD01_APR20	GW	N	Calcium	SW6020A	Dissolved	9,200	96	180	200	µg/L		2	J	TR
LYSBGD01_APR20	GW	N	Chloride	SW9056A	Total	50	1.2	3.0	4.0	mg/L		20		
LYSBGD01_APR20	GW	N	Copper	SW6020A	Dissolved	2.5	1.9	2.5	3.0	µg/L	1300	2	U	ND
LYSBGD01_APR20	GW	N	Iron	SW6020A	Dissolved	40	20	40	50	µg/L		2	U	ND
LYSBGD01_APR20	GW	N	Lead	SW6020A	Dissolved	2.0	1.0	2.0	3.0	µg/L	15	2	U	ND

Porewater Sample Results Spring 2020

Field Sample ID	Matrix	Sample Type	Analyte	Analytical Method	Extraction Method	Lab Result	MDL	LOD	LOQ	Units	OMMP Action Level (mg/L)	Dilution Factor	Qualifier	Reason
LYSBGD01_APR20	GW	N	Magnesium	SW6020A	Dissolved	2,300	20	40	50	µg/L		2		
LYSBGD01_APR20	GW	N	Phosphorus, total	E365.4	Total	0.045	0.041	0.057	0.10	mg/L		1	J	TR
LYSBGD01_APR20	GW	N	Potassium	SW6020A	Dissolved	2,200	45	90	100	µg/L		2		
LYSBGD01_APR20	GW	N	Sodium	SW6020A	Dissolved	21,000	50	90	100	µg/L		2		
LYSBGD01_APR20	GW	N	Sodium	SW6020A	Dissolved	7,200	50	90	100	µg/L		2		
LYSBGD01_APR20	GW	N	Sulfate	SW9056A	Total	8.1	0.050	0.15	0.50	mg/L		1		
LYSBGD01_APR20	GW	N	Total Carbon	E415.1	Dissolved	3.7	0.50	0.50	1.0	mg/L		1		
LYSRNG001_APR20	GW	N	Alkalinity, total	SM2320B	Total	60	5	5	5	mg/L		1		
LYSRNG001_APR20	GW	N	Antimony	SW6020A	Dissolved	4.0	2.0	4.0	5.0	µg/L	6	2	U	ND
LYSRNG001_APR20	GW	N	Calcium	SW6020A	Dissolved	25,000	96	180	200	µg/L		2		
LYSRNG001_APR20	GW	N	Chloride	SW9056A	Total	12	0.30	0.75	1.0	mg/L		5		
LYSRNG001_APR20	GW	N	Copper	SW6020A	Dissolved	4.2	1.9	2.5	3.0	µg/L	1300	2		
LYSRNG001_APR20	GW	N	Iron	SW6020A	Dissolved	230	20	40	50	µg/L		2		
LYSRNG001_APR20	GW	N	Lead	SW6020A	Dissolved	2.0	1.0	2.0	3.0	µg/L	15	2	U	ND
LYSRNG001_APR20	GW	N	Magnesium	SW6020A	Dissolved	2,300	20	40	50	µg/L		2		
LYSRNG001_APR20	GW	N	Phosphorus, total	E365.4	Total	0.057	0.041	0.057	0.10	mg/L		1	U	ND
LYSRNG001_APR20	GW	N	Potassium	SW6020A	Dissolved	790	45	90	100	µg/L		2		
LYSRNG001_APR20	GW	N	Sodium	SW6020A	Dissolved	4,500	50	90	100	µg/L		2		
LYSRNG001_APR20	GW	N	Sulfate	SW9056A	Total	4.0	0.050	0.15	0.50	mg/L		1		
LYSRNG001_APR20	GW	N	Total Carbon	E415.1	Dissolved	6.6	0.50	0.50	1.0	mg/L		1		
LYSRNG002_APR20	GW	N	Alkalinity, total	SM2320B	Total	5	5	5	5	mg/L		1	U	ND
LYSRNG002_APR20	GW	N	Antimony	SW6020A	Dissolved	4	2	4	5	µg/L	6	2	U	ND
LYSRNG002_APR20	GW	N	Calcium	SW6020A	Dissolved	870	96	180	200	µg/L		2		
LYSRNG002_APR20	GW	N	Chloride	SW9056A	Total	7.1	0.12	0.30	0.40	mg/L		2		
LYSRNG002_APR20	GW	N	Copper	SW6020A	Dissolved	3	1.9	2.5	3	µg/L	1300	2		
LYSRNG002_APR20	GW	N	Iron	SW6020A	Dissolved	27	20	40	50	µg/L		2	J	TR
LYSRNG002_APR20	GW	N	Lead	SW6020A	Dissolved	2	1	2	3	µg/L	15	2	U	ND
LYSRNG002_APR20	GW	N	Magnesium	SW6020A	Dissolved	450	20	40	50	µg/L		2		
LYSRNG002_APR20	GW	N	Phosphorus, total	E365.4	Total	0.057	0.041	0.057	0.10	mg/L		1	U	ND
LYSRNG002_APR20	GW	N	Potassium	SW6020A	Dissolved	4,000	45	90	100	µg/L		2		
LYSRNG002_APR20	GW	N	Sodium	SW6020A	Dissolved	3,000	50	90	100	µg/L		2		
LYSRNG002_APR20	GW	N	Sulfate	SW9056A	Total	1.1	0.050	0.15	0.50	mg/L		1		
LYSRNG002_APR20	GW	N	Total Carbon	E415.1	Dissolved	2.4	0.50	0.50	1.0	mg/L		1		
LYTBGD01_APR20	GW	N	Alkalinity, total	SM2320B	Total	5	5	5	5	mg/L		1	U	ND
LYTBGD01_APR20	GW	N	Antimony	SW6020A	Dissolved	4	2	4	5	µg/L	6	2	U	ND
LYTBGD01_APR20	GW	N	Calcium	SW6020A	Dissolved	540	96	180	200	µg/L		2		
LYTBGD01_APR20	GW	N	Chloride	SW9056A	Total	12	0.30	0.75	1.0	mg/L		5		

Porewater Sample Results Spring 2020

Field Sample ID	Matrix	Sample Type	Analyte	Analytical Method	Extraction Method	Lab Result	MDL	LOD	LOQ	Units	OMMP Action Level (mg/L)	Dilution Factor	Qualifier	Reason
LYTBGD01_APR20	GW	N	Copper	SW6020A	Dissolved	3	1.9	2.5	3	µg/L	1300	2	U	ND
LYTBGD01_APR20	GW	N	Iron	SW6020A	Dissolved	40	20	40	50	µg/L		2	U	ND
LYTBGD01_APR20	GW	N	Lead	SW6020A	Dissolved	2	1	2	3	µg/L	15	2	U	ND
LYTBGD01_APR20	GW	N	Magnesium	SW6020A	Dissolved	1,600	20	40	50	µg/L		2		
LYTBGD01_APR20	GW	N	Phosphorus, total	E365.4	Total	0.064	0.041	0.057	0.10	mg/L		1	J	TR
LYTBGD01_APR20	GW	N	Potassium	SW6020A	Dissolved	92	45	90	100	µg/L		2	J	TR
LYTBGD01_APR20	GW	N	Sulfate	SW9056A	Total	3.9	0.050	0.15	0.50	mg/L		1		
LYTBGD01_APR20	GW	N	Total Carbon	E415.1	Dissolved	2.2	0.50	0.50	1.0	mg/L		1		
LYTRNG013_APR20	GW	N	Alkalinity, total	SM2320B	Total	44	5	5	5	mg/L		1		
LYTRNG013_APR20	**GW**	**N**	**Antimony**	**SW6020A**	**Dissolved**	**50**	**2**	**4**	**5**	**µg/L**	6	**2**		
LYTRNG013_APR20	GW	N	Calcium	SW6020A	Dissolved	13,000	96	180	200	µg/L		2		
LYTRNG013_APR20	GW	N	Chloride	SW9056A	Total	3.8	0.060	0.15	0.20	mg/L		1		
LYTRNG013_APR20	GW	N	Copper	SW6020A	Dissolved	22	1.9	2.5	3	µg/L	1300	2		
LYTRNG013_APR20	GW	N	Iron	SW6020A	Dissolved	930	20	40	50	µg/L		2		
LYTRNG013_APR20	GW	N	Lead	SW6020A	Dissolved	2	1	2	3	µg/L	15	2	J	TR
LYTRNG013_APR20	GW	N	Magnesium	SW6020A	Dissolved	2,600	20	40	50	µg/L		2		
LYTRNG013_APR20	GW	N	Phosphorus, total	E365.4	Total	0.059	0.041	0.057	0.10	mg/L		1	J	TR
LYTRNG013_APR20	GW	N	Potassium	SW6020A	Dissolved	5,600	45	90	100	µg/L		2		
LYTRNG013_APR20	GW	N	Sodium	SW6020A	Dissolved	2,600	50	90	100	µg/L		2		
LYTRNG013_APR20	GW	N	Sulfate	SW9056A	Total	3.9	0.050	0.15	0.50	mg/L		1		
LYTRNG013_APR20	GW	N	Total Carbon	E415.1	Dissolved	7.2	0.50	0.50	1.0	mg/L		1		
LYTRNG013_APR20 FD	GW	FD	Alkalinity, total	SM2320B	Total	46	5	5	5	mg/L		1		
LYTRNG013_APR20 FD	**GW**	**FD**	**Antimony**	**SW6020A**	**Dissolved**	**52**	**2**	**4**	**5**	**µg/L**		**2**		
LYTRNG013_APR20 FD	GW	FD	Calcium	SW6020A	Dissolved	13,000	96	180	200	µg/L		2		
LYTRNG013_APR20 FD	GW	FD	Chloride	SW9056A	Total	3.8	0.060	0.15	0.20	mg/L		1		
LYTRNG013_APR20 FD	GW	FD	Copper	SW6020A	Dissolved	22	1.9	2.5	3	µg/L		2		
LYTRNG013_APR20 FD	GW	FD	Iron	SW6020A	Dissolved	860	20	40	50	µg/L		2		
LYTRNG013_APR20 FD	GW	FD	Lead	SW6020A	Dissolved	2	1	2	3	µg/L		2	J	TR
LYTRNG013_APR20 FD	GW	FD	Magnesium	SW6020A	Dissolved	2,600	20	40	50	µg/L		2		
LYTRNG013_APR20 FD	GW	FD	Phosphorus, total	E365.4	Total	0.080	0.041	0.057	0.10	mg/L		1	J	TR
LYTRNG013_APR20 FD	GW	FD	Potassium	SW6020A	Dissolved	5,600	45	90	100	µg/L		2		
LYTRNG013_APR20 FD	GW	FD	Sodium	SW6020A	Dissolved	2,600	50	90	100	µg/L		2		
LYTRNG013_APR20 FD	GW	FD	Sulfate	SW9056A	Total	3.9	0.050	0.15	0.50	mg/L		1		
LYTRNG013_APR20 FD	GW	FD	Total Carbon	E415.1	Dissolved	7.1	0.50	0.50	1.0	mg/L		1		

Notes:

µg/L = microgram(s) per lit MDL = method detection limit ND = nondetectable U = not detected

ID = identifier mg/L = milligram(s) per liter LOQ = limit of quantitation

Porewater Sample Results Spring 2020

Field Sample ID	Matrix	Sample Type	Analyte	Analytical Method	Extraction Method	Lab Result	MDL	LOD	LOQ	Units	OMMP Action Level (mg/L)	Dilution Factor	Qualifier	Reason
B = method blank detection	MS%R = matrix spike % recovery			LOD = limit of detection										
J = estimated value	N = normal (primary) sample			TR = trace result (<LOQ and >MDL)										

Juliet and Kilo Ranges, STAPP bullet catcher system, Camp Edwards, Massachusetts
LY=Lysimeter, MW=Monitoring Well, SS=Soil Sample

Tango Range with STAPP bullet catcher system, Camp Edwards, Massachusetts
LY=Lysimeter, MW=Monitoring Well, SS=Soil Sample

India Range, Copper Ammunition Only, Camp Edwards, Massachusetts.
LY=Lysimeter, MW=Monitoring Well, SS=Soil Sample

Small Arms Range Sampling Reports

Groundwater Sampling Results

Fall 2019

CAMP EDWARDS SMALL ARMS RANGE BASELINE GROUNDWATER MONITORING RESULTS OCTOBER 2019

Site List	Field Sample ID	Matrix	Analyte	Analytical Method	Units	Lab Result	LOQ	LOD	DL	Qualifier	Reason	OMMP Action Levels (µg/L)
E Range	MW-468S_OCT19	Water	Alkalinity, total	SM2320B	mg/L	9.0	5.0	4.0	0.23			
E Range	MW-468S_OCT19	Water	Antimony	SW6020A	µg/L	0.5	1.0	0.055	0.50	U	ND	3
E Range	MW-468S_OCT19	Water	Calcium	SW6020A	µg/L	3,970	100	21	80			
E Range	MW-468S_OCT19	Water	Chloride	SW9056A	mg/L	10	2.0	1.0	0.0993			
E Range	MW-468S_OCT19	Water	Copper	SW6020A	µg/L	1.2	3.0	0.19	2.0	J	TR	650
E Range	MW-468S_OCT19	Water	Lead	SW6020A	µg/L	0.18	1.0	0.075	0.50	J	TR	7.5
E Range	MW-468S_OCT19	Water	Magnesium	SW6020A	µg/L	2870	100	8.0	80			
E Range	MW-468S_OCT19	Water	Potassium	SW6020A	µg/L	1,010	1,000	31	400			
E Range	MW-468S_OCT19	Water	Sodium	SW6020A	µg/L	8,460	1,000	19	400			
E Range	MW-468S_OCT19	Water	Sulfate	SW9056A	mg/L	9.3	1.0	0.50	0.064			
I Range	MW-639S_OCT19	Water	Alkalinity, total	SM2320B	mg/L	7.3	5.0	4.0	0.23			
I Range	MW-639S_OCT19	Water	Antimony	SW6020A	µg/L	0.50	1.0	0.055	0.50	U	ND	3
I Range	MW-639S_OCT19	Water	Calcium	SW6020A	µg/L	2,350	100	21	80			
I Range	MW-639S_OCT19	Water	Chloride	SW9056A	mg/L	9.1	2.0	1.0	0.0993			
I Range	MW-639S_OCT19	Water	Copper	SW6020A	µg/L	0.74	3.0	0.19	2.0	J	TR	650
I Range	MW-639S_OCT19	Water	Lead	SW6020A	µg/L	0.50	1.0	0.075	0.50	U	ND	7.5
I Range	MW-639S_OCT19	Water	Magnesium	SW6020A	µg/L	1810	100	8.0	80			
I Range	MW-639S_OCT19	Water	Potassium	SW6020A	µg/L	628	1,000	31	400	J	TR	
I Range	MW-639S_OCT19	Water	Sodium	SW6020A	µg/L	6,800	1,000	19	400			
I Range	MW-639S_OCT19	Water	Sulfate	SW9056A	mg/L	6.4	1.0	0.50	0.064			
J Range	MW-471S_OCT19	Water	Alkalinity, total	SM2320B	mg/L	12	5.0	4.0	0.23			
J Range	MW-471S_OCT19	Water	Antimony	SW6020A	µg/L	0.089	1.0	0.055	0.50	J	TR	3
J Range	MW-471S_OCT19	Water	Calcium	SW6020A	µg/L	3280	100	21	80			
J Range	MW-471S_OCT19	Water	Chloride	SW9056A	mg/L	6.4	2.0	1.0	0.0993			
J Range	MW-471S_OCT19	Water	Copper	SW6020A	µg/L	1.2	3.0	0.19	2.0	J	TR	650
J Range	MW-471S_OCT19	Water	Lead	SW6020A	µg/L	0.23	1.0	0.075	0.50	J	TR	7.5
J Range	MW-471S_OCT19	Water	Magnesium	SW6020A	µg/L	2240	100	8.0	80			
J Range	MW-471S_OCT19	Water	Potassium	SW6020A	µg/L	770	1,000	31	400	J	TR	
J Range	MW-471S_OCT19	Water	Sodium	SW6020A	µg/L	4,870	1,000	19	400			
J Range	MW-471S_OCT19	Water	Sulfate	SW9056A	mg/L	4.8	1.0	0.50	0.064			
J Range	MW-471S_OCT19 FD	Water	Alkalinity, total	SM2320B	mg/L	12	5.0	4.0	0.23			
J Range	MW-471S_OCT19 FD	Water	Antimony	SW6020A	µg/L	0.08	1.0	0.055	0.50	J	TR	3
J Range	MW-471S_OCT19 FD	Water	Calcium	SW6020A	µg/L	3180	100	21	80			
J Range	MW-471S_OCT19 FD	Water	Chloride	SW9056A	mg/L	6.5	2.0	1.0	0.0993			
J Range	MW-471S_OCT19 FD	Water	Copper	SW6020A	µg/L	0.99	3.0	0.19	2.0	J	TR	650
J Range	MW-471S_OCT19 FD	Water	Lead	SW6020A	µg/L	0.20	1.0	0.075	0.50	J	TR	7.5

CAMP EDWARDS SMALL ARMS RANGE BASELINE GROUNDWATER MONITORING RESULTS OCTOBER 2019

Site List	Field Sample ID	Matrix	Analyte	Analytical Method	Units	Lab Result	LOQ	LOD	DL	Qualifier	Reason	OMMP Action Levels (µg/L)
J Range	MW-471S_OCT19 FD	Water	Magnesium	SW6020A	µg/L	2290	100	8.0	80			
J Range	MW-471S_OCT19 FD	Water	Potassium	SW6020A	µg/L	771	1,000	31	400	J	TR	
J Range	MW-471S_OCT19 FD	Water	Sodium	SW6020A	µg/L	4,850	1,000	19	400			
J Range	MW-471S_OCT19 FD	Water	Sulfate	SW9056A	mg/L	4.9	1.0	0.50	0.064			
J Range	MW-472S_OCT19	Water	Alkalinity, total	SM2320B	mg/L	9.7	5.0	4.0	0.23			
J Range	MW-472S_OCT19	Water	Chloride	SW9056A	mg/L	8.9	2.0	1.0	0.0993			
J Range	MW-472S_OCT19	Water	Magnesium	SW6020A	µg/L	2710	100	8	80			
J Range	MW-472S_OCT19	Water	Potassium	SW6020A	µg/L	688	1,000	31	400	J	TR	
J Range	MW-472S_OCT19	Water	Sodium	SW6020A	µg/L	4,800	1,000	19	400			
J Range	MW-472S_OCT19	Water	Sulfate	SW9056A	mg/L	5.0	1.0	0.50	0.064			
K Range	MW-474S_OCT19	Water	Alkalinity, total	SM2320B	mg/L	9.0	5.0	4.0	0.23			
K Range	MW-474S_OCT19	Water	Antimony	SW6020A	µg/L	0.50	1.0	0.055	0.50	U	ND	3
K Range	MW-474S_OCT19	Water	Calcium	SW6020A	µg/L	2350	100	21	80			
K Range	MW-474S_OCT19	Water	Chloride	SW9056A	mg/L	9.4	2.0	1.0	0.0993			
K Range	MW-474S_OCT19	Water	Copper	SW6020A	µg/L	0.72	3.0	0.19	2.0	J	TR	650
K Range	MW-474S_OCT19	Water	Lead	SW6020A	µg/L	0.50	1.0	0.075	0.50	U	ND	7.5
K Range	MW-474S_OCT19	Water	Magnesium	SW6020A	µg/L	2630	100	8.0	80			
K Range	MW-474S_OCT19	Water	Potassium	SW6020A	µg/L	763	1,000	31	400	J	TR	
K Range	MW-474S_OCT19	Water	Sodium	SW6020A	µg/L	6,910	1,000	19	400			
K Range	MW-474S_OCT19	Water	Sulfate	SW9056A	mg/L	4.4	1.0	0.50	0.064			
S Range	MW-465S_OCT19	Water	Alkalinity, total	SM2320B	mg/L	20	5.0	4.0	0.23			
S Range	MW-465S_OCT19	Water	Antimony	SW6020A	µg/L	0.50	1.0	0.055	0.50	U	ND	3
S Range	MW-465S_OCT19	Water	Calcium	SW6020A	µg/L	5150	100	21	80			
S Range	MW-465S_OCT19	Water	Chloride	SW9056A	mg/L	6.1	2.0	1.0	0.0993			
S Range	MW-465S_OCT19	Water	Copper	SW6020A	µg/L	0.60	3.0	0.19	2.0	J	TR	650
S Range	MW-465S_OCT19	Water	Lead	SW6020A	µg/L	0.20	1.0	0.075	0.50	J	TR	7.5
S Range	MW-465S_OCT19	Water	Magnesium	SW6020A	µg/L	2490	100	8	80			
S Range	MW-465S_OCT19	Water	Potassium	SW6020A	µg/L	678	1,000	31	400	J	TR	
S Range	MW-465S_OCT19	Water	Sodium	SW6020A	µg/L	6,250	1,000	19	400			
S Range	MW-465S_OCT19	Water	Sulfate	SW9056A	mg/L	6.6	1.0	0.50	0.064	J	FD RPD	
S Range	MW-465S_OCT19FD	Water	Alkalinity, total	SM2320B	mg/L	17	5.0	4.0	0.23			
S Range	MW-465S_OCT19FD	Water	Antimony	SW6020A	µg/L	0.089	1.0	0.055	0.50	J	TR	3
S Range	MW-465S_OCT19FD	Water	Calcium	SW6020A	µg/L	5,430	100	21	80			
S Range	MW-465S_OCT19FD	Water	Chloride	SW9056A	mg/L	6.2	2.0	1.0	0.0993			
S Range	MW-465S_OCT19FD	Water	Copper	SW6020A	µg/L	1.2	3.0	0.19	2.0	J	TR	650
S Range	MW-465S_OCT19FD	Water	Lead	SW6020A	µg/L	0.47	1.0	0.075	0.50	J	TR	7.5

CAMP EDWARDS SMALL ARMS RANGE BASELINE GROUNDWATER MONITORING RESULTS OCTOBER 2019

Site List	Field Sample ID	Matrix	Analyte	Analytical Method	Units	Lab Result	LOQ	LOD	DL	Qualifier	Reason	OMMP Action Levels (µg/L)
S Range	MW-465S_OCT19FD	Water	Magnesium	SW6020A	µg/L	2620	100	8	80			
S Range	MW-465S_OCT19FD	Water	Potassium	SW6020A	µg/L	719	1,000	31	400	J	TR	
S Range	MW-465S_OCT19FD	Water	Sodium	SW6020A	µg/L	6,550	1,000	19	400			
S Range	MW-465S_OCT19FD	Water	Sulfate	SW9056A	mg/L	11	1.0	0.50	0.064	J	FD RPD	
S Range	MW-466S_OCT19	Water	Alkalinity, total	SM2320B	mg/L	23	5.0	4.0	0.23			
S Range	MW-466S_OCT19	Water	Antimony	SW6020A	µg/L	0.50	1.0	0.055	0.50	U	ND	3
S Range	MW-466S_OCT19	Water	Calcium	SW6020A	µg/L	5,610	100	21	80			
S Range	MW-466S_OCT19	Water	Chloride	SW9056A	mg/L	7.4	2.0	1.0	0.0993	J	MS%R	
S Range	MW-466S_OCT19	Water	Copper	SW6020A	µg/L	1.4	3.0	0.19	2.0	J	TR	650
S Range	MW-466S_OCT19	Water	Lead	SW6020A	µg/L	0.13	1.0	0.075	0.50	J	TR	7.5
S Range	MW-466S_OCT19	Water	Magnesium	SW6020A	µg/L	2640	100	8	80			
S Range	MW-466S_OCT19	Water	Potassium	SW6020A	µg/L	751	1,000	31	400	J	TR	
S Range	MW-466S_OCT19	Water	Sodium	SW6020A	µg/L	8,300	1,000	19	400			
S Range	MW-466S_OCT19	Water	Sulfate	SW9056A	mg/L	6.3	1.0	0.50	0.064			
T Range	MW-467S_OCT19	Water	Alkalinity, total	SM2320B	mg/L	11	5.0	4.0	0.23			
T Range	MW-467S_OCT19	Water	Antimony	SW6020A	µg/L	0.5	1.0	0.055	0.50	U	ND	3
T Range	MW-467S_OCT19	Water	Calcium	SW6020A	µg/L	7530	100	21	80			
T Range	MW-467S_OCT19	Water	Chloride	SW9056A	mg/L	6.1	2.0	1.0	0.0993			
T Range	MW-467S_OCT19	Water	Copper	SW6020A	µg/L	0.66	3.0	0.19	2.0	J	TR	650
T Range	MW-467S_OCT19	Water	Lead	SW6020A	µg/L	0.5	1.0	0.075	0.50	U	ND	7.5
T Range	MW-467S_OCT19	Water	Magnesium	SW6020A	µg/L	3070	100	8	80			
T Range	MW-467S_OCT19	Water	Potassium	SW6020A	µg/L	703	1,000	31	400	J	TR	
T Range	MW-467S_OCT19	Water	Sodium	SW6020A	µg/L	8,990	1,000	19	400			
T Range	MW-467S_OCT19	Water	Sulfate	SW9056A	mg/L	21	1.0	0.50	0.064			
T Range	MW-467S_OCT19 EB	FIELDQC	Alkalinity, total	SM2320B	mg/L	1.8	5.0	4.0	0.23	J	TR	
T Range	MW-467S_OCT19 EB	Water	Antimony	SW6020A	µg/L	0.096	1.0	0.055	0.50	J	TR	3
T Range	MW-467S_OCT19 EB	Water	Calcium	SW6020A	µg/L	82	100	21	80	J	TR	
T Range	MW-467S_OCT19 EB	FIELDQC	Chloride	SW9056A	mg/L	0.10	2.0	1.0	0.0993	J	TR	
T Range	MW-467S_OCT19 EB	Water	Copper	SW6020A	µg/L	0.94	3.0	0.19	2.0	J	TR	650
T Range	MW-467S_OCT19 EB	Water	Lead	SW6020A	µg/L	0.15	1.0	0.075	0.50	J	TR	7.5
T Range	MW-467S_OCT19 EB	Water	Magnesium	SW6020A	µg/L	22	100	8.0	80	J	TR	
T Range	MW-467S_OCT19 EB	Water	Potassium	SW6020A	µg/L	48	1,000	31	400	J	TR	
T Range	MW-467S_OCT19 EB	Water	Sodium	SW6020A	µg/L	249	1,000	19	400	J	TR	
T Range	MW-467S_OCT19 EB	FIELDQC	Sulfate	SW9056A	mg/L	0.50	1.0	0.50	0.064	U	ND	

Notes:

µg/L = microgram(s) per liter ND = nondetectable

CAMP EDWARDS SMALL ARMS RANGE BASELINE GROUNDWATER MONITORING RESULTS OCTOBER 2019

Site List	Field Sample ID	Matrix	Analyte	Analytical Method	Units	Lab Result	LOQ	LOD	DL	Qualifier	Reason	OMMP Action Levels (µg/L)
DL = detection limit			LOQ = limit of quantitation									
ID = identifier			TR = trace result (<LOQ and >DL)									
J = estimated value			U = not detected									

Small Arms Range Sampling Reports

Groundwater Sampling Results

Spring 2020

Groundwater Sample Results Spring 2020

Field Sample ID	Matrix	Sample Type	Analyte	Analytical Method	Extraction Method	Lab Result	MDL	LOD	LOQ	Units	OMMP Action Level (mg/L)	Dilution Factor	Qualifier	Reason
MW-465S_APR20	GW	N	Alkalinity, total	SM2320B	Total	20	5.0	5.0	5.0	mg/L		1		
MW-465S_APR20	GW	N	Antimony	SW6020A	Dissolved	4.0	2.0	4.0	5.0	µg/L	3	2	U	ND
MW-465S_APR20	GW	N	Calcium	SW6020A	Dissolved	5,000	96	180	200	µg/L		2		
MW-465S_APR20	GW	N	Chloride	SW9056A	Total	6.0	0.12	0.30	0.40	mg/L		2		
MW-465S_APR20	GW	N	Copper	SW6020A	Dissolved	2.5	1.9	2.5	3.0	µg/L	650	2	U	ND
MW-465S_APR20	GW	N	Iron	SW6020A	Dissolved	24	20	40	50	µg/L		2	J	TR
MW-465S_APR20	GW	N	Lead	SW6020A	Dissolved	2.0	1.0	2.0	3.0	µg/L	7.5	2	U	ND
MW-465S_APR20	GW	N	Magnesium	SW6020A	Dissolved	2,500	20	40	50	µg/L		2		
MW-465S_APR20	GW	N	Phosphorus, total	E365.4	Total	2.6	0.82	1.1	2.0	mg/L		1		
MW-465S_APR20	GW	N	Potassium	SW6020A	Dissolved	690	45	90	100	µg/L		2		
MW-465S_APR20	GW	N	Sodium	SW6020A	Dissolved	6,500	50	90	100	µg/L		2		
MW-465S_APR20	GW	N	Sulfate	SW9056A	Total	6.3	0.10	0.30	1.0	mg/L		2		
MW-465S_APR20	GW	N	Total Carbon	E415.1	Dissolved	0.50	0.50	0.50	1.0	mg/L		1	U	ND
MW-465S_APR20 FD	GW	FD	Alkalinity, total	SM2320B	Total	21	5.0	5.0	5.0	mg/L		1		
MW-465S_APR20 FD	GW	FD	Antimony	SW6020A	Dissolved	4.0	2.0	4.0	5.0	µg/L	3	2	U	ND
MW-465S_APR20 FD	GW	FD	Calcium	SW6020A	Dissolved	4,900	96	180	200	µg/L		2		
MW-465S_APR20 FD	GW	FD	Chloride	SW9056A	Total	6.0	0.12	0.30	0.40	mg/L		2		
MW-465S_APR20 FD	GW	FD	Copper	SW6020A	Dissolved	2.5	1.9	2.5	3.0	µg/L	650	2	U	ND
MW-465S_APR20 FD	GW	FD	Iron	SW6020A	Dissolved	40	20	40	50	µg/L		2	U	ND
MW-465S_APR20 FD	GW	FD	Lead	SW6020A	Dissolved	2.0	1.0	2.0	3.0	µg/L	7.5	2	U	ND
MW-465S_APR20 FD	GW	FD	Magnesium	SW6020A	Dissolved	2,400	20	40	50	µg/L		2		
MW-465S_APR20 FD	GW	FD	Phosphorus, total	E365.4	Total	1.6	0.82	1.1	2.0	mg/L		1	J	TR
MW-465S_APR20 FD	GW	FD	Potassium	SW6020A	Dissolved	620	45	90	100	µg/L		2		
MW-465S_APR20 FD	GW	FD	Sodium	SW6020A	Dissolved	6,100	50	90	100	µg/L		2		
MW-465S_APR20 FD	GW	FD	Sulfate	SW9056A	Total	6.3	0.10	0.30	1.0	mg/L		2		
MW-465S_APR20 FD	GW	FD	Total Carbon	E415.1	Dissolved	0.50	0.50	0.50	1.0	mg/L		1	U	ND
MW-466S_APR20	GW	N	Alkalinity, total	SM2320B	Total	28	5.0	5.0	5.0	mg/L		1		
MW-466S_APR20	GW	N	Antimony	SW6020A	Dissolved	4.0	2.0	4.0	5.0	µg/L	3	2	U	ND
MW-466S_APR20	GW	N	Calcium	SW6020A	Dissolved	6,300	96	180	200	µg/L		2		
MW-466S_APR20	GW	N	Chloride	SW9056A	Total	7.5	0.12	0.30	0.40	mg/L		2		
MW-466S_APR20	GW	N	Copper	SW6020A	Dissolved	8.6	1.9	2.5	3.0	µg/L	650	2		
MW-466S_APR20	GW	N	Iron	SW6020A	Dissolved	30	20	40	50	µg/L		2	J	TR
MW-466S_APR20	GW	N	Lead	SW6020A	Dissolved	2.0	1.0	2.0	3.0	µg/L	7.5	2	U	ND
MW-466S_APR20	GW	N	Magnesium	SW6020A	Dissolved	2,900	20	40	50	µg/L		2		
MW-466S_APR20	GW	N	Phosphorus, total	E365.4	Total	1.5	0.82	1.1	2.0	mg/L		1	J	TR
MW-466S_APR20	GW	N	Potassium	SW6020A	Dissolved	740	45	90	100	µg/L		2		
MW-466S_APR20	GW	N	Sodium	SW6020A	Dissolved	8,200	50	90	100	µg/L		2		
MW-466S_APR20	GW	N	Sulfate	SW9056A	Total	6.0	0.10	0.30	1.0	mg/L		2		
MW-466S_APR20	GW	N	Total Carbon	E415.1	Dissolved	0.50	0.50	0.50	1.0	mg/L		1	U	ND
MW-467S_APR20	GW	N	Alkalinity, total	SM2320B	Total	16	5.0	5.0	5.0	mg/L		1		
MW-467S_APR20	GW	N	Antimony	SW6020A	Dissolved	4.0	2.0	4.0	5.0	µg/L	3	2	U	ND

Groundwater Sample Results Spring 2020

Field Sample ID	Matrix	Sample Type	Analyte	Analytical Method	Extraction Method	Lab Result	MDL	LOD	LOQ	Units	OMMP Action Level (mg/L)	Dilution Factor	Qualifier	Reason
MW-467S_APR20	GW	N	Calcium	SW6020A	Dissolved	5,900	96	180	200	µg/L		2		
MW-467S_APR20	GW	N	Chloride	SW9056A	Total	6.2	0.12	0.30	0.40	mg/L		2		
MW-467S_APR20	GW	N	Copper	SW6020A	Dissolved	2.5	1.9	2.5	3.0	µg/L	650	2	U	ND
MW-467S_APR20	GW	N	Iron	SW6020A	Dissolved	40	20	40	50	µg/L		2	U	ND
MW-467S_APR20	GW	N	Lead	SW6020A	Dissolved	2.0	1.0	2.0	3.0	µg/L	7.5	2	U	ND
MW-467S_APR20	GW	N	Magnesium	SW6020A	Dissolved	2,500	20	40	50	µg/L		2		
MW-467S_APR20	GW	N	Phosphorus, total	E365.4	Total	1.2	0.82	1.1	2.0	mg/L		1	J	TR
MW-467S_APR20	GW	N	Potassium	SW6020A	Dissolved	620	45	90	100	µg/L		2		
MW-467S_APR20	GW	N	Sodium	SW6020A	Dissolved	8,200	50	90	100	µg/L		2		
MW-467S_APR20	GW	N	Sulfate	SW9056A	Total	9.6	0.10	0.30	1.0	mg/L		2		
MW-467S_APR20	GW	N	Total Carbon	E415.1	Dissolved	0.50	0.50	0.50	1.0	mg/L		1	U	ND
MW-467S_APR20 EB	FIELDQC	EB	Alkalinity, total	SM2320B	Total	5.0	5.0	5.0	5.0	mg/L		1	U	ND
MW-467S_APR20 EB	FIELDQC	EB	Antimony	SW6020A	Dissolved	4.0	2.0	4.0	5.0	µg/L	3	2	U	ND
MW-467S_APR20 EB	FIELDQC	EB	Calcium	SW6020A	Dissolved	180	96	180	200	µg/L		2	J	TR
MW-467S_APR20 EB	FIELDQC	EB	Chloride	SW9056A	Total	0.15	0.060	0.15	0.20	mg/L		1	U	ND
MW-467S_APR20 EB	FIELDQC	EB	Copper	SW6020A	Dissolved	2.5	1.9	2.5	3.0	µg/L	650	2	U	ND
MW-467S_APR20 EB	FIELDQC	EB	Iron	SW6020A	Dissolved	40	20	40	50	µg/L		2	U	ND
MW-467S_APR20 EB	FIELDQC	EB	Lead	SW6020A	Dissolved	2.0	1.0	2.0	3.0	µg/L	7.5	2	U	ND
MW-467S_APR20 EB	FIELDQC	EB	Magnesium	SW6020A	Dissolved	40	20	40	50	µg/L		2	U	ND
MW-467S_APR20 EB	FIELDQC	EB	Phosphorus, total	E365.4	Total	1.4	0.82	1.1	2.0	mg/L		1	J	TR
MW-467S_APR20 EB	FIELDQC	EB	Potassium	SW6020A	Dissolved	90	45	90	100	µg/L		2	U	ND
MW-467S_APR20 EB	FIELDQC	EB	Sodium	SW6020A	Dissolved	3,200	50	90	100	µg/L		2		
MW-467S_APR20 EB	FIELDQC	EB	Sulfate	SW9056A	Total	0.15	0.050	0.15	0.50	mg/L		1	U	ND
MW-468S_APR20	GW	N	Alkalinity, total	SM2320B	Total	7.9	5.0	5.0	5.0	mg/L		1		
MW-468S_APR20	GW	N	Antimony	SW6020A	Dissolved	4.0	2.0	4.0	5.0	µg/L	3	2	U	ND
MW-468S_APR20	GW	N	Calcium	SW6020A	Dissolved	3,100	96	180	200	µg/L		2		
MW-468S_APR20	GW	N	Chloride	SW9056A	Total	10	0.60	1.5	2.0	mg/L		10		
MW-468S_APR20	GW	N	Copper	SW6020A	Dissolved	2.5	1.9	2.5	3.0	µg/L	650	2	U	ND
MW-468S_APR20	GW	N	Iron	SW6020A	Dissolved	40	20	40	50	µg/L		2	U	ND
MW-468S_APR20	GW	N	Lead	SW6020A	Dissolved	2.0	1.0	2.0	3.0	µg/L	7.5	2	U	ND
MW-468S_APR20	GW	N	Magnesium	SW6020A	Dissolved	2,100	20	40	50	µg/L		2		
MW-468S_APR20	GW	N	Phosphorus, total	E365.4	Total	1.6	0.82	1.1	2.0	mg/L		1	J	TR
MW-468S_APR20	GW	N	Potassium	SW6020A	Dissolved	820	45	90	100	µg/L		2		
MW-468S_APR20	GW	N	Sodium	SW6020A	Dissolved	7,500	50	90	100	µg/L		2		
MW-468S_APR20	GW	N	Sulfate	SW9056A	Total	6.6	0.10	0.30	1.0	mg/L		2		
MW-468S_APR20	GW	N	Total Carbon	E415.1	Dissolved	0.50	0.50	0.50	1.0	mg/L		1	U	ND
MW-471S_APR20	GW	N	Alkalinity, total	SM2320B	Total	9.5	5.0	5.0	5.0	mg/L		1		
MW-471S_APR20	GW	N	Antimony	SW6020A	Dissolved	4.0	2.0	4.0	5.0	µg/L	3	2	U	ND
MW-471S_APR20	GW	N	Calcium	SW6020A	Dissolved	2,900	96	180	200	µg/L		2		
MW-471S_APR20	GW	N	Chloride	SW9056A	Total	6.4	0.12	0.30	0.40	mg/L		2		

Groundwater Sample Results Spring 2020

Field Sample ID	Matrix	Sample Type	Analyte	Analytical Method	Extraction Method	Lab Result	MDL	LOD	LOQ	Units	OMMP Action Level (mg/L)	Dilution Factor	Qualifier	Reason
MW-471S_APR20	GW	N	Copper	SW6020A	Dissolved	2.5	1.9	2.5	3.0	µg/L	650	2	U	ND
MW-471S_APR20	GW	N	Iron	SW6020A	Dissolved	40	20	40	50	µg/L		2	U	ND
MW-471S_APR20	GW	N	Lead	SW6020A	Dissolved	2.0	1.0	2.0	3.0	µg/L	7.5	2	U	ND
MW-471S_APR20	GW	N	Magnesium	SW6020A	Dissolved	2,100	20	40	50	µg/L		2		
MW-471S_APR20	GW	N	Phosphorus, total	E365.4	Total	8.6	0.82	1.1	2.0	mg/L		1	J	D
MW-471S_APR20	GW	N	Potassium	SW6020A	Dissolved	700	45	90	100	µg/L		2		
MW-471S_APR20	GW	N	Sodium	SW6020A	Dissolved	5,500	50	90	100	µg/L		2		
MW-471S_APR20	GW	N	Sulfate	SW9056A	Total	6.5	0.10	0.30	1.0	mg/L		2		
MW-471S_APR20	GW	N	Total Carbon	E415.1	Dissolved	0.51	0.50	0.50	1.0	mg/L		1	J	TR
MW-471S_APR20 FD	GW	FD	Alkalinity, total	SM2320B	Total	9.9	5.0	5.0	5.0	mg/L		1		
MW-471S_APR20 FD	GW	FD	Antimony	SW6020A	Dissolved	4.0	2.0	4.0	5.0	µg/L	3	2	U	ND
MW-471S_APR20 FD	GW	FD	Calcium	SW6020A	Dissolved	2,800	96	180	200	µg/L		2		
MW-471S_APR20 FD	GW	FD	Chloride	SW9056A	Total	6.6	0.12	0.30	0.40	mg/L		2		
MW-471S_APR20 FD	GW	FD	Copper	SW6020A	Dissolved	2.5	1.9	2.5	3.0	µg/L	650	2	U	ND
MW-471S_APR20 FD	GW	FD	Iron	SW6020A	Dissolved	42	20	40	50	µg/L		2	J	TR
MW-471S_APR20 FD	GW	FD	Lead	SW6020A	Dissolved	2.0	1.0	2.0	3.0	µg/L	7.5	2	U	ND
MW-471S_APR20 FD	GW	FD	Magnesium	SW6020A	Dissolved	2,100	20	40	50	µg/L		2		
MW-471S_APR20 FD	GW	FD	Phosphorus, total	E365.4	Total	4.7	0.82	1.1	2.0	mg/L		1	J	D
MW-471S_APR20 FD	GW	FD	Potassium	SW6020A	Dissolved	750	45	90	100	µg/L		2		
MW-471S_APR20 FD	GW	FD	Sodium	SW6020A	Dissolved	5,700	50	90	100	µg/L		2		
MW-471S_APR20 FD	GW	FD	Sulfate	SW9056A	Total	5.5	0.10	0.30	1.0	mg/L		2		
MW-471S_APR20 FD	GW	FD	Total Carbon	E415.1	Dissolved	0.51	0.50	0.50	1.0	mg/L		1	J	TR
MW-472S_APR20	GW	N	Alkalinity, total	SM2320B	Total	9.1	5.0	5.0	5.0	mg/L		1		
MW-472S_APR20	GW	N	Antimony	SW6020A	Dissolved	4.0	2.0	4.0	5.0	µg/L	3	2	U	ND
MW-472S_APR20	GW	N	Calcium	SW6020A	Dissolved	2,700	96	180	200	µg/L		2		
MW-472S_APR20	GW	N	Chloride	SW9056A	Total	8.3	0.12	0.30	0.40	mg/L		2		
MW-472S_APR20	GW	N	Copper	SW6020A	Dissolved	2.5	1.9	2.5	3.0	µg/L	650	2	U	ND
MW-472S_APR20	GW	N	Iron	SW6020A	Dissolved	40	20	40	50	µg/L		2	U	ND
MW-472S_APR20	GW	N	Lead	SW6020A	Dissolved	2.0	1.0	2.0	3.0	µg/L	7.5	2	U	ND
MW-472S_APR20	GW	N	Magnesium	SW6020A	Dissolved	2,800	20	40	50	µg/L		2		
MW-472S_APR20	GW	N	Phosphorus, total	E365.4	Total	6.7	0.82	1.1	2.0	mg/L		1		
MW-472S_APR20	GW	N	Potassium	SW6020A	Dissolved	690	45	90	100	µg/L		2		
MW-472S_APR20	GW	N	Sodium	SW6020A	Dissolved	4,800	50	90	100	µg/L		2		
MW-472S_APR20	GW	N	Sulfate	SW9056A	Total	5.4	0.10	0.30	1.0	mg/L		2		
MW-472S_APR20	GW	N	Total Carbon	E415.1	Dissolved	0.50	0.50	0.50	1.0	mg/L		1	U	ND
MW-474S_APR20	GW	N	Alkalinity, total	SM2320B	Total	7.2	5.0	5.0	5.0	mg/L		1		
MW-474S_APR20	GW	N	Antimony	SW6020A	Dissolved	4.0	2.0	4.0	5.0	µg/L	3	2	U	ND
MW-474S_APR20	GW	N	Calcium	SW6020A	Dissolved	2,400	96	180	200	µg/L		2		
MW-474S_APR20	GW	N	Chloride	SW9056A	Total	8.6	0.12	0.30	0.40	mg/L		2		
MW-474S_APR20	GW	N	Copper	SW6020A	Dissolved	2.5	1.9	2.5	3.0	µg/L	650	2	U	ND

Groundwater Sample Results Spring 2020

Field Sample ID	Matrix	Sample Type	Analyte	Analytical Method	Extraction Method	Lab Result	MDL	LOD	LOQ	Units	OMMP Action Level (mg/L)	Dilution Factor	Qualifier	Reason
MW-474S_APR20	GW	N	Iron	SW6020A	Dissolved	40	20	40	50	µg/L		2	U	ND
MW-474S_APR20	GW	N	Lead	SW6020A	Dissolved	2.0	1.0	2.0	3.0	µg/L	7.5	2	U	ND
MW-474S_APR20	GW	N	Magnesium	SW6020A	Dissolved	2,400	20	40	50	µg/L		2		
MW-474S_APR20	GW	N	Phosphorus, total	E365.4	Total	2.4	0.82	1.1	2.0	mg/L		1		
MW-474S_APR20	GW	N	Potassium	SW6020A	Dissolved	740	45	90	100	µg/L		2		
MW-474S_APR20	GW	N	Sodium	SW6020A	Dissolved	6,600	50	90	100	µg/L		2		
MW-474S_APR20	GW	N	Sulfate	SW9056A	Total	4.6	0.10	0.30	1.0	mg/L		2		
MW-474S_APR20	GW	N	Total Carbon	E415.1	Dissolved	0.50	0.50	0.50	1.0	mg/L		1	U	ND
MW-639S_APR20	GW	N	Alkalinity, total	SM2320B	Total	6.1	5.0	5.0	5.0	mg/L		1		
MW-639S_APR20	GW	N	Antimony	SW6020A	Dissolved	4.0	2.0	4.0	5.0	µg/L	3	2	U	ND
MW-639S_APR20	GW	N	Calcium	SW6020A	Dissolved	2,200	96	180	200	µg/L		2		
MW-639S_APR20	GW	N	Chloride	SW9056A	Total	9.6	0.12	0.30	0.40	mg/L		2		
MW-639S_APR20	GW	N	Copper	SW6020A	Dissolved	2.5	1.9	2.5	3.0	µg/L	650	2	U	ND
MW-639S_APR20	GW	N	Iron	SW6020A	Dissolved	85	20	40	50	µg/L		2		
MW-639S_APR20	GW	N	Lead	SW6020A	Dissolved	2.0	1.0	2.0	3.0	µg/L	7.5	2	U	ND
MW-639S_APR20	GW	N	Magnesium	SW6020A	Dissolved	1,700	20	40	50	µg/L		2		
MW-639S_APR20	GW	N	Phosphorus, total	E365.4	Total	1.3	0.82	1.1	2.0	mg/L		1	J	TR
MW-639S_APR20	GW	N	Potassium	SW6020A	Dissolved	600	45	90	100	µg/L		2		
MW-639S_APR20	GW	N	Sodium	SW6020A	Dissolved	6,700	50	90	100	µg/L		2		
MW-639S_APR20	GW	N	Sulfate	SW9056A	Total	6.1	0.10	0.30	1.0	mg/L		2		
MW-639S_APR20	GW	N	Total Carbon	E415.1	Dissolved	0.50	0.50	0.50	1.0	mg/L		1	U	ND

Notes:

µg/L = microgram(s) per liter MDL = method detection limit LOQ = limit of quantitation
D = replicate and parent sam mg/L = milligram(s) per liter LOD = limit of detection
ID = identifier N = normal (primary) sample TR = trace result (<LOQ and >MDL)
J = estimated value ND = nondetectable U = not detected

Small Arms Range Sampling Reports

XRF Results

Fall 2019 and Spring 2020

Camp Edwards Small Arms Range XRF Results Fall 2019

Site/SLX List	Location ID	Date Sampled	Time Sampled	Test Method	Analyte	Result Value (ppm)	OMMP Action Levels (mg/kg)
Sierra Range	50 m backstop, Lane 4	10/07/2019	1442	XRF	Copper	62	10,000
Sierra Range	50 m backstop, Lane 4	10/07/2019	1442	XRF	Copper	65	10,000
Sierra Range	50 m backstop, Lane 4	10/07/2019	1442	XRF	Copper	58	10,000
Sierra Range	100 m backstop, Lane 6	10/07/2019	1500	XRF	Copper	316	10,000
Sierra Range	100 m backstop, Lane 6	10/07/2019	1500	XRF	Copper	319	10,000
Sierra Range	100 m backstop, Lane 6	10/07/2019	1500	XRF	Copper	317	10,000
Sierra Range	320 m backstop, Lane 4	10/07/2019	1521	XRF	Copper	23	10,000
Sierra Range	320 m backstop, Lane 4	10/07/2019	1521	XRF	Copper	25	10,000
Sierra Range	320 m backstop, Lane 4	10/07/2019	1521	XRF	Copper	20	10,000

Notes:
m = meter
ppm = parts per million
XRF = X-ray Fluorescence

Camp Edwards Small Arms Range XRF Results Spring 2020

Site/SLX List	Location ID	Date Sampled	Time Sampled	Test Method	Analyte	Result Value (ppm)	OMMP Action Levels (mg/kg)
Sierra Range	50 m backstop, Lane 4	04/08/2020	1315	XRF	Copper	62	10,000
Sierra Range	50 m backstop, Lane 4	04/08/2020	1315	XRF	Copper	65	10,000
Sierra Range	50 m backstop, Lane 4	04/08/2020	1314	XRF	Copper	58	10,000
Sierra Range	100 m backstop, Lane 6	04/08/2020	1330	XRF	Copper	316	10,000
Sierra Range	100 m backstop, Lane 6	04/08/2020	1330	XRF	Copper	319	10,000
Sierra Range	100 m backstop, Lane 6	04/08/2020	1330	XRF	Copper	317	10,000
Sierra Range	320 m backstop, Lane 4	04/08/2020	1345	XRF	Copper	23	10,000
Sierra Range	320 m backstop, Lane 4	04/08/2020	1345	XRF	Copper	25	10,000
Sierra Range	320 m backstop, Lane 4	04/08/2020	1345	XRF	Copper	20	10,000

Notes:
m = meter
ppm = parts per million
XRF = X-ray Fluorescence

Soldier Validation Lane Annual Report

Camp Edwards --- Massachusetts Army National Guard

Soldier Validation Lane Annual Monitoring Report

February, 2021

(NHESP Tracking No.: 08-24210)

Soldier Validation Lane Use

Five containers were moved out of soldier validation lanes (SVL) and placed in battle positions (BP) in 2020. All container movements were performed in accordance with the Container Placement Checklist in Appendix B of the MESA review application. BP will be treated as SVL so long as containers remain on site, though their names will not change. All maneuver activities associated with the sites were limited to established roads, road shoulders, and roadways within power line right of ways.

SVL Assessments after 2020 Training Season

All sites with containers were visited in February 2021 to evaluate training impacts during the 2020 training season. The assessment methodology matched the assessment performed in the Baseline Condition Assessment Report and FYs 12-19, to provide a means of comparison. The containers replicate buildings, and prop materials are utilized to create a more realistic setting, such as barrels, bicycles, grills, tires, wall sections, etc. SVL-1 and SVL-3 had no major changes for 2020. SVL-6 had no major changes, but the surrounding area was mechanically thinned during the fall. SVL-4 had pitch pine regen cut back (Fig. 1) and five containers removed. The remaining containers at SVL-21 pre-date military use of the site, and all military containers were removed prior to the 2019 training season. This site will no longer be monitored, barring future installation of containers.

The first new site, BP-24, was rehabbed over the last two years. The area was cleared of pine, graded, reseeded with cool and warm-season grasses, and had two containers placed there (Fig. 2 & 3). There were minimal tire tracks and no rutting, some boulders throughout the site that would affect helicopter maneuvers, a pile of gravel and a brush pile. The second new site, BP-20, had two containers placed into the rear west corner (Fig. 4). There were minor tire tracks and minimal erosion (Fig. 5), a small island of pitch pine and shrubs, and cool and warm-season grasses throughout. The third new site, BP-12, had minor ruts from vehicles and dirt bikes (Fig. 6 & 7), pitch pine saplings growing densely on one half of the site, and one container.

Conclusion

All regulatory conditions were followed during use of the SVL and BP for training. Most erosion and rutting impacts have remained static on the lanes as expected with regular levels of vehicle use and regular stormwater runoff on dirt roads. Based on a renewed LRAM emphasis on managing pitch pine before it can choke out training areas, all SVL and BP will be prioritized for removing juvenile pitch pine encroaching on training assets. The MAARNG will continue to strive to minimize environmental impacts from these lanes by following the established guidelines.

Figure 1: View of pitch pine regen cut back on the edges of SVL-4. Bare patches left from removed containers.

Figure 2: Containers and gravel pile viewed from the northerly entrance of BP-24.

Figure 3: View of southern and western corners of BP-24, with minor tire tracks.

Figure 4: View of containers and minor tire tracks at BP-20.

Figure 5: Minor erosion occurring where the gravel road ends at BP-20.

Figure 6: View of BP-12.

Figure 7: Tire tracks at BP-12.

Joint Base Cape Cod - Soldier Validation Lane
Post Assessment of Container Locations

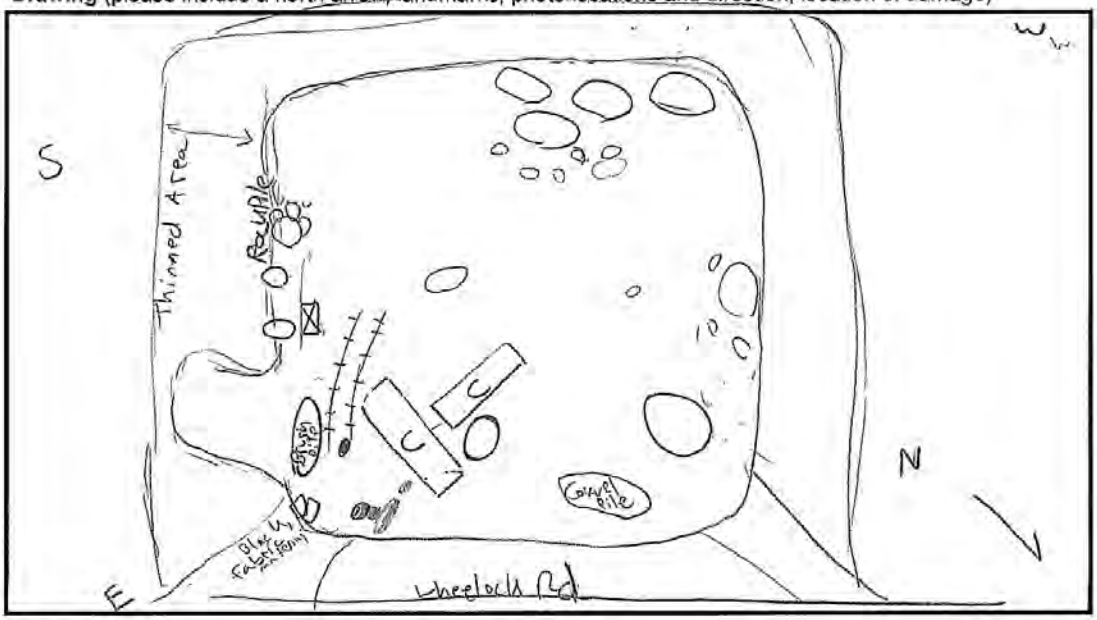
Site BP24 Assessors RL, NM Date 2/5/2021

Damage		Description
	Tree scarring	Newly rehabbed sites. Tire tracks, but not cutting.
X	Standing deadwood	
	Felled trees	
X	Brush piles	One snow fence piece along southern edge. Also rolls of black material.
	Erosion	
	Ditching/rutting	Very minor tire tracks visible near entrance
X	Trash	
	Spills	Gravel Pile by entrance, & a large boulder. Boulder by conexes.
X	Material piles	Brush/Dirt Pile by entrance (South), along southern border
	Other	is a rockpile and a few notable boulders.
		Back Western corner numerous large boulders and rocks.

Percent Cover		Dominant Species
10	Trees	PPOF
10	Shrubs	scrub oak
75	Herbaceous	Grasses
5	Bare	Sandy dirt, some visible rocks

Any improvements made for training?
Within past 2 years, cleared of pines, graded and reseeded with hardy cool grasses.

Drawing (please include a north arrow, landmarks, photo locations and direction, location of damage)



Snow fencing. Rocks & Boulders
Puddles Rutting/Tire tracks
C Containers/Conex

Joint Base Cape Cod - Soldier Validation Lane
Post Assessment of Container Locations

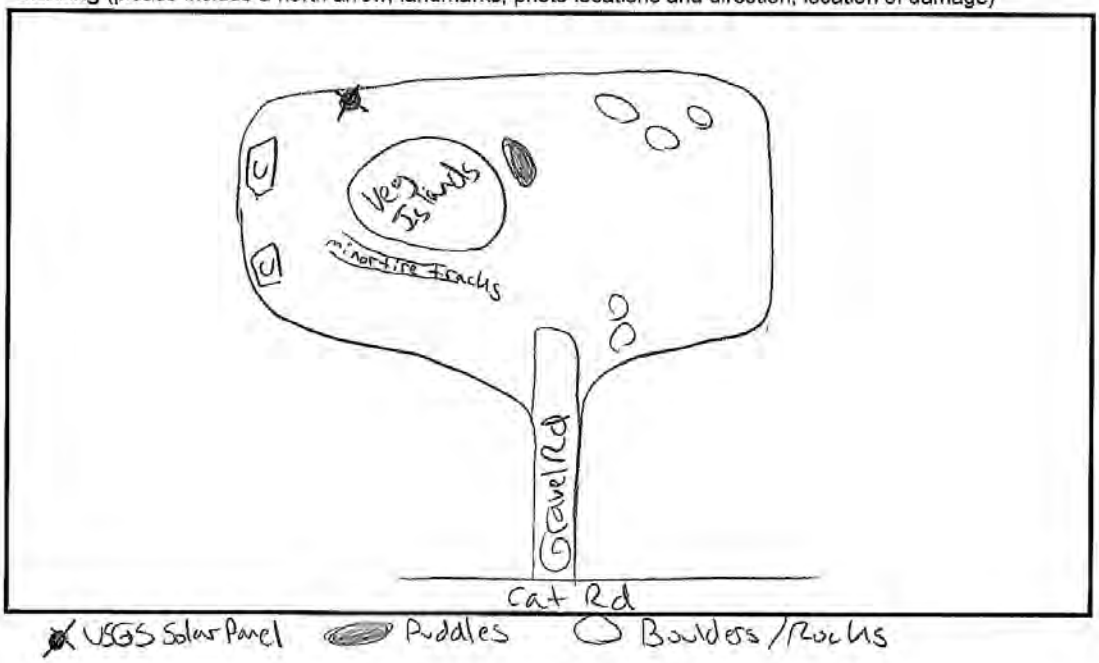
Site BP20 Assessors NM Date 2/5/2021

Damage		Description
	Tree scarring	
	Standing deadwood	
	Felled trees	
	Brush piles	
X	Erosion	In center of unit, past gravel road, open area with minor erosion.
	Ditching/rutting	
	Trash	
	Spills	
	Material piles	
	Other	

Percent Cover		Dominant Species
10	Trees	Pitch Pine
5	Shrubs	Scrub oak
50	Herbaceous	Grasses
35	Bare	Bare Dirt / sand

Any improvements made for training?

Drawing (please include a north arrow, landmarks, photo locations and direction, location of damage)



Joint Base Cape Cod - Soldier Validation Lane
Post Assessment of Container Locations

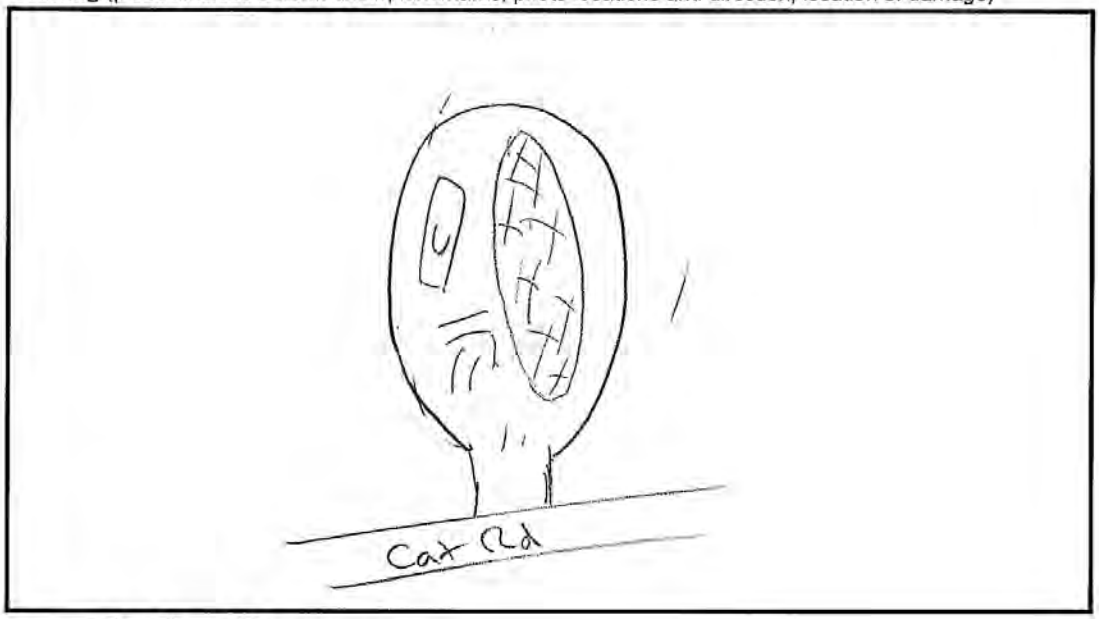
Site BP12 Assessors NM Date 2/5/2021

Damage		Description
____	Tree scarring	
____	Standing deadwood	
____	Felled trees	
____	Brush piles	
____	Erosion	
X	Ditching/rutting	Minor ruts from vehicles
____	Trash	
____	Spills	
____	Material piles	
____	Other	

Percent Cover		Dominant Species
____	Trees	
40	Shrubs	Pitch Pine regen
20	Herbaceous	
40	Bare	

Any improvements made for training?

Drawing (please include a north arrow, landmarks, photo locations and direction, location of damage)



XXX Pitch Pine regen

Tire ruts

Joint Base Cape Cod - Soldier Validation Lane
Post Assessment of Container Locations

Site SVL1 Assessors N. Madden Date 2/5/2021

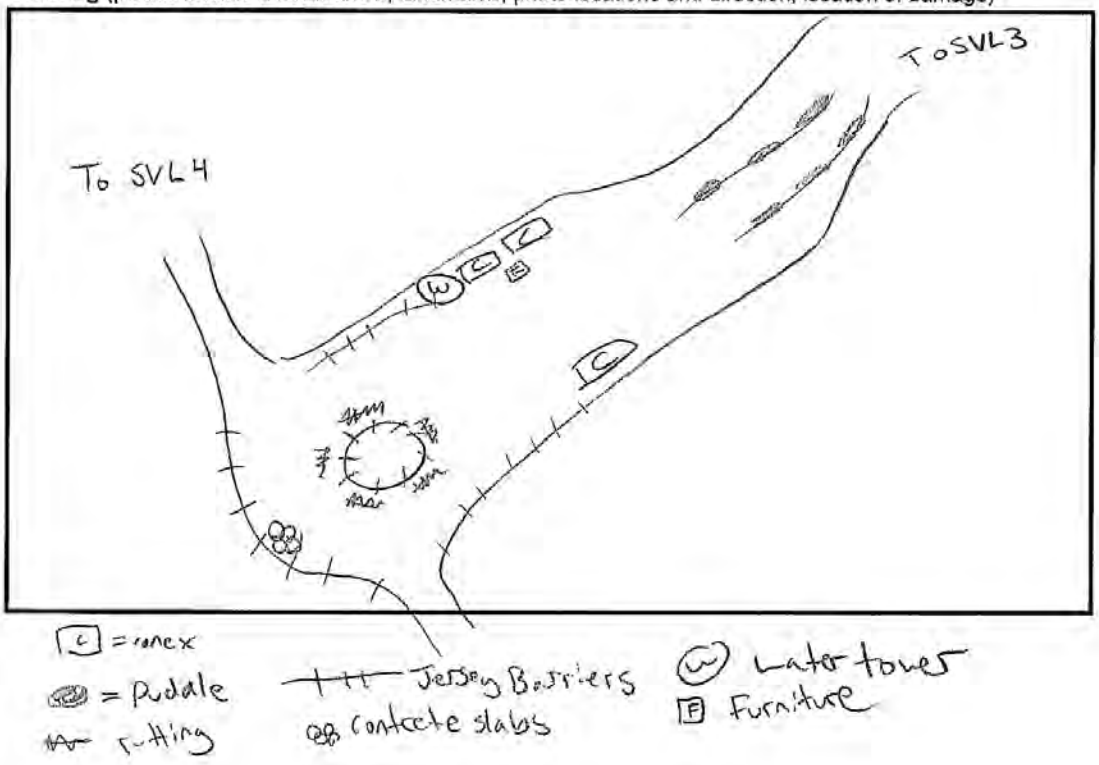
Damage		Description
	Tree scarring	
	Standing deadwood	
	Felled trees	
	Brush piles	
	Erosion	
X	Ditching/rutting	Some on way to SVL 3
	Trash	
	Spills	
X	Material piles	Small pile of concrete slabs at rotary
	Other	

Percent Cover		Dominant Species
0	Trees	surrounded by PPDF, no trees within SVL boundary
5	Shrubs	
5	Herbaceous	grasses
90	Bare	sand & dirt

Any improvements made for training?

Seems same as 2019 visit.

Drawing (please include a north arrow, landmarks, photo locations and direction, location of damage)



Joint Base Cape Cod - Soldier Validation Lane
Post Assessment of Container Locations

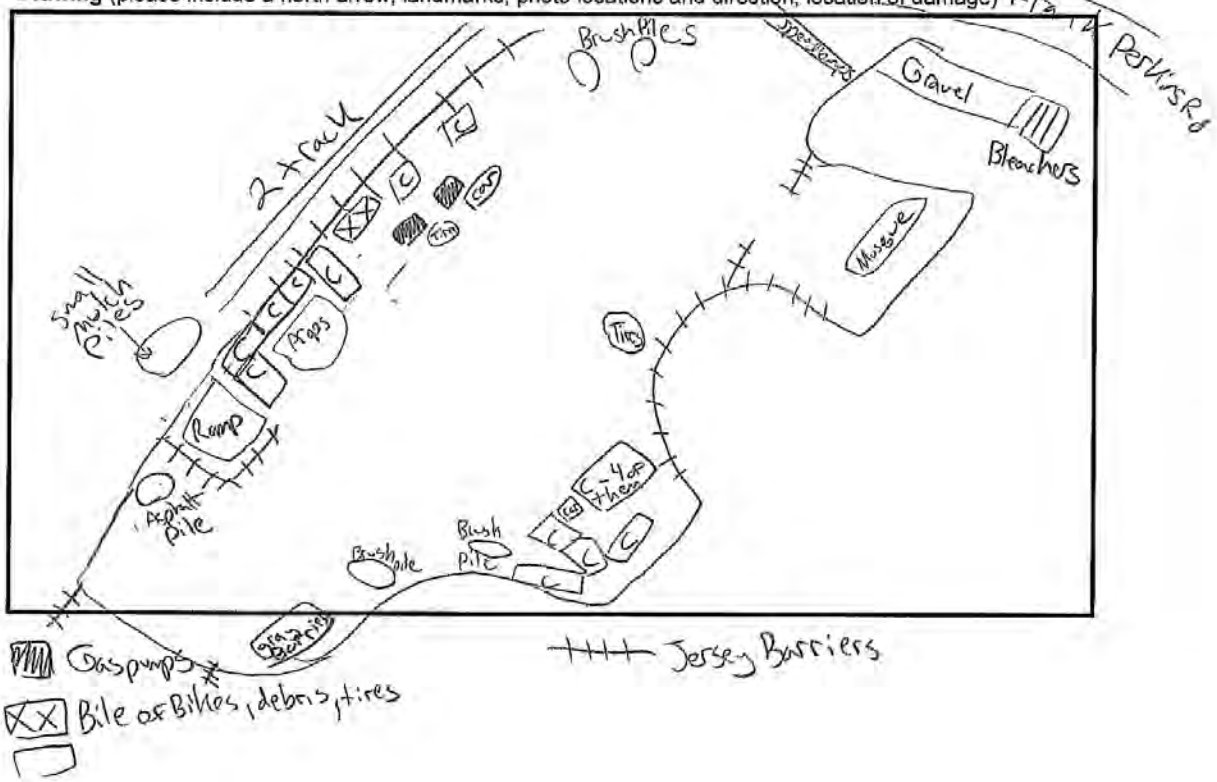
Site SVL3 Assessors NM Date 2/5/2021

Damage		Description
____	Tree scarring	
____	Standing deadwood	
____	Felled trees	
X	Brush piles	Pitch Pine piles.
____	Erosion	
____	Ditching/rutting	
X	Trash	Bikes, metal, wood.
____	Spills	
X	Material piles	asphalt
____	Other	

Percent Cover		Dominant Species
—	Trees	
—	Shrubs	
—	Herbaceous	Some grass growing through cracks.
100	Bare	

Any improvements made for training?
Doesn't seem like much has changed since 2019 survey.

Drawing (please include a north arrow, landmarks, photo locations and direction, location of damage)



Joint Base Cape Cod - Soldier Validation Lane
Post Assessment of Container Locations

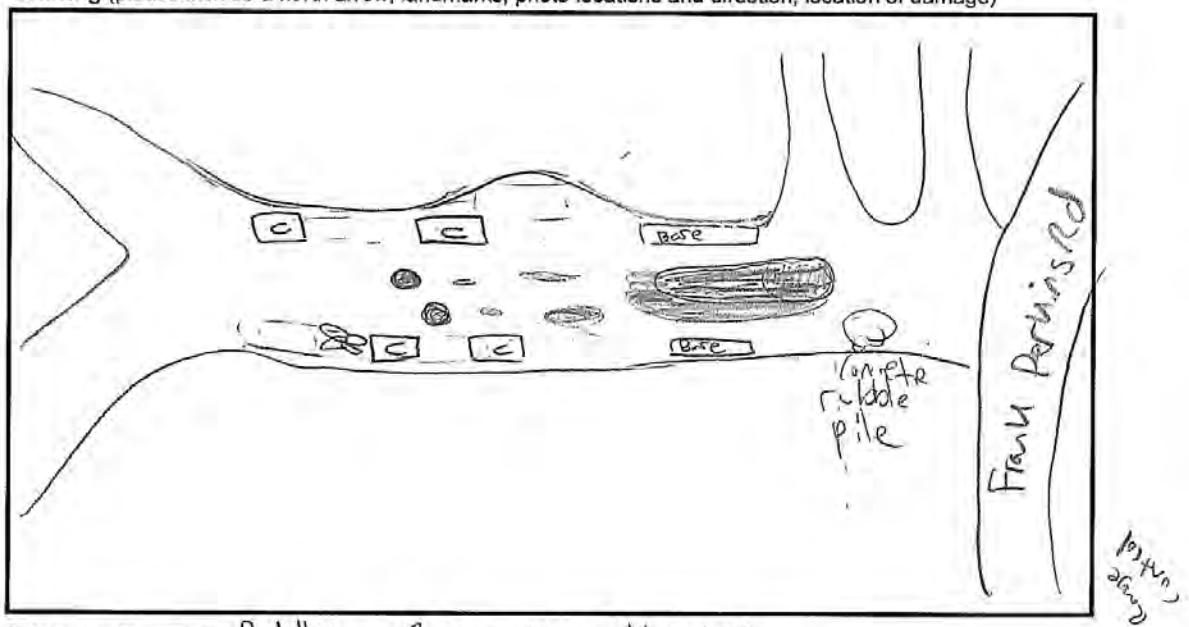
Site SVL4 Assessors NM Date 2/5/2021

Damage		Description
____	Tree scarring	
____	Standing deadwood	
X ?	Felled trees	Pitch Pine regen cut back recently.
____	Brush piles	
____	Erosion	
____	Ditching/rutting	
____	Trash	
____	Spills	
X	Material piles	Pile of concrete road barriers.
____	Other	

Percent Cover		Dominant Species
0	Trees	—
0	Shrubs	—
5	Herbaceous	Grasses
95	Bare	dirt sand

Any improvements made for training?
Pitch Pine regen cut back. Two bare areas. these conexes used to be.

Drawing (please include a north arrow, landmarks, photo locations and direction, location of damage)



Joint Base Cape Cod - Soldier Validation Lane
Post Assessment of Container Locations

Site SVL 6 Assessors NM Date 2/16/2021

Damage		Description
	Tree scarring	
	Standing deadwood	
	Felled trees	
	Brush piles	
x	Erosion	edges of road have slight erosion occurring
x	Ditching/rutting	
	Trash	
	Spills	
x	Material piles	Sand bags & chunks of concrete
	Other	Standing water

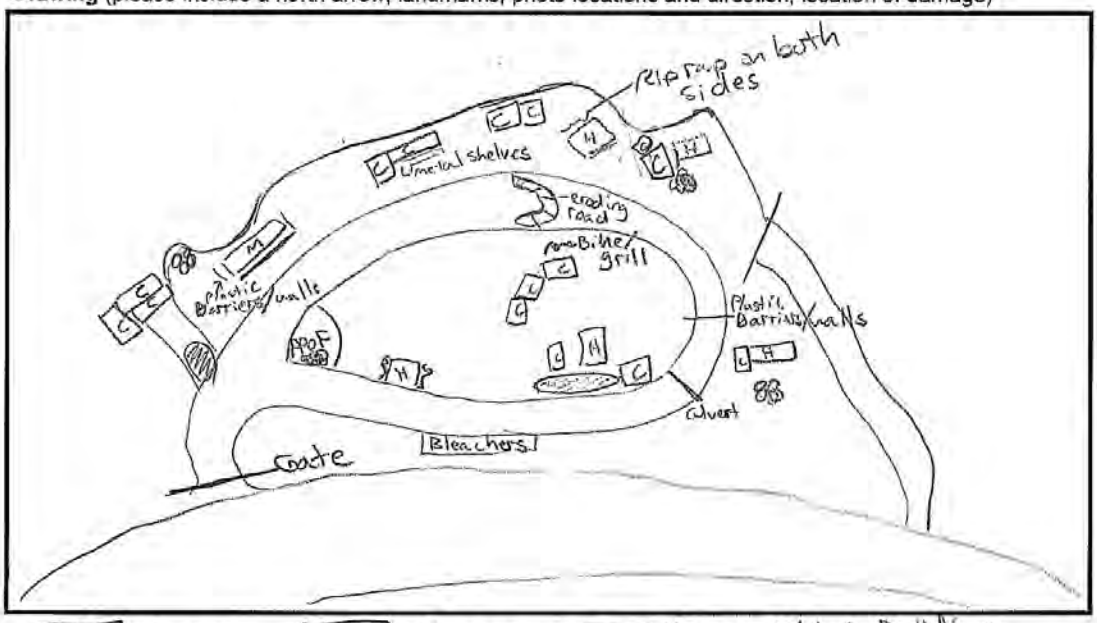
Percent Cover		Dominant Species
35	Trees	PIRI
10	Shrubs	Gail / COPE 80
40	Herbaceous	grasses
15	Bare	gravel / compacted dirt

Any improvements made for training?

Not much has changed in site from 2019 to now.

Surrounding area outside SVL was mechanically thinned and mastication machine used.

Drawing (please include a north arrow, landmarks, photo locations and direction, location of damage)



Joint Base Cape Cod - Soldier Validation Lane
Post Assessment of Container Locations

Site SVL 24 Assessors N. Madden Date 2/5/2021

Damage		Description
	Tree scarring	
	Standing deadwood	
	Felled trees	
	Brush piles	
	Erosion	
X	Ditching/rutting	Not too bad, minor
	Trash	
	Spills	
X	Material piles	Dirt pile
	Other	

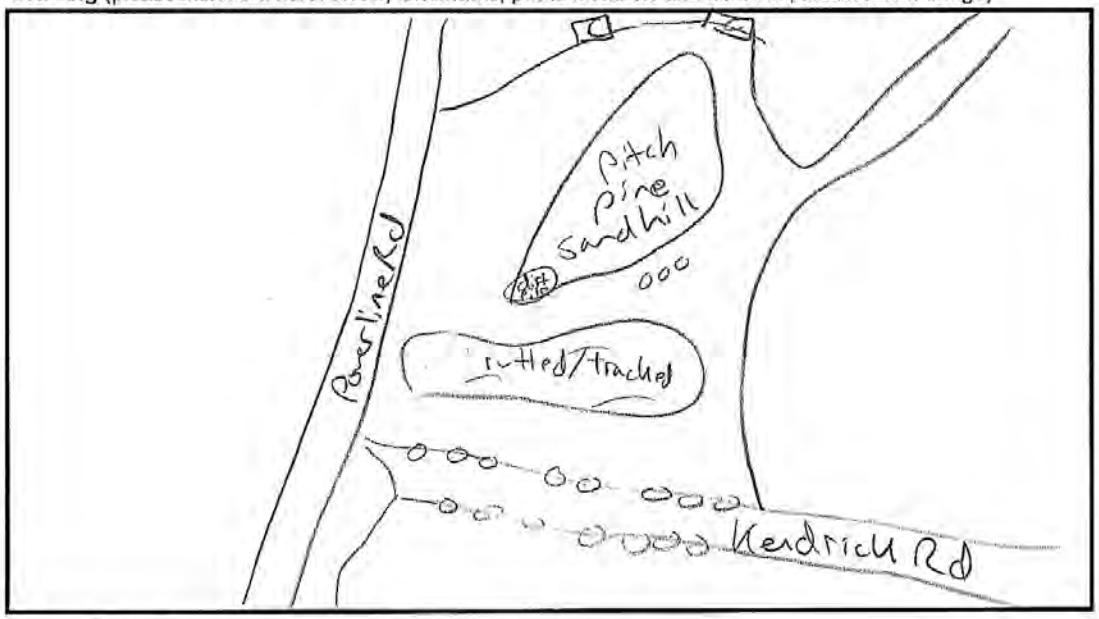
Percent Cover		Dominant Species
3	Trees	PIRI
2	Shrubs	PIRI regen. Oak
2	Herbaceous	grasses
93	Bare	sand / sandy loam

Any improvements made for training?

N/A

No changes from prior survey

Drawing (please include a north arrow, landmarks, photo locations and direction, location of damage)



000 rock barrier w/ regen pitch pine. ○○ rocks

APPENDIX D
ENVIRONMENTAL LAWS AND REGULATIONS

ENVIRONMENTAL LAWS AND REGULATIONS GOVERNING MAARNG ACTIVITIES IN THE TRAINING AREA/RESERVE			
Reserve EPS	**Federal Law / Regulation**	**State Law / Regulation**	**DoD Regulation**
Groundwater Resources	Clean Water Act Safe Drinking Water Act	Drinking Water Quality Standards (310 CMR 22.00) State Wellhead Protection (310 CMR 22.21) Water Management Act (310 CMR 36.00)	AR 200-1 AR 200-2 Camp Edwards Regulation (CER) 385-63
Wetlands and Surface Water	Clean Water Act Coastal Zone Management Act Floodplains Management (EO 11988) Protection of Wetlands (EO 11990) Rivers and Harbors Act of 1899 Sikes Act Wetlands Management (EO 11990)	Massachusetts Wetlands Protection Act (M.G.L. c. 131, s40; 310 CMR 100.00)	AR 200-2 CER 385-63
Rare Species	Federal Endangered Species Act Sikes Act	Massachusetts Endangered Species Act (M.G.L. c. 131A, 321 CMR 10.00)	AR 200-1 AR 200-2 AR 200-3 CER 385-63
Soil Conservation	Sikes Act Soils and Water Conservation Act Use of Off-Road Vehicles on Public Lands (EO 11989)		AR 200-1 AR 200-2 AR 200-3 CER 385-63
Vegetation Management	American Indian Religious Freedom Act Environmental Justice (EO 12898) Exotic Organisms (EO 11987) Sikes Act		AR 200-1 AR 200-2 AR 200-3 CER 385-63
Habitat Management	Sikes Act	Massachusetts Endangered Species Act (M.G.L. c. 131A, 321 CMR 10.00)	AR 200-1 AR 200-2 AR 200-3 CER 385-63
Wildlife Management	Fish and Wildlife Conservation Act Migratory Bird Conservation Act Migratory Bird Treaty Act Sikes Act		AR 200-1 AR 200-2 AR 200-3 CER 385-63
Air Quality	Clean Air Act	State Air Quality Regulations (310 CMR 4.00)	AR 200-1 AR 200-2 CER 385-63

ENVIRONMENTAL LAWS AND REGULATIONS GOVERNING MAARNG ACTIVITIES IN THE TRAINING AREA/RESERVE			
Reserve EPS	**Federal Law / Regulation**	**State Law / Regulation**	**DoD Regulation**
Noise Management	Federal Interagency Committee Land Noise Control Act Occupational Safety & Health Act Use Planning Standards on Urban Noise, Guidelines for Considering Noise in Land Planning and Control (June 1990)		AR 200-1 AR 200-2
Pest Management	Animal Damage Control Act Federal Insecticide, Fungicide, and Rodenticide Act Noxious Weed Act Resource Conservation and Recovery Act Sikes Act Toxic Substances Control Act		DoD 4150.7 AR 200-1 AR 200-2 AR 200-5 AR 420-47
Fire Management	Clean Air Act Sikes Act The National Fire Code Uniform Fire Code	State Air Quality Regulations (310 CMR 4.00)	AR 200-1 AR 200-2 AR 200-3 AR 420-90 CER 385-63
Storm Water Management	Clean Water Act NPDES discharge permitting and limitations	Massachusetts Wetlands Protection Act (M.G.L. c. 131 s.40, 310 CMR 10.00.)	AR 200-1 AR 200-2
Wastewater	Clean Water Act	Title V (310 CMR 15.00)	AR 200-1 CER 385-63
Solid Waste	Resource Conservation and Recovery Act Toxic Substances Control Act	State Solid Waste Handling and Disposal (310 CMR 16.00/19.00)	AR 200-1 AR 200-2 AR 420-47 CER 385-63
Hazardous Materials	Asbestos Hazard Emergency Response (40 CFR 763) Federal Insecticide, Fungicide and Rodenticide Act Hazard Communication Standard Program (29 CFR 1910.1200) Lead Contamination Control Act OSHA (29 CFR 1910, 29 USC 91-596) Poison Prevention Packaging Act Toxic Substances Control Act	Hazardous Substances Labeling Law (105 CMR 650.00)	AR 200-1 AR 200-2 CER 385-63

ENVIRONMENTAL LAWS AND REGULATIONS GOVERNING MAARNG ACTIVITIES IN THE TRAINING AREA/RESERVE			
Reserve EPS	**Federal Law / Regulation**	**State Law / Regulation**	**DoD Regulation**
Hazardous Waste	Clean Air Act Clean Water Act Emergency Preparedness and Community Right-To-Know Act Federal Facilities Compliance Act Hazardous Waste Operations and Emergency Response Medical Waste Tracking National Fire Code Oil Pollution Act Pollution Prevention Act Resource Conservation and Recovery Act The National Contingency Plan Underground Storage Tank Program (RCRA, Title I) Uniform Building and Fire Codes Comprehensive Environmental Response, Compensation, and Liability Act	Department of Transportation regulations regarding shipping and transportation, Hazardous Waste Management and Transportation (310 CMR 30.000) Management of Medical Waste (105 CMR 480) Pesticide use (333 CMR 1.00 – 12.00) Solid waste facilities management (310 CMR 16.00/19.00) State right-to-know requirements (105 CMR 670.00) Title V (310 CMR 15.00) Toxic use reduction (310 CMR 5.00) Underground storage tanks standards (527 CMR 4.00 and 9.0) Massachusetts Contingency Plan (310 CMR 40.00)	AR 200-1 AR 200-2 AR 420-47 CER 385-63
Vehicle	Use of Off-Road Vehicles on Public Lands (EO 11989)		AR 200-2 CER 385-63
General Use And Access	Use of Off-Road Vehicles on Public Lands (EO 11989)		AR 200-1 AR 200-2 CER 385-63

ENVIRONMENTAL LAWS AND REGULATIONS GOVERNING MAARNG ACTIVITIES IN THE TRAINING AREA/RESERVE			
Reserve EPS	**Federal Law / Regulation**	**State Law / Regulation**	**DoD Regulation**
Cultural Resources (This EPS refers to archeological resources only; the list of regulations cited here has therefore been restricted to those that pertain to protection of archeological resources)	Antiquities Act of 1906 Archeological and Historic Preservation Act of 1974 Archeological Resources Protection Act of 1979 Consultation and Coordination with Indian Tribal Governments (Executive Order 13175) Curation of Federally Owned/Administered Archeological Collections Executive Memorandum of April 19, 1994 – Government-to-Government Relations with American Tribal Governments National Environmental Policy Act of 1966, as amended Native American Graves Protection and Repatriation Act of 1990	Massachusetts General Laws, Chapter 9, sections 26-27C as amended by Chapter 254 of the Acts of 1988 (950 CMR 71.00) Massachusetts Environmental Policy Act (MEPA) Massachusetts General Laws Chapter 30, sections 61 through 62H, inclusive (301 CMR 11.00) Massachusetts General Laws, Chapter 38, section 6B: Chapter 9, sections 26A and 27C; Chapter 7, section 38A; Chapter 114, section 17; as amended by Chapter 659 of the Acts of 1983 and Chapter 386 of the Acts of 1989	AR 200-2 AR 200-4 DA PAM 200-4 Office of the Secretary of Defense, Annotated Policy Document for the American Indian and Alaska Native Policy (27 October 1999)

DOD Regulations include all regulations and directives of the Department of Defense, Department of the Army, and National Guard Bureau.
AR = Army Regulation
CER – Camp Edwards Regulation
CFR – Code of Federal Regulations
CMR - Code of Massachusetts Regulations
DA PAM = Department of Army Pamphlet
EO – Executive Order
M.G.L – Massachusetts General Laws
RCRA – Resource Conservation and Recovery Act

APPENDIX E
WATER SUPPLY INFORMATION

2020 Consumer Confidence Report
Upper Cape Regional Water Supply Cooperative

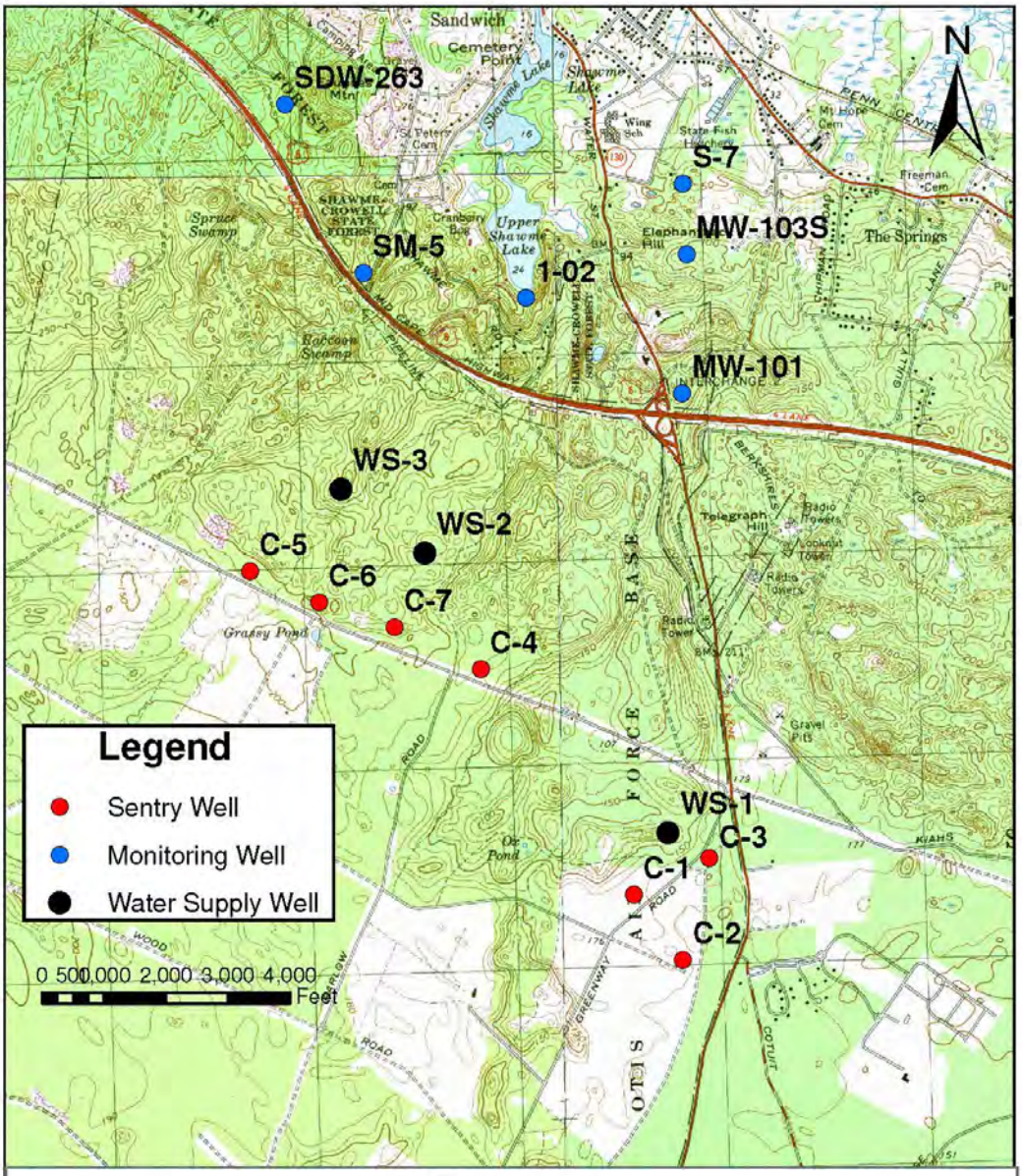


Figure 1
Long-term Monitoring Well Network
Upper Cape Regional Water Supply Cooperative
Cape Cod, Massachusetts

Massachusetts Department of Environmental Protection
Bureau of Resource Protection – Drinking Water Program

Consumer Confidence Report Certification

For calendar year 2020

A. PWS Information

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.

Upper Cape Regional Water Supply Cooperative
4261024

Sandwich — City /Town
56,250 — Max population

The community water system named above hereby certifies that its Consumer Confidence Report (CCR) was distributed to customers, appropriate agencies, and notices of availability have been given in compliance with 310 CMR 22.16A. Furthermore, the system certifies that the information contained in the report is correct and consistent with the compliance monitoring data previously submitted to MassDEP.
I certify under penalty of law that I am the person authorized to fill out this form and the information contained herein is true, accurate, and complete to the best of my knowledge and belief.

Marisa Picone-Devine — Name
Operator — Title
508-888-7262 — Phone
mdevine@sarianco.com — E-Mail
January 12, 2021 — Date

Signature of Owner/Responsible Party or Certified Operator

B. Public Notice Certification

VSS PWS note: if you deliver your CCR by newspaper or postings, that method will not meet PN requirements. You must directly deliver your PN by hand, land, or electronic.

Is this system using this CCR to provide **Tier 3** Public Notice to their customers? ☐ Yes ☒ No

The PN is for a: Violation ☐ UCMR ☐ Other ☐ — List other

Did you have a consultation with MassDEP? ☐ Yes ☐ No — Consultation date

The PN can be found on page _____ of the CCR. — Date of PN Occurrence — NON Number

☐ I am reporting multiple Tier 3 PNs. I have listed the additional PN information at the end of this form.

The public water system indicated above hereby affirms that a Tier 3 public notice has been provided within this CCR to consumers in accordance with 310 CMR 22.16(4) including: delivery, content, format requirements, notification deadlines, and that the public water system will meet future requirements for notifying new billing units and new customers of the violation.

If you did not sell water to another community PWS skip Section C.

C. For Systems Selling Water to Other Community Water Systems

☒ My system delivered the applicable information required at 310 CMR 22.16A(3), to the buying system(s) no later than April 1st of this year, or by the mutually agreed upon date specifically included in a written contract between the parties.

D. Annual Cross Connection Education

Is this CCR being used for your system's annual cross-connection education? ☐ Yes ☐ No

If no, what methods did you use to meet your annual CCCP requirements (citation)?

Continued on next page

Massachusetts Department of Environmental Protection
Bureau of Resource Protection – Drinking Water Program

Consumer Confidence Report Certification

For calendar year 2020

ALL distribution (posting, land mail, or e-delivery, publication, and good faith efforts) must be *completed* on or before July 1st.

Instructions for customers to request a hard copy must also be included in

When a URL is used it must be a *direct* link to the document; no other clicks allowed.

E. Consumer Delivery Methods – Based on Population Served

For systems serving fewer than 500 persons:
(Choose #1 or #2)

Date of delivery/publication: mm/dd/yyyy

☐ 1. My system used one or more of the following methods to notify customers that their CCR would **not** be mailed directly to them but is available to them upon request. (the notice is attached)

☐ Land-mail ☐ Door-to-door ☐ Newspaper ☐ eMail ☐ Posted notices

Locations of posted notices

☐ 2. My system provided a CCR to each customer by the following method(s):

☐ Published the full CCR in a local newspaper (the published report from newspaper is attached).
☐ eDelivered the CCR

☐ Land-mailed or hand-delivered the CCR to consumers.

☐ e-Mailed with the CCR either embedded in the email or attached as a PDF. (e-mail is attached)

☐ Posted the CCR on the web and sent the direct URL to customers by way of land-mail or email (notice/postcard is attached).

List URL

For systems serving 500 to 9,999 persons:
(Choose either #1 or #2)

Date of delivery/publication: mm/dd/yyyy

☐ 1. My system provided a copy of the CCR to each customer by:
☐ Land-mail ☐ e-Mail with PDF of CCR ☐ e-Mail with embedded CCR

☐ Sent a notice (by land or e-mail) containing a *direct* URL to customers (copy is attached)

List the URL if used.

☐ 2.My system provided the CCR to each customer by publishing the full report in a newspaper (a copy of the published CCR is attached) and provided notice to consumers of this action by either:
☐ Published a notice of this in a local newspaper
☐ Land mailed a notice of this to consumers.
☐ e-Mailed a notice of this to consumers.

For systems serving 10,000 or more persons:

Date of delivery/publication: mm/dd/yyyy

☐ My system provided a copy of the CCR to each customer by:

☐ Land mail ☐ e-Mail with PDF ☐ e-Mail with embedded CCR
☐ Sent a notice (by land or e-mail) containing a *direct* URL to customers

List the URL if used.

☐ For systems serving greater than 100,000 population: In addition to one of the delivery methods checked above, we have posted the CCR on a publicly accessible Internet site as required.
www.
List the URL used

Continued on next page

Massachusetts Department of Environmental Protection
Bureau of Resource Protection – Drinking Water Program

Consumer Confidence Report Certification

For calendar year 2020

F. Good Faith Delivery Methods (minimum of 3 is required for any sized systems)

Good Faith efforts are *in addition* to your primary method of delivery.

To reach people who drink our water but are not billed customers the following were conducted in addition to the required delivery:

- ☐ Posted the CCR on a publicly accessible Internet site at the following address. (Only for systems under 100,000 population who did not use this method as their primary method)
  www. _____
  List the URL used.
- ☐ Mailed the CCR to all postal patrons within the service area (list of zip codes used is attached).
- ☐ Mailed a postcard listing the URL where the CCR can be found, to all postal patrons within the service area (list of zip codes used is attached).
  www. _____
  List the URL used.
- ☐ Advertised availability of the CCR in the following news media (the announcement is attached):
  ☐ Radio ☐ Newspaper ☐ Television / cable ☐ Social media ☐ Digital signboard
- ☐ Published the CCR in local newspaper (attach the published CCR).
- ☐ Posted the CCR in public places i.e., post office, town hall, library (list of locations is attached).
- ☐ Delivered multiple CCR copies to single-bill addresses serving several persons i.e., apartments, businesses, large private employers (list of locations is attached).
- ☐ Delivered multiple CCR copies to community organizations (list of organizations is attached.)
- ☐ Posted the CCR or a notice of availability at locations within the apartment/condo complex (list of the locations is attached).
- ☐ Deliver CCR to new residents when they move in.
- ☐ _____
  Other

G. Mandatory Agency Delivery Requirements

All systems must submit CCR to these three agencies

- ☒ 1. **Local Board of Health** — 1-12-21 (Date completed)
  Deliver 1 copy of CCR and the Certification Form (Contact your board of health as to whether they would prefer hardcopy or e-delivery of CCR.)

Agencies and consumers must **receive** CCR on or before July 1.

- ☒ 2. **MA Dept. of Public Health** — 1-12-21 (Date completed)
  Deliver 1-copy of CCR and the Certification Form
  ☐ PDF emailed to: dph.ccr@mass.gov
  or
  ☐ Hardcopy to: 250 Washington St., Boston, MA 02108

For e-delivery, scan documents into 1 PDF file. Make sure Cert Form is first with CCR following it.

- ☒ 3. **MassDEP Boston Office** — 1-12-21 (Date completed)
  Deliver 1 copy of CCR, the Certification Form, and all needed attachments
  ☐ PDF emailed to: Program.Director-DWP@mass.gov.
  Label it [(PWSID)(PWS Name)(YEAR)CCR]
  or
  ☐ Hardcopy to: MassDEP-CCR Program, 1 Winter St. -5th Fl., Boston, MA 02108

--Do not send to MassDEP regional offices--
Only Boston is accepting CCRs

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UPPER CAPE REGIONAL WATER SUPPLY COOPERATIVE

2020 Consumer Confidence Report

PWS ID # 4261024

The Upper Cape Regional Drinking Water Supply Cooperative consists of three groundwater supply wells located in Sandwich, MA on Joint Base Cape Cod (JBCC). A Board of Managers representing four-member public water supply systems manages the Cooperative. The Cooperative has the capacity to provide a supplemental supply of water to its member public water systems, which include the Town of Falmouth, the Bourne Water District, the Mashpee Water District and the Sandwich Water District. The Cooperative also supplies water to the Otis Air National Guard public water system on JBCC and the Barnstable County Jail.

Wells #1, #2 and #3 are located in a forested area of the northeastern portion of the JBCC. In July 2004, the Department of Environmental Protection completed a source water assessment (SWAP) report for the Cooperative water supply wells. A SWAP report is a planning tool to support local and state efforts to improve water supply protection by identifying land uses within water supply protection areas that may be potential sources of contamination. The report identifies potential sources of contamination including a gas station, a medical facility and a military facility, and helps focus protection efforts on appropriate Best Management Practices. A susceptibility ranking of high was assigned to the Cooperative using information that was collected during the assessment. A copy of the report is available, upon request, from the Cooperative. JBCC has adopted a Groundwater Protection Plan to prohibit inappropriate activities on JBCC property within the Zone II areas of community public water supply wells. In addition, the Environmental Management Commission provides oversight over activities on the northern portion of the JBCC. For questions regarding SWAP or other information contained within this document call Marisa Picone-Devine at 508-888-7262.

Our system, out of an abundance of caution and concerns about PFAS, sampled for PFAS compounds (PFBS, PFHpA, PFHxS, PFNA, PFOA, and PFOS) at all three wells in 2019 and 2020; there were no detections of any of the analytes in any of the samples.

2020 WATER QUALITY DATA

Listed below are the substances detected in water samples collected during the most recent sampling period from the three (3) wells that comprise the Upper Cape Drinking Water Supply Cooperative.

Inorganic Contaminants	Year Sampled	Highest Result	Range of Detections	MCL	MCLG	Violation (Y / N)	Possible Sources
Barium	2020	0.002 ppm	0.002 ppm	2 ppm	2 ppm	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Nitrate	2020	0.13 ppm	0.13 ppm	10 ppm	10 ppm	No	Runoff from fertilizer use; Leaching form septic tanks, sewage; Erosion of natural deposits
Unregulated and Secondary Contaminants	**Year Sampled**	**Amount Detected**	**Range of Detections**	**SMCL**	**ORSG**	**Violation**	**Possible Sources**
Chloroform	2020	2.19 ppb	1.46 -2.19 ppb	NA	70 ppb	No	Trihalomethane: by-product of drinking water chlorination. In non-chlorinated sources, chloroform may be naturally occurring
Chloride	2020	8.6 ppm	8.6 ppm	250 ppm	--	NO	Runoff and leaching from natural deposits; seawater influence
Copper	2020	0.014 ppm	0.014 ppm	1 ppm	--	No	Internal corrosion of household plumbing; erosion of natural deposits
Sodium	2020	5.4 ppm	5.4 ppm	--	20 ppm	No	Natural erosion, road salt
Sulfate	2020	5.0 ppm	5.0 ppm	250 ppm	--	No	Runoff and leaching from natural deposits; industrial wastes

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
Office of Research and Standards Guideline (ORSG): This is the concentration of a chemical in drinking water, at or below which, adverse health effects are unlikely to occur after chronic (lifetime) exposure. If exceeded, it serves as an indicator of the potential need for further action
Parts per million (ppm) or Milligrams per liter (mg/l): One part per million corresponds to one minute in two years.
Parts per billion (ppb) or Micrograms per liter (ug/l): One part per billion corresponds to one minute in 2,000 years.
Picocuries per liter (pCi/L): A measure of radioactivity.
Secondary Maximum Contaminant Level (SMCL): These standards are developed to protect the aesthetic qualities of drinking water and are not health based.
Unregulated Contaminants: Substances for which EPA has not established drinking water standards. The purpose of unregulated monitoring is to assist EPA in determining their occurrence in drinking water and whether future regulation is warranted.

102nd Intelligence Wing
Consumer Confidence Report

2019 Consumer Confidence Report

For

Otis Air National Guard Base

Joint Base Cape Cod, Massachusetts

MASSDEP PWSID #4096001

This report is a snapshot of the drinking water quality that we provided between January 1 and December 31, 2019. Included are details about where your water comes from, what it contains, and how it compares to state and federal standards. We continually strive to adopt new methods for delivering the best-quality drinking water to you. We are committed to providing you with this information because informed customers are our best allies.

PUBLIC WATER SYSTEM INFORMATION

Address: Otis Air National Guard Base on Joint Base Cape Cod, Massachusetts

Contact Person: Mr. Richard Souza

Telephone #: (508) 968-4102

Water System Improvements

The Massachusetts Department of Environmental Protection (MassDEP) routinely inspects our water system. MassDEP inspects our system for its technical, financial, and managerial capacity to provide safe drinking water to you. To ensure that we provide the highest quality of water available, a Massachusetts certified operator who oversees the routine operations of our system operates your water system. As part of our ongoing commitment to service, the MassDEP Drinking Water Program has determined that the public water supply system at Otis Air National Guard Base is compliant with all national Primary Drinking Water Standards and MassDEP Drinking Water Regulations.

DRINKING WATER SOURCE

Where Does My Drinking Water Come From?

Our drinking water supply is provided entirely by groundwater. J-Well (4096001-01G), which is located on Herbert Road, is our primary pumping station. We are also connected to the Upper Cape Regional Water Supply Cooperative. The Cooperative's water sources come from three wells located in the northeastern corner of Joint Base Cape Cod. On average, we provide up to 300,000 gallons of high-quality water every day. All of the Otis public water supply is drawn from the Sagamore Lens of the Cape Cod single-source aquifer. This lens runs from the Cape Cod Canal eastward into the town of Yarmouth. To learn more about our watershed on the Internet, go to the U.S. Environmental Protection Agency's (EPA) "Surf Your Watershed" website at the following link: http://cfpub.epa.gov/surf/locate/index.cfm

Source Name	MassDEP Source ID#	Source Type	Location of Source
J-Well	4096001-01G	Groundwater	Herbert Road

Is My Water Treated?
Our drinking water is treated with potassium carbonate, sodium fluoride, and sodium hypochlorite. The water in this geographic area is naturally acidic, with an average pH of 5.9 (7.0 is neutral). Acidic water can be harmful to the distribution system. Potassium carbonate is used to buffer the water to as close to a neutral pH as possible. At the request of the U.S. Coast Guard, which is the owner and operator of the family housing area, sodium fluoride is added to the water. This compound has proven effective in strengthening teeth. Finally, sodium hypochlorite is used to disinfect the water supply by killing bacteria. We make every effort to provide you with safe and pure drinking water. To improve the quality of the water delivered to you, we treat it to remove several contaminants.
The water quality of our system is constantly monitored by us and MassDEP to determine the effectiveness of existing water treatment and to determine if any additional treatment is required.

How Are These Sources Protected?
The Source Water Assessment and Protection (SWAP) Program, established under the federal Safe Drinking Water Act, requires every state to inventory land uses within the recharge areas of all public water supply sources; to assess the susceptibility of drinking water sources to contamination from these land uses; and to publicize the results to provide support for improved protection.

MassDEP has prepared a SWAP Report for the water supply source(s) serving this water system. The SWAP Report assesses the susceptibility of public water supplies.

What is My System's Ranking?
A susceptibility ranking of HIGH was assigned to this system due to the absence hydrogeological barriers (i.e., clay) that can prevent contaminant migration.

Where Can I See The SWAP Report?
Information on obtaining the complete SWAP Report is available by contacting the Water Supply Superintendent at (508) 968-4102. To access the SWAP Report on the Internet, go to the Source Water Assessment & Protection (SWAP) Program Website at the following link:
https://www.mass.gov/service-details/the-source-water-assessment-protection-swap-program

What Are the Key Issues For Our Water Supply?
We are all concerned about the quality of the water we drink. Our drinking water well may be threatened by many potential contaminant sources, including storm runoff, road salting, and improper disposal of hazardous materials. Also, being a military facility, Otis Air National Guard Base has the potential of having fuel, chemicals, and other material(s) as possible sources of contamination. Citizens and on base personnel can work together to better protect these drinking water sources.

What Can Be Done To Improve Protection?
Residents can help protect sources by:

- Practicing good septic system maintenance
- Supporting water supply protection initiatives when implemented
- Taking hazardous household chemicals to locally established hazardous materials collection days
- Limiting pesticide and fertilizer use, etc.

SUBSTANCES FOUND IN TAP WATER

Sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals. In some cases, water travels over the surface of the land or through the ground and dissolves radioactive material. The water can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

Microbial contaminants – such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

Inorganic contaminants – such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, and farming.

Pesticides and herbicides – which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

Organic chemical contaminants – including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.

Radioactive contaminants – which can be naturally occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, MassDEP and U.S. EPA prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) and Massachusetts Department of Public Health (DPH) regulations establish limits for contaminants in bottled water that must provide the same protection for public health.

All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at (800) 426-4791.

IMPORTANT DEFINITIONS

Maximum Contaminant Level (MCL) – The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal (MCLG) – The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
Action Level (AL) – The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

90th Percentile – Out of every 10 homes sampled, 9 were at or below this level.

Secondary Maximum Contaminant Level (SMCL) – These standards are developed to protect the aesthetic qualities of drinking water and are not health based.

Unregulated Contaminants – Unregulated contaminants are those for which EPA has not established drinking water standards. The purpose of unregulated monitoring is to assist EPA in determining their occurrence in drinking water and whether future regulation is warranted.

Massachusetts Office of Research and Standards Guideline (ORSG) – This is the concentration of a chemical in drinking water, at or below which, adverse health effects are unlikely to occur after chronic (lifetime) exposure. If exceeded, it serves as an indicator of the potential need for further action.

Treatment Technique (TT) – A required process intended to reduce the level of a contaminant in drinking water.

Running Annual Average (RAA) – The average of four consecutive quarter of data.

Maximum Residual Disinfectant Level (MRDL) – The highest level of a disinfectant (chlorine, chloramines, chlorine dioxide) allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal (MRDLG) -- The level of a drinking water disinfectant (chlorine, chloramines, chlorine dioxide) below which there is no known expected risk to health. MRDLG's do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Level 1 Assessment – A Level 1 assessment is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system.

Level 2 Assessment – A Level 2 assessment is a very detailed study of the water system to identify potential problems and determine (if possible) why an *E. coli* MCL violation has occurred and/or why total coliform bacteria have been found in our water system on multiple occasions.

UNITS OF MEASURMENT

MFL	= Million Fibers per Liter
mrem/year	= millimrems per year (a measure of radiation absorbed by the body)
N/A	= Not Applicable
ND	= Not Detected
pCi/L	= picocuries per liter (a measure of radioactivity)
ppb	= parts per billion, or micrograms per liter (ug/L)
ppm	= parts per million, or milligrams per liter (mg/L)
ppt	= parts per trillion, or nanograms per liter (ng/L)

WATER QUALITY TESTING RESULTS

What Does This Data Represent?

The water quality information presented in the table is from the most recent round of testing done in accordance with the regulations. All data shown was collected during the last calendar year unless otherwise noted in the table.

Bacteria	MCL/TT	MCLG	Value	Date	Violation (Y/N)	Possible Source(s) of Contamination
Total Coliform Bacteria	0	0	0	2019	N	Human and animal fecal waste

What About Lead Exposure?

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Otis Air National Guard Base is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to two minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline at (800) 426-4791 or on the Internet, at the following link: http://www.epa.gov/safewater/lead

Substance (unit of measurement)	Date(s) Collected	90[th] Percentile	Action Level	MCLG	# of sites sampled	# of sites above Action Level	Possible Source(s) of Contamination
Lead (ppb)	2018	0.2	15	0	40	0	Corrosion of household plumbing systems; Erosion of natural deposits
Copper (ppm)	2018	0.448	1.3	1.3	40	0	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives

Regulated Contaminant	Date(s) Collected	Highest Result	Range Detected	MCL or MRDL	MCLG or MRDLG	Violation (Y/N)	Possible Source(s) of Contamination
Inorganic Contaminants							
Asbestos (MFL)	2013	N/A	ND	7	7	N	Decay of asbestos cement water mains; erosion of natural deposits
Barium (ppm)	2018	0.016	0.00-0.016	2	2	N	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Chromium (ppb)	2015	0.51	0.00-0.51	100	100	N	Discharge from pulp mills; erosion of natural deposits
Fluoride (ppm)*	2019	0.30	0.01 0.30	4	4	N	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
*Fluoride also has a secondary contaminant level (SMCL) of 2 ppm.							
Nitrate (ppm)	2019	1.78	0.08-1.78	10	10	N	Runoff from fertilizer use; leaching from septic tanks; sewage; erosion of natural deposits
Nitrite (ppm)	2017	ND	N/A	1	1	N	Runoff from fertilizer use; leaching from septic tanks; sewage; erosion of natural deposits
Perchlorate (ppb)	2019	ND	N/A	2	N/A	N	Rocket propellants, fireworks, munitions, flares, blasting agents
Radioactive Contaminants							
Radium 226 & 228 (pCi/L) (combined values)	2015	1.10	0.623-1.10	5	0	N	Erosion of natural deposits
Disinfectants and Disinfection By-Products							
Total Trihalomethanes (TTHMs) (ppb)	QTR3 (2019)	33.2	24.8 33.2	80	N/A	N	Byproduct of drinking water chlorination
Haloacetic Acids (HAA5) (ppb)	QTR3 (2019)	5.63	1.36-5.63	60	N/A	N	Byproduct of drinking water disinfection
Chlorine (ppm)	Monthly in (2019)	2.28	0.02-2.28	4	4	N	Water additive used to control microbes

Unregulated and Secondary Contaminants

Unregulated contaminants are those for which there are no established drinking water standards. The purpose of unregulated contaminant monitoring is to assist regulatory agencies in determining their occurrence in drinking water and whether future regulation is warranted.

Unregulated Contaminants	Date(s) Collected	Result or Range Detected	Average Detected	SMCL	ORSG	Possible Source(s) of Contamination
Bromodichloromethane	2019	6.73-8.64	7.67	N/A	N/A	Trihalomethane; by-product of drinking water chlorination
Bromoform	2019	2.24 2.92	2.58	N/A	N/A	Trihalomethane; by-product of drinking water chlorination
Chloroform (ppb)	2019	0.56-12.8	6.68	N/A	70	By-product of drinking water chlorination (In non-chlorinated sources it may be naturally occurring)
Chromium-6	2015	0.0-0.29	0.145	N/A	N/A	Discharge from steel and pulp mills; Erosion of natural deposits
Dibromodichloromethane	2019	6.83-8.82	7.83	N/A	N/A	Trihalomethane: By-product of drinking water chlorination
Manganese* (ppb)	2017	0.016	0.008	N/A	300	Erosion of natural deposits
*US EPA has established a lifetime health advisory (HA) value of 300 ppb for manganese to protect against concerns of potential neurological effects, and a one-day and 10-day HA of 1000 ppb for acute exposure.						
Methyl tertiary butyl ether* or MTBE (ppb)	2016	0.63	0.315	20-40	70	Fuel additive: leaks and spills from gasoline storage tanks
*EPA has established a lifetime Health Advisory (HA) of 0.3 mg/L and an acute HA at 1.0 mg/L						
Sodium (ppm)	2019	5.1 5.6	5.3	N/A	20	Discharge from the use and improper storage of sodium-containing de-icing compounds or in water-softening agents, natural erosion, road salt

COMPLIANCE WITH DRINKING WATER REGULATIONS

Does My Drinking Water Meet Current Health Standards?

We failed to complete required sampling in a timely manner, which is a monitoring and reporting violation. Because we did not take the required number of samples, we did not know whether the contaminants were present in your drinking water, and we are unable to tell you whether your health was at risk during that time. The contaminants for which monitoring was not done are listed in the table below, with the period during which samples should have been taken, the number of samples each contaminant required, the number taken, and when the required sampling was conducted. In addition to sampling for these contaminants, our system announced public notification upon awareness of the violation.

Contaminant	Monitoring Period	Number of Samples Required	Number of Samples Taken	Date Sampling Conducted	Health Effects
Synthetic Organic Compounds	10/2019-12/2019	1	0	2/2020	Unknown
E. coli	8/22/2017-8/29/2017	1	0	N/A	See health effects statement

Health Effects Statements

Total Coliform: Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other potentially harmful bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems.

Fecal coliforms and *E.coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, and people with severely-compromised immune systems.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791 or on the Internet, at the following link: http://water.epa.gov/drink/hotline

EDUCATIONAL INFORMATION

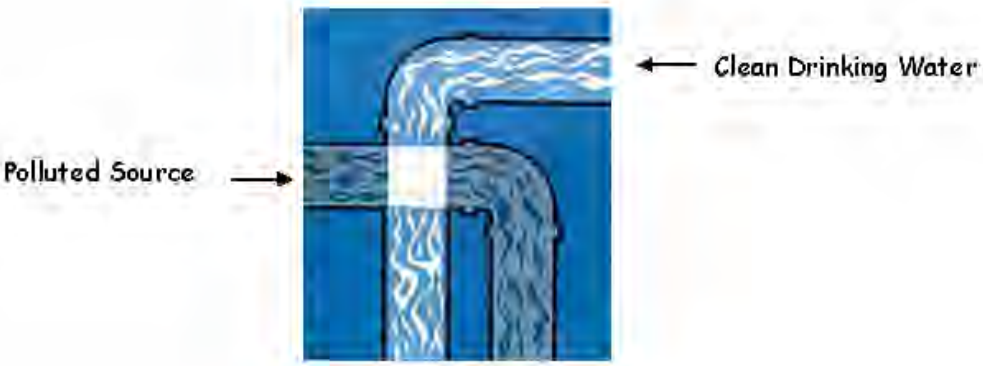
Do I Need To Be Concerned about Certain Contaminants Detected in My Water?

This is an alert about your drinking water and a cosmetic dental problem that might affect children under nine years of age. At low levels, fluoride can help prevent cavities, but children drinking water containing more than 2 ppm of fluoride may develop cosmetic discoloration of their permanent teeth (dental fluorosis). The drinking water provided by Otis Air National Guard Base has a fluoride concentration of 0.7 mg/l. Dental fluorosis, in its moderate or severe forms, may result in a brown staining and/or pitting of the permanent teeth. This problem occurs only in developing teeth, before they erupt from the gums. Children under nine should be provided with alternative sources of drinking water or water that has been treated to remove the fluoride to avoid the possibility of staining and pitting of their permanent teeth. You may also want to contact your dentist about proper use by young children of fluoride containing products. Older children and adults may safely drink the water. Drinking water containing more than 4 ppm of fluoride (the U.S. Environmental Protection Agency's drinking water standard) can increase your risk of developing bone disease. Your drinking water does not contain more than 4 ppm of fluoride, but we're required to notify you when we discover the fluoride levels in your drinking water to exceed 2 ppm because of the cosmetic dental problem. Some home water treatment units are available to remove fluoride from drinking water. To learn more about available home water treatment units, you may call the NSF International at 1-800-NSF-MARK (1-800-673-6275). For more information, please call the Water Superintendent at (508) 968-4102 or for additional information on fluoride in drinking water, contact the Massachusetts Department of Public Health, Office of Oral Health, (617) 624-5943.

Cross-Connection Control and Backflow Prevention

Otis Air National Guard Base makes every effort to ensure that the water delivered to your home and business is clean, safe and free of contamination. Our staff works very hard to protect the quality of the water delivered to our customers from the time the water is extracted via deep wells from underground aquifers or withdrawal point from a surface water source, throughout the entire treatment and distribution system. But what happens when the water reaches your home or business? Is there still a need to protect the water quality from contamination caused by a cross-connection? If so, how?

What is a Cross Connection and what can I do about it?



A cross connection is a connection between a drinking water pipe and a polluted source. The pollution can come from your own home. For instance, you're going to spray fertilizer on your lawn. You hook up your hose to the sprayer that contains the fertilizer. If the water pressure drops at the same time you turn on the hose, the fertilizer may be sucked back into the drinking water pipes through the hose. This problem can be prevented by using an attachment on your hose called a backflow-prevention device.

We recommend the installation of backflow prevention devices, such as a low cost hose bib vacuum breaker, for all inside and outside hose connections. You can purchase this at a hardware store or plumbing supply store. This is a great way for you to help protect the water in your home as well as the drinking water system on the installation! For additional information on cross connections and on the status of your water systems cross connection program, please contact the Water Superintendent.

If you are the owner or manager of a property that is being used as a commercial, industrial, or institutional facility you must have your property's plumbing system surveyed for cross-connection by your water purveyor. If your property has NOT been surveyed for cross-connection, contact your water department to schedule a cross-connection survey.

9

ADDITIONAL INFORMATION

Tap Water vs. Bottled Water

Thanks in part to aggressive marketing, the bottled water industry has successfully convinced us all that water purchased in bottles is a healthier alternative to tap water. However, according to a four-year study conducted by the Natural Resources Defense Council (NRDC), bottled water is not necessarily cleaner or safer than most tap water. In fact, about 25 percent of bottled water is actually just bottled tap water (40 percent according to government estimates).

The Food and Drug Administration (FDA) is responsible for regulating bottled water, but these rules allow for less rigorous testing and purity standards than those required by the U.S. EPA for community tap water. For instance, the high mineral content of some bottled waters makes them unsuitable for babies and young children. Further, the FDA completely exempts bottled water that's packaged and sold within the same state, which accounts for about 70 percent of all bottled water sold in the United States.

People spend 10,000 times more per gallon for bottled water than they typically do for tap water. If you get your recommended eight glasses a day from bottled water, you could spend up to $1,400 annually. The same amount of tap water would cost about 73 cents. Even if you installed a filter device on your tap, your annual expenditure would be far less than what you'd pay for bottled water.

For a detailed discussion on the NRDC study results, check out "The Truth About Tap" website at the following link: www.nrdc.org/water/drinking/qbw.asp

Brown, Red, Orange, or Yellow Water

Brown, red, orange, or yellow water is usually caused by rust. The different colors can be attributed to varying chemical oxidation states of the iron (rust) and by varying concentrations of the rust in the water. There are two major sources that can cause water to be rusty:

- The water mains, or
- The water pipes in your building

Rusty water occurs from sediment or rust from the inside walls of the water mains. The rust can be disturbed and temporarily suspended in water with unusual water flows from water main breaks or maintenance or by flushing of a hydrant. This discolored water is not a health threat.

When the water is discolored it is recommended to either not wash laundry or to use a rust stain remover or regular detergent but not chlorine bleach as it will react with the iron to form a permanent stain.

The other major cause of brown, red, orange or yellow water is rusty water pipes in your building. Water that is being discolored by rusty pipes is not a health hazard.

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER
Monitoring Requirements Not Met for Otis Air National Guard Base

Our water system violated a drinking water standard over the past year. Even though this violation was not an emergency, as our customers, you have a right to know what happened and what we did to correct the situation.

We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not our drinking water meets health standards. During October-December 2019 (4th Quarter), we failed to conduct Synthetic Organic Compounds (SOC) samples and therefore could not be sure of the quality of our drinking water during that time.

What should I do?

There is nothing you need to do at this time.

The table below lists the contaminant that we did not properly test for, how often we were supposed to sample for, how many samples we were supposed to take, how many samples we took, when samples should have been taken, and the date on which follow-up samples were (or will be) taken.

Contaminant	Required sampling frequency	Number of samples taken	When all samples should have been taken	When samples were or will be taken
SOC	1	0	October-December 2019	February 2020

What happened? What is being done?

Failure to collect SOC samples is a violation of the monitoring requirements and we were notified of this non-compliance.

However, we did take the required samples in February 2020. The results did not detect any Synthetic Organic Compounds present in the drinking water.

For more information, please contact SMSgt Keith Delgado at 508-968-4078 or 102 MDG/SGPB 156 Reilly, Box 12 Otis ANGB, MA 02542.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

Otis Air National Guard Base PWS ID#: 4096001 Distributed on 28 May 2020

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER
Monitoring Requirements Not Met for Otis Air National Guard Base

It was determined that our water system violated a drinking water standard in 2017. Even though this was not an emergency, as our customers, you have a right to know what happened and what we did to correct the situation.

We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not our drinking water meets health standards. During 8/22/2017-8/29/2017, we failed to conduct triggered fecal indicator source monitoring for fecal coliform and therefore cannot be sure of the quality of our drinking water during that time.

What should I do?

There is nothing you need to do at this time.

The table below lists the contaminant that we did not properly test for during August 2017, how often we were supposed to sample for, how many samples we were supposed to take, how many samples we took, when samples should have been taken, and the date on which follow-up samples were (or will be) taken.

Contaminant	Required sampling frequency	Number of samples taken	When all samples should have been taken	When samples were or will be taken
E. coli	1 sample	0	August 2017	N/A - violation

What happened? What is being done?

Triggered source samples are used to monitor water quality and indicate if the water is free of fecal indicator bacteria. Following a positive routine total coliform result in our distribution system, our water system is required to submit one triggered source sample for every active ground water well. Failure to collect all required triggered source samples is a violation of the monitoring requirements and we were notified of this non-compliance.

However, we did take multiple repeat bacteriological samples; one repeat sample at the original site, one repeat sample within five service connections upstream, and one repeat sample within five service connections downstream.

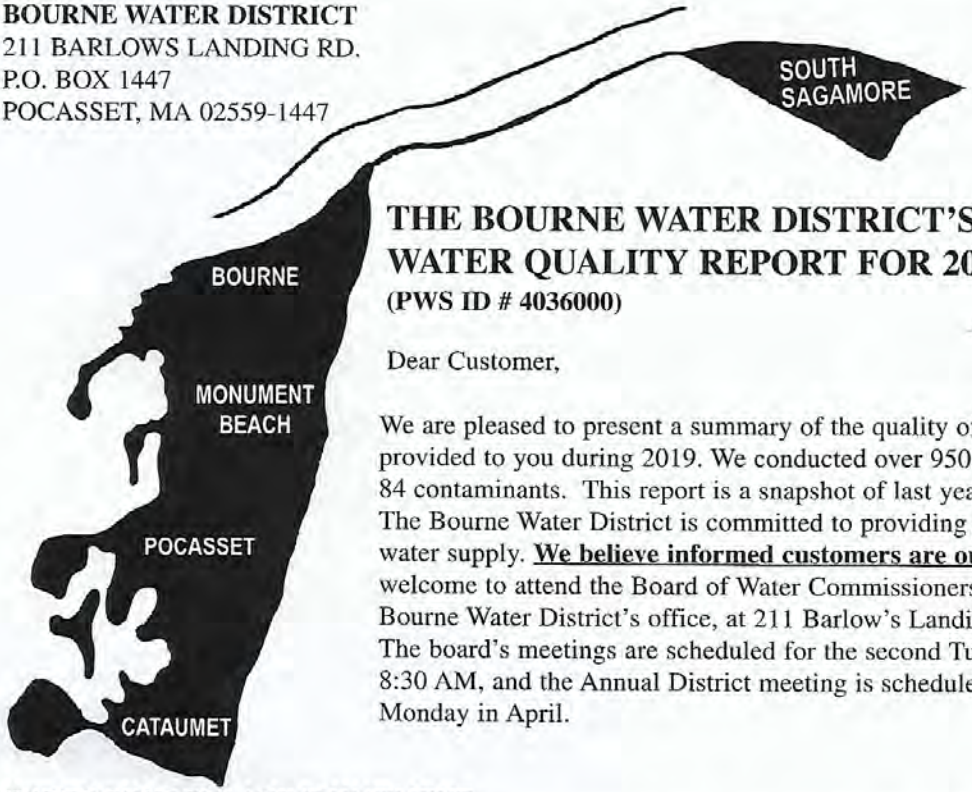
For more information, please contact SMSgt Keith Delgado at 508-968-4078 or 102 MDG/SGPB 156 Reilly, Box 12 Otis ANGB, MA 02542.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

Otis Air National Guard Base PWS ID#: 4096001 Distributed on 28 May 2020

Bourne Water District
Water Quality Report 2019

BOURNE WATER DISTRICT
211 BARLOWS LANDING RD.
P.O. BOX 1447
POCASSET, MA 02559-1447



THE BOURNE WATER DISTRICT'S WATER QUALITY REPORT FOR 2019

(PWS ID # 4036000)

Dear Customer,

We are pleased to present a summary of the quality of the drinking water provided to you during 2019. We conducted over 950 tests for more than 84 contaminants. This report is a snapshot of last year's water quality. The Bourne Water District is committed to providing you with a reliable water supply. **We believe informed customers are our best allies.** You are welcome to attend the Board of Water Commissioners meetings held at the Bourne Water District's office, at 211 Barlow's Landing Road in Pocasset. The board's meetings are scheduled for the second Tuesday of the month at 8:30 AM, and the Annual District meeting is scheduled on the fourth Monday in April.

WATER SOURCES AND TREATMENT

The Bourne Water District is supplied by 10 different sources, 7 of our own gravel packed well sites and 3 gravel packed well sites from the Upper Cape Regional Water Supply Cooperative. Four of our well sites are in the Monument Beach area of the Town Forest. The other two wells are in the Cataumet area of the Town of Bourne. One well is on Joint Base Cape Cod and we have one transfer station on Connery Ave. The Bourne Water District treats all supplies with lime slurry for corrosion control. The lime slurry is used to raise the pH of the water. This makes the water less aggressive to the copper pipe and lead joints in your homes to prevent exposure to lead and copper.

WHAT DOES THE FOLLOWING TABLE MEAN?

Action Level (AL) The concentration of a contaminant which if exceeded triggers treatment or other requirements.
Maximum Contaminant Level (MCL) The highest level of a contaminant that is allowed in the drinking water. The MCL is set as close to the MCLG as feasible using the best available treatment technology.
Maximum Contaminant Level Goal (MCLG) The level of a contaminant in the drinking water below which there is no known or expected risk to health. The MCLG allow for a margin of safety.
90th Percentile Out of every 10 houses sampled, 9 were below this level.

KEY TO TABLE

AL = Action Level
MCL = Maximum Contaminant Level
MCLG = Maximum Contaminant Level Goal
MFL = million fibers per liter
Mrem/year = millirems per year (a measure of radiation absorbed by the body)
NTU = Nephelometric Turbidity Units
pci/l = picocuries per liter (a measurement of radioactivity)
ppm = parts per million, or milligrams per liter (mg/l)
ppb = parts per billion, or micrograms per liter (ug/l)
ppt = parts per trillion, or nanograms per liter
ppq = parts per quadrillion, or picograms per liter
TT = Treatment Technique

DISTRIBUTION SYSTEM WATER QUALITY This report summarizes only those items detected during Sampling-not all contaminants that are monitored

Microbial Results	Highest Detected	Range Detected	MCL	MCLG	Violation	Possible Source of Contamination
Total Coliform Bacteria**	0	0	0	0	No	Naturally present in the environment
Fecal Coliform or E. Coli	0	0	0	0	No	Human and Animal Fecal Waste

*Compliance with the Fecal Coliform/E.Coli MCL is determined upon additional repeat testing

**Total Coliform:Coliform are bacteria that are naturally present in the environment and are used as an indicator that other potentially harmful bacteria may be present

Lead and Copper	Dates collected	90th Percentile	Action Level	MCGL	# of sites sampled	# Sites above Action Level	Violation	Possible Source of Contamination
Lead (ppb)	9/1/2019thru 12/31/2019	0.0028	15	0	30	0	No	Corrosion of household plumbing systems: Erosio of natural deposits
Copper (ppm)	9/1/2019thru 12/31/2019	0.179	1.3	1.3	30	0	No	Corrosion of household plumbing systems: Erosio of natural deposits

TESTING FOR LEAD - If present, elevated levels of lead can causse serious health problems,especially for pregnant women and young childern. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing .Bourne Water District is responsible for providing high quality drinking water,but cannot control the variety of materials used in plumbing components.When you water has been sitting for several hours,you can minimize the potental for lead exposure by flushing you tap for 30 seconds to 2 minutes before using water for drinking or cooking.If you are concerned about lead in your water,you may wish to have your water tested. Information about lead in drinking water,testing methods and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

SUMMARY OF FINISHED WATER CHARACTERISTICS

Regulated Contaminants	Date(s) collected	Highest Detect Value	Range Detected	MCL	MCGL	Violation	
Inorganic Contaminants:							
Barium (ppm)	2018	0.009	0.002-0.009	2	2	No	Discharge of drilling waste; discharge from metal refineries;erosion of natural deposits
Nitrate * (ppm)	2019 2018	.71 0.35	.06-.71 0.08-0.35	10	10	No	Runoff from fertilizer use;leaching from septic tanks;sewage;erosion of natural deposits
Perchlorate ** (ppb)	2019 2018	0 ~~"J"0.23~~	0 ~~0-0.23 "J"~~	2	-	No	Rocket propellants,fireworks,munitions ,flares,blasting agents* (see note below)
*Nitrate	Nitrate in drinking water at levels at levels above 10ppm is a health risk for infants of less than six months of age.High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant, you should ask advise from your health care provider.						
**Perchlorate (Various Chemical Abstract Service RegistryNumbers (CASRN)for different chemical species	Perchlorate interferes with the normal function of the thyroid gland and thus has the potential to affect growth and development, causing braiun damage and other adverse effects, particularly in fetuses and infants. Pregnant women, the fetus, infants and children up to the age of 12, and people with hypothyroid condition are particularly suseptable to perchlorate toxicity. "J"values are required when the results are above the MDL(0.012) and below the MRL(0.05)						
Organic Contaminants							
Tetrachloroethylene(PCE)(ppb)	2019	1.64	0 -1.64	5	-	No	Discharge from factories and dry cleaners
Chloroform (ppb	2019	1.21	0-1.21	ORSG 70	NA	No	By-product of drinking water chlorination
CIS-3,2 Dichloroethylene (ppb)	2019	1.26	0-1.26	70	NA	No	Runoff from fertillzer use;leaching from septic tanks;sewage;erosion of natural deposits

Secondary Contaminents	Date(s) collected	Highest Detect Value	Range Detected	SMCL	OSRG	Possible Source of Contamination
Magnesium (ppm)	2019	3	1.1-3.0	-	-	Natural Mineral and Organic Matter
Chloride (ppm)	2019	40	7.2-40	250	NA	Natural Mineral, Road Salt
Calcium (ppm)	2019	14	3.0-14	-	-	Natural Mineral and Organic Matter
Iron (ppb)	2019	0.08	0-0.08	300	NA	Erosion of Natural Deposits and oxidation of iron components
Manganese (ppb)*	2019	0.012	0-0.012	50	NA	Erosion of Natural Deposits
Sodium(ppm)**	2019	28**	5.7-28	-	20	Road Salting;erpsion of natural deposits
Potassium (ppm)	2019	1.2	0.6-1.2	-	-	Natural Mineral and Organic Matter
Sulfate (ppm)	2019	7.2	5.1-7.2	250	250	Natural Sources
Zinc (ppm)	2019	0.014	0-0.014	5	NA	Erosion of Natural Deposits and industrial discharge

*EPA has established a lifetime health advisory (HA) for Manganese at 300ppb and an acute at 1000ppb

**Sodium is a naturally-occurring element found in soil and water. It is necessary for the normal functioning of regulating fluids in human systems.Some people,however, have difficulty regulating fluid volumeas a result of several diseases , including congestive heart failure and hypoertension. The guideline of 20mg/L for sodium represents a level in water tthat physicians and sodium sensitive individuals should be aware of in cases where sodium exposures are being carefully controlled.For additional information,contact your health care provoder, your local Board of Health or the Massachusetts Dept. of Public Health,Bureau of Environmental Health Assessment at 617-624-5757.

NATIONAL PRIMARY DRINKING WATER REGULATION COMPLIANCE

The Total Coliform rule requires water systems to meet a stricter limit for Coliform bacteria. Coliform bacteria are harmless, but the presence in water can be an indication of disease-causing bacteria. When Coliform bacteria is found, special follow up tests are done to determine if harmful bacteria are present in the water supply. Over 500 Coliform samples were taken throughout the Bourne Water District in the year 2019.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead and copper in drinking water is primarily from materials and components associated with service lines and home plumbing. The Bourne Water District is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead and copper exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead and copper in your water, you may wish to have your water tested. Information on lead and copper in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

Sodium; ORSG = 20 Sodium sensitive individuals, such as those experiencing hypertension, kidney failure or congestive heart failure, should be aware of the levels of sodium in their drinking water where exposures are carefully being controlled.
Massachusetts Office of Research and Standard Guidelines (ORSG): This is the concentration of a chemical in drinking water, at or below which, adverse health effects are likely to occur after chronic (lifetime) exposure, with a margin of safety. If exceeded, it serves as an indicator of the potential need for further action.

If you are interested in a more detailed report, contact Robert Prophett at 508-563-2294.

REQUIRED ADDITIONAL HEALTH INFORMATION:

To insure that tap water is safe to drink, Department of Environmental Protection (DEP) and Environmental Protection Agency (EPA) prescribes limits on the amounts of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) and the Massachusetts Department of Public Health regulations establish limits for contaminants in bottled water. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency Safe Drinking Water Hotline (1-800-426-4791).The sources of drinking water (both tap and bottled) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and radioactive material and can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in the sources include:

(A) Microbial contaminants such as viruses and bacteria which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.

(B) Inorganic contaminants such as salts and metals which can be naturally-occurring or result from urban storm runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.

(C) Pesticides and herbicides, which may come from a variety of sources such as agriculture, storm water runoff and residential uses.

(D) Organic chemical contaminants, including synthetic and volatile organics which are by-products of industrial processes and petroleum production and can also come from gas stations, urban storm water runoff and septic systems.

(E) Radioactive contaminants, which can be naturally occurring or be the results of oil and gas production and mining activities. In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infections by Cryptosporidium are available from the Safe Drinking Water Hotline (1-800-426-4791).

SOURCE WATER ASSESSMENT

The Bourne Water District had a source water assessment performed by the MA. Department of Environmental Protection in 2002. The Source Water Assessment and Protection (SWAP) program, established under the Federal Safe Drinking Water Act requires every state to:

- Inventory land uses within the recharge areas of all public water supply sources.
- Assess the susceptibility of drinking water sources to contamination from these land uses.
- Publicize the results to provide support for improved protection.

A susceptibility ranking of high was assigned to the Bourne Water District using the information collected during the assessment by the DEP. The high ranking was due to the potential contamination from land uses such as auto repair shops, truck terminal, furniture refinishing, auto salvage operation, an industrial park and activities in the recharge area (Zone II's)of some of the wells. The complete SWAP report is available at the Bourne Water District's office. For more information contact Robert Prophett at 508-563-2294.

CROSS CONNECTION

A cross connection is a connection between a drinking water pipe and a polluted source. The pollution can come from your own home. For instance, you're going to spray fertilizer on your lawn, and you hook up your hose to the sprayer that contains the fertilizer. If the water pressure drops (say because of a fire hydrant being used or water main break) when the hose is connected to the fertilizer sprayer, the fertilizer may be sucked back into the drinking water pipes through your hose. Using an anti-siphon backflow-prevention device on your sprayer or hose bib can prevent this problem.
The Bourne Water District recommends using devices with an anti-siphon feature or equipping hose bibs with hose bib vacuum breakers to prevent against back flow. For additional information on cross connections and on the status of your water system's cross connection program, please contact Robert Prophett at 508-563-2294.

UPPER CAPE REGIONAL WATER SUPPLY COOPERATIVE
2019 Consumer Confidence Report (PWS ID # 4261024)

The Upper Cape Regional Drinking Water Supply Cooperative consists of three groundwater supply wells located in Sandwich, MA on Joint Base Cape Cod (JBCC). A Board of Managers representing four-member public water supply systems manages the Cooperative. The Cooperative has the capacity to provide a supplemental supply of water to its member public water systems, which include the Town of Falmouth, the Bourne Water District, the Mashpee Water District and the Sandwich Water District. The Cooperative also supplies water to the Otis Air National Guard public water system on JBCC and the Barnstable County Jail.
Wells #1, #2 and #3 are located in a forested area of the northeastern portion of the JBCC. In July 2004, the Department of Environmental Protection completed a source water assessment (SWAP) report for the Cooperative water supply wells. A SWAP report is a planning tool to support local and state efforts to improve water supply protection by identifying land uses within water supply protection areas that may be potential sources of contamination. The report identifies potential sources of contamination including a gas station, a medical facility and a military facility, and helps focus protection efforts on appropriate Best Management Practices. A susceptibility ranking of high was assigned to the Cooperative using information that was collected during the assessment. A copy of the report is available, upon request, from the Cooperative. JBCC has adopted a Groundwater Protection Plan to prohibit inappropriate activities on JBCC property within the Zone II areas of community public water supply wells. In addition, the Environmental Management Commission provides oversight over activities on the northern portion of the JBCC. For information regarding the Groundwater Protection Plan call Elizabeth Kirkpatrick at 508-968-6487. For information regarding the Environmental Management Commission call Len Pinaud at 508-946-2871. For questions regarding SWAP or other information contained within this document call Marisa Picone-Devine at 508-888-7262.
Our system, out of an abundance of caution and concerns about PFAS, sampled for PFAS compounds (PFBS, PFHpA, PFHxS, PFNA, PFOA, and PFOS) at all three wells in 2019; there were no detections of any of the analytes in any of the samples.

2019 WATER QUALITY DATA

Listed below are the substances detected in water samples collected during the most recent sampling period from the three (3) wells that comprise the Upper Cape Drinking Water Supply Cooperative.

Inorganic Contaminants	Year Sampled	Highest Result	Range of Detections	MCL	MCLG	Violation (Y / N)	Possible Sources
Nitrate	2019	0.08 ppm	0.08 ppm	10 ppm	10 ppm	No	Runoff from fertilizer use; Leaching form septic tanks, sewage; Erosion of natural deposits
Radioactive Contaminants	**Year Sampled**	**Amount Detected**	**Range of Detections**	**MCL**	**MCLG**	**Violation**	**Possible Sources**
Radium 228	2015	0.623 pCi/L	NA	5 pCi/L	0	No	Erosion of natural deposits
Combined Radium	2015	0.623 pCi/L	NA	5 pCi/L	0	No	Erosion of natural deposits
Unregulated and Secondary Contaminants	**Year Sampled**	**Amount Detected**	**Range of Detections**	**SMCL**	**ORSG**	**Violation**	**Possible Sources**
Chloroform	2019	2.08 ppb	1.09 -2.08 ppb	NA	70 ppb	No	Trihalomethane: by-product of drinking water chlorination. In non-chlorinated sources, chloroform may be naturally occurring
Chloride	2019	9.1 ppm	8.0 -9.1 ppm	250 ppm	—	NO	Runoff and leaching from natural deposits; seawater influence
Copper	2019	0.015 ppm	.009 ppm – 0.015 ppm	1 ppm	—	No	Internal corrosion of household plumbing; erosion of natural deposits
Iron	2019	10 ppb	ND – 10 ppb	300 ppb	--	No	Natural and industrial sources as well as aging and corroding distribution systems and household pipes
Sodium	2018	5.8 ppm	5.8 ppm	—	20 ppm	No	Natural erosion, road salt
Sulfate	2019	5.6 ppm	5.1 – 5.6 ppm	250 ppm	--	No	Runoff and leaching from natural deposits; industrial wastes

APPENDIX F
RARE SPECIES REPORTED TO NATURAL HERITAGE AND ENDANGERED SPECIES PROGRAM

Appendix F - LIST OF RARE SPECIES REPORTED TO NHESP
Quantities shown are not resulting of standardized surveys, and should not be interpreted as population trends

Common/Scientific Names	Fed Status[14]	State Status	TY 2011	TY 2012	TY 2013	TY 2014	TY 2015	TY 2016	TY 2017	TY 2018	TY 2019	TY 2020
			Individuals Reported									
BIRDS												
Grasshopper Sparrow[13] *(Ammodramus savannarum)*	-	T	26	27	19	26	23	16	15	16	20	34
Northern Harrier[1] *(Circus cyaneus)*	-	T	4	5	8	12	Wintering	Wintering	Wintering	Wintering	Wintering	Wintering
Upland Sandpiper[13] *(Bartramia longicauda)*	-	E	4	3	5	2	4	9	8	7	12	6
Eastern Meadowlark[13,16] *(Sturnella magna)*	-	SC	9	2	3	1	0	8	3	2	7	14
Long-eared Owl[1] *(Asio otus)*	-	SC	0	0	0	1	0	0	0	0	0	0
Vesper Sparrow *(Pooecetes gramineus)*	-	T	3	1	3	1	0	0	0	0	0	0
Whip-poor-will[2] *(Antrostomus vociferous)*	-	SC	0	201	51	156	96	87	52	110	53	99
Bald Eagle[1] *(Haliaeetus leucocephalus)*	-	SC	0	0	0	0	3	0	0	0	0	0
REPTILES and AMPHIBIANS												
Eastern Box Turtle *(Terrapene carolina carolina)*	-	SC	29	13	1	15	13	38	42	43	58	45
Eastern Hog-nosed Snake *(Heterodon platirhinos)*	-	SC	0	0	0	0	0	2	3	8	9	1

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Quantities shown are not resulting of standardized surveys, and should not be interpreted as population trends

Common/Scientific Names	Fed Status[14]	State Status	TY 2011	TY 2012	TY 2013	TY 2014	TY 2015	TY 2016	TY 2017	TY 2018	TY 2019	TY 2020
						Individuals Reported						
ODONATES												
Comet Darner[3] *(Anax longipes)*	-	-	14	4	0	5	0	N/A	N/A	N/A	N/A	N/A
Spatterdock Darner[3] *(Aeshna mutata)*	-	-	10	14	0	9	0	N/A	N/A	N/A	N/A	N/A
PLANTS												
Adder's Tongue Fern[4,6] *(Ophioglossum pusillum)*	-	T	48	84	542	1467	256	98	247	0	25	646
Broad Tinker's Weed[5,6] *(Triosteum perfoliatum)*	-	E	233	332	1230	297	N/A	113	127	0	200	TBD
American Arborvitae[9] (*Thuja occidentalis*)	-	E	0	0	0	0	0	4	N/A	N/A	N/A	N/A
BEES												
Walsh's Anthophora[15] *(Anthophora walshii)*	-	E	0	0	0	0	0	0	5 (1)	0	32 (9)	4
BUTTERFLIES and MOTHS[11]												
Buck Moth (*Hemileuca maia*)	-	SC	0	0	0	4	13	90	95	0	4	2
Pine Barrens Speranza *(Speranza exonerata)*	-	SC	0	0	0	0	0	44	13	0	0	0
Sandplain Euchlaena *(Euchlaena madusaria)*	-	SC	0	0	0	0	0	3	7	0	0	1
Heath Metarranthis *(Metarranthis pilosaria)*	-	SC	0	0	0	0	0	1	1	0	0	0

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Quantities shown are not resulting of standardized surveys, and should not be interpreted as population trends

Common/Scientific Names	Fed Status[14]	State Status	TY 2011	TY 2012	TY 2013	TY 2014	TY 2015	TY 2016	TY 2017	TY 2018	TY 2019	TY 2020
			Individuals Reported									
BUTTERFLIES and MOTHS[11]												
Melsheimer's Sack Bearer *(Cicinnus melsheimeri)*	-	T	0	0	0	0	0	2	0	0	0	7
Gerhard's Underwing *(Catocala herodias)*	-	SC	0	0	0	0	0	33	10	0	0	2
Pine Barrens Zale *(Zale lunifera)*	-	SC	0	0	0	0	0	13	8	0	0	0
Barrens Dagger Moth *(Acronicta albarufa)*	-	T	0	0	0	0	0	1	0	0	0	0
Chain-dotted Geometer *(Cingilia catenaria)*	-	SC	0	0	0	0	0	0	0	0	1	0
Drunk Apamea *(Apamea inebriata)*	-	SC	0	0	0	0	0	1	0	0	0	0
Pink Sallow *(Psectraglaea carnosa)*	-	SC	0	0	0	0	0	9	5	0	0	0
Pink Streak *(Dargida rubripennis)*	-	T	0	0	0	0	0	25	0	0	0	3
Collared Cycnia *(Cycnia collaris)*	-	T	0	0	0	0	0	0	1	0	11	33
Coastal Heathland Cutworm *(Abagrotis benjamini)*	-	SC	0	0	0	0	0	0	1	0	0	0
Woolly Gray *(Lycia ypsilon)*	-	T	0	0	0	0	0	0	2	0	0	0

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Quantities shown are not resulting of standardized surveys, and should not be interpreted as population trends

Common/Scientific Names	Fed Status[14]	State Status	TY 2011	TY 2012	TY 2013	TY 2014	TY 2015	TY 2016	TY 2017	TY 2018	TY 2019	TY 2020
			Individuals Reported									
BUTTERFLIES and MOTHS[11]												
Water-willow Stem Borer *(Papaipema sulphurata)*	-	T	0	0	0	0	0	0	1	0	0	0
Waxed Sallow Moth *(Chaetaglaea cerata)*	-	SC	0	0	0	0	0	0	2	0	0	0
Frosted Elfin[12] *(Callophrys irus)*	-	SC	0	0	0	0	0	5	5	5	TBD	25
Slender Clearwing Sphinx *(Hemaris gracilis)*	-	SC	0	0	0	0	0	0	0	0	0	5
CRUSTACEANS												
Agassiz's Clam Shrimp[10] *(Eulimnadia agassizii)*	-	E	0	0	0	0	1	0	6	38	9	3
MAMMALS												
Northern Long-Eared Bat[7,8] *(Myotis septentionalis)*	T	E	0	0	0	8	22 (2)	15 (1)	2	1	3	TBD
Little Brown Bat[7] *(Myotis lucifugus)*	UR	E	0	0	0	4	40	22	4	2	6	TBD
Tricolored Bat[7] (Perimyotis subflavus)	UR	E	0	0	0	11	11	7	3	2	3	TBD
Eastern Small-Footed Bat[7] *(Myotis leibii)*	UR	E	0	0	0	0	0	0	0	0	1	TBD

[1] NHESP is only accepting reports of nesting raptors, rather than opportunistic observations of individuals. Reports are provided as relevant, but common wintering birds or migrants are not individually tracked or reported (e.g., Northern Harrier). [2] As of TY 2016, quantities only reflect the results of annual survey routes during May, after totaling the minimum number (between two observers) heard at each site. In prior years, the number shown reflects the quantity reported to NHESP, which may include multiple survey windows and repeated counts. Due to Covid-19 concerns, 2020 routes were not run in duplicate, and the number represents the total number of individual birds heard calling throughout the routes. [3] Comet and Spatterdock Darner are no longer on NHESP's rare species list. Also, Odonate surveys were suspended after TY 2015. [4] Several known *Ophioglossum* sites could not be surveyed in TY 2016 due to a lack of cease-fire agreement with the off-base Monument Beach Shooting Club. 2019 numbers are likely under representative, as surveys occurred late in the season. In 2020 *Ophioglossum* was surveyed earlier in the year in order to get an accurate count. [5] Actual 2019 numbers may be as few as 82, MAARNG staff is now studying the genetics of *Triosteum perfoliatum* and *T. aurantiacum* due to difficulty in accurately differentiating the two species. Once the genetics project is completed, 2020 numbers will be reported. [6] In 2018, only sites with historic records and no recent records were surveyed, and this should not be interpreted as a loss of rare plants between 2017 and 2018. [7] Acoustic monitoring collects "call sequence" data and the true number of individuals is unknown. Numbers in the table reflect the number of survey sites with acoustic detections confirmed through manual call vetting. Numbers are reported to NHESP, but not tracked by them due to current uncertainty in using acoustic identifications. TY 2020 data is still being processed, these numbers are to be determined at a later date (TBD). [8] Number in parentheses is captured individuals trackable by NHESP due to species identification confirmation versus acoustic data. [9] NHESP is not interested in tracking this population, as it is likely of anthropogenic origin (pers. comm. with State Botanist, Bob Wernerehl). [10] Numbers represent only locations where species was found and ID confirmed by either NHESP Aquatic Ecologist or trained MAARNG staff. [11] Moths were extensively surveyed under contract with the Lloyd Center for the Environment between 2016 and 2017. There were no surveys in 2018, and MAARNG staff is not recording flight records of Barrens Buckmoth, as they are ubiquitous around the Training Area/Reserve. 2019 and later quantities represent individuals or groups of individuals (a group of Barrens Buckmoth caterpillars on a single leaf is counted as one, as are a pair of Unexpected Cycnia caterpillars sharing the same butterflyweed plant). [12] MAARNG staff did not perform surveys for *Callophrys irus* in 2019, but facilitated USFWS surveys. Results are pending, but USFWS staff found Frosted Elfins across a wider area than was previously known.
[13] Grassland bird numbers represent individual territories observed in a given year rather than the total number of birds observed throughout repeated surveys as was reported in past years (prior to the TY 2019 SOTRR). Upland Sandpiper counts exclude known females, but include unknown birds. Also, the numbers reported in annual reports TY 2015 and earlier included birds found on the Coast Guard airfield, which is not reported by MAARNG Natural Resources. Due to these changes, past year quantities may be different from prior versions of Appendix F, but now reflect the population more accurately. [14] "UR" indicates a species is currently under review for listing on the federal Endangered Species Act. [15] MAARNG contracted a targeted survey for *Anthophora walshii* in 2019 after an exploratory bee survey in 2017. The first number represents the number of flying/foraging records, and in parentheses the records of nesting activity. Unconfirmed nests were not counted. [16] Species added to MA Endangered Species List in TY 2020. Observation quantities included for prior years, but would not have been officially reported to NHESP.

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APPENDIX G
ENVIRONMENTAL PERFORMANCE STANDARDS VIOLATIONS HISTORY

EPS VIOLATIONS HISTORY			
TRAINING YEAR	REPORTED VIOLATION	EXPLANATION OF VIOLATION	CORRECTIVE ACTION
TY 2020	Training Area Fire Management EPS (EPS 11)	Three burn barrels (55-gallon drums) were found at SVLs 1 and 2. The MAARNG reported the nonconformance to the EMC on October 25, 2019.	All full-time and Mobilization Day staff are instructed to review Training Area Clearing processes and be re-briefed on guiding regulations and standards that apply to the Training Area/Reserve. Clear and obvious signage stating that open burning is prohibited has been posted at Range Control. The Camp Edwards Operations and Training Regulation 350-2 has been updated to clearly state the requirement for clearing training areas and that open burning is prohibited on Camp Edwards.
TY 2019	General Performance Standard	Three L600 M119 whistling booby trap simulators were used; they are not on the approved munitions list and were not authorized for use. The MAARNG reported a nonconformance to the EMC on September 17, 2019.	All levels: command, units training and the ASP will be provided a list of items permanently and temporarily authorized for a particular training event. The ASP will make a change in their ammunition reservation program that will not allow unauthorized ammunition or simulators to be reserved. Camp Edwards Range Control will do a final munition check as units check in for their reserved training area or venue.
TY 2018	Rare Species EPS (EPS 3)	A road puddle containing state-listed Agassiz clam shrimp was filled by a unit training at Dig Site 1. The MAARNG forwarded a formal notice of violation to the EMC on May 16, 2018.	Camp Edwards will, after relocation of the clam shrimp and in concert with the CMP, fill the puddles, use signage to avoid infilling of relevant puddles, and educate users as to how they are supposed to coordinate with Camp Edwards before taking actions outside of their training plan while in the Training Area/Reserve.
TY 2017	None	-----	-----
TY 2016	General Performance Standard	Eight thousand paintball rounds were fired by a unit on the IMT range (Dig Site 3) without permission or prior coordination. The MAARNG forwarded a formal notice of violation to the EMC on November 9, 2015.	Unit soldiers cleaned and cleared the area of debris, discussion of the seriousness of the violation with the Unit Commander and told of actions needed for compliance when wanting to train with any unapproved munition. Camp Edwards staff conducted a Range Officer in Charge and Range Safety brief audit to validate content and effectiveness. Range Control staff will conduct assessments of units while they are training in the Training Area/Reserve to ensure activities are within established performance standards.
TY 2015	Vehicle Performance Standard EPS (EPS 17)	A pickup truck was driven into, off road, and placed in Training Area BA-7 as a temporary training aid. The MAARNG forwarded a formal notice of violation to the EMC on June 5, 2015.	Camp Edwards staff conducted a Range Officer in Charge and Range Safety brief audit to validate content and effectiveness. Range Control staff will conduct assessments of units while they are training in the Training Area/Reserve to ensure activities are within established performance standards.
TY 2014	None	-----	
TY 2013	None	-----	-----

EPS VIOLATIONS HISTORY			
TRAINING YEAR	REPORTED VIOLATION	EXPLANATION OF VIOLATION	CORRECTIVE ACTION
TY 2012	Small Arms Range EPS (EPS 19)	On November 7, 2011, the EMC issued a notice for failure to remove water from bullet traps on all three active small arms ranges within the prescribed time periods on multiple occasions during TY 2011. The EPA also cited the MAARNG for a violation for the same failure.	The MAARNG submitted a Response Packet to the EMC in early December 2011 which included: 1) a Notification Protocol should it not be able to comply with a requirement of the OMMPs; 2) a STAPP™ Range Tarp Cover Project Description; 3) Water Removal Contracting and Budgeting provisions; 4) creation of a Camp Edwards Sustainable Range Program Working Group; and 5) a Standard Operating Procedure for STAPP™ System Range Maintenance Procedures and Inspections.
TY 2011	Wetlands & Surface Water EPS (EPS 2) & General Use and Access EPS (EPS 18)	On May 17, 2011 military vehicles (Humvees) were driven into an off limits area within 100 feet of Donnelly Pond in the B 8 Training Area. On the same date, Humvees were driven on a seasonably restricted road in the B 8 Training Area.	The using unit notified Range Control and the EMC's Environmental Officer, who was present at Range Control when the using unit reported the violation. The MAARNG reestablished the seasonal road closure and closing of unauthorized access points in the B 8 Training Area, revisited all seasonal road closure areas to ensure road blocks and proper signage was in place, and conducted a debriefing by Range Control of the involved unit.

Cover photographs: Clockwise from top left, A soldier firing on Sierra Range at Camp Edwards; a box turtle at Camp Edwards; Lupines found at Camp Edwards; a Canada Armed Forces soldier training at Camp Edwards