

# Hicks Flat Final Project Report



Prepared for the Association of Bay Area Governments, San Francisco Estuary Project, and the

State and San Francisco Bay Regional Water Quality Control Board

Prepared by Matt Baldzikowski, CPESC #828, Midpeninsula Regional Open Space District

December 2013

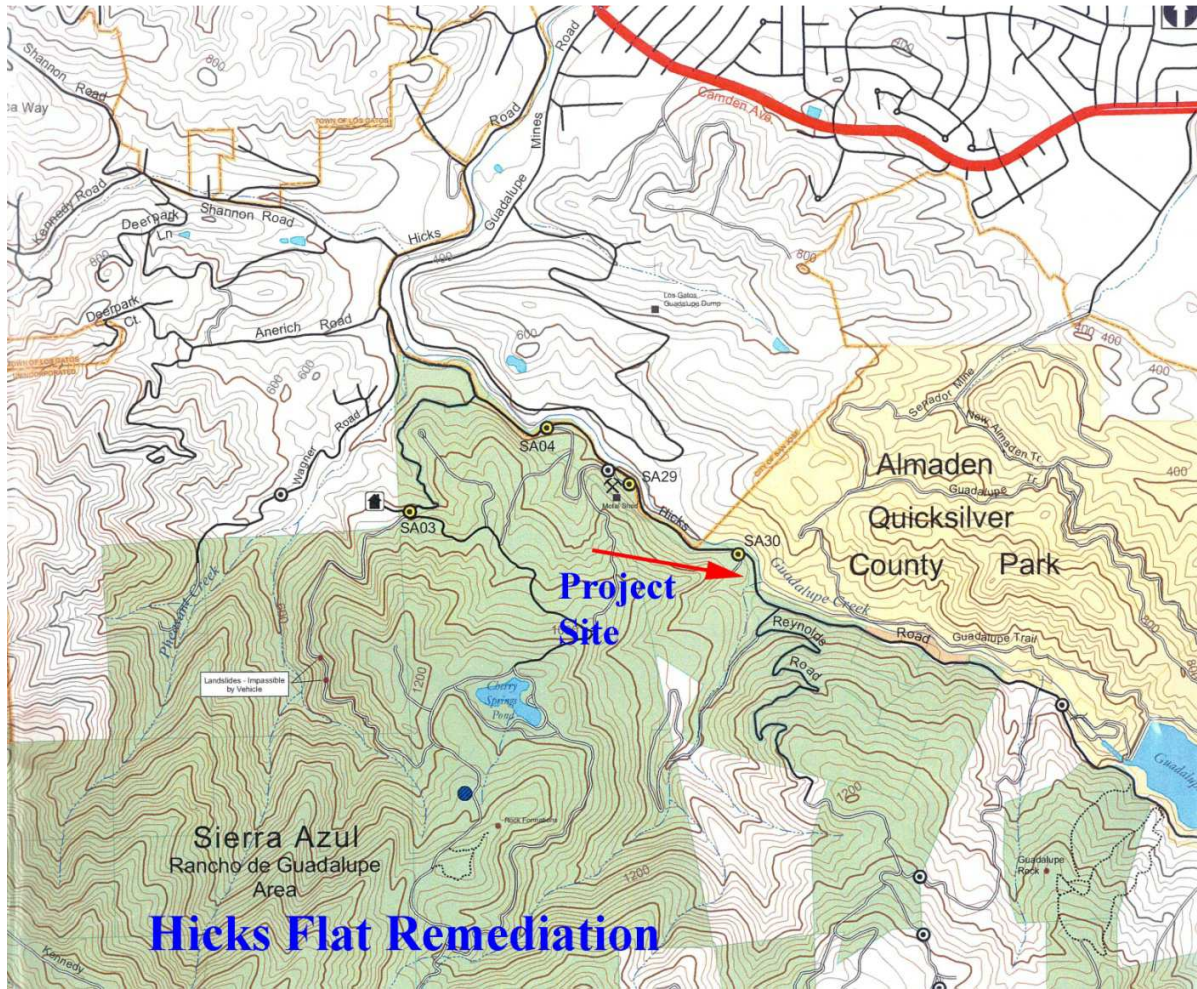
# Table of Contents

Project Location, Implementation	page 1
Project Performance	page 5
Lessons Learned	page 7
Outreach	page 8
Project Funding	page 8
Project Follow-up	page 9
Photo's	page 10
Items Submitted	page 13

## List of Figures:

<b>Figure 1.</b> Project Location Map.	page 2
<b>Figure 2.</b> Stream Reach Location Map.	page 3
<b>Figure 3.</b> Slope flattening to achieve stable slope configuration.	page 3
<b>Figure 4.</b> Stable waste (fill) disposal location.	page 4
<b>Figure 5.</b> Perimeter air monitoring.	page 5
<b>Figure 6.</b> Creek protection, restoration.	page 6
<b>Figure 7.</b> Creek protection practices.	page 7
<b>Figure 8.</b> Blackberry and willow growth.	page 8
<b>Figure 9.</b> Photo point 5 sequence. Slope flattening, creek-side restoration.	page 10
<b>Figure 10.</b> Photo point 4 sequence. Slope flattening through erosion control.	page 11
<b>Figure 11.</b> Photo point 3 sequence. Waste disposal (fill) placement.	page 12

**Section a. Project Location, Implementation**



**Figure 1.** Project Location Map.

### Hicks Flat Mercury Remediation Site Sierra Azul Open Space Preserve



**Figure 2.** Stream Reach Location Map.

The Hicks Flat Remediation Project was successfully completed in September of 2013, per the project plans and reports prepared in advance of project implementation. Construction focused on removing approximately 800 cubic yards of perched, unstable mercury mine waste adjacent to Hicks Creek. This unstable mine waste was actively failing into the adjacent Hicks Creek. The slope was stabilized through the removal of approximately 800 cubic yards of over-steepened mine waste. Geotechnical investigations completed prior to construction concluded that a 2.5:1 slope would be stable. Waste material removed from the creek-side slope to achieve the 2.5:1 slope, was placed at a stable flat location onsite, where it was stabilized through grading and erosion control measures (photo's below).



**Figure 3.** Slope flattening to achieve stable slope configuration.



**Figure 4.** Stable waste (fill) disposal location.

The project Geotechnical Engineer, and/or Geotechnical Technician were onsite throughout the active grading portion of the project, to insure proper final slope configurations and proper compaction of fill. The Geotechnical Engineer also conducted a final project inspection. Geotechnical observations and conclusions are presented in the Final Report of Geotechnical Testing and Observation (October 31, 2013, Attachment 1 to this report), concluding that grading operations (project) were completed in general conformance with the grading plans, revegetation plan, and geotechnical recommendations.

The project was also extensively monitored for air quality during construction, to identify if dust control measures were adequately implemented, and to assess potential worker exposure to mercury and naturally occurring asbestos within the work zone. This monitoring was consistent with the air monitoring recommendations of the Health and Safety Plan and Remedial Action Workplan prepared for the project.



**Figure 5.** Perimeter air monitoring.

The monitoring effort and conclusions are presented in the final Air Monitoring Report (October 31, 2013, Attachment 2 to this report). The Air Monitoring Report concludes that dust suppression management practices were effective in controlling the pollutants of concern, and that there was a low exposure risk to workers, with exposures orders of magnitude below the Permissible Exposure Limit for airborne contaminants adopted by Cal/OSHA.

Pre-construction surveys and daily monitoring for sensitive species were completed during the project. No sensitive species were encountered during project implementation. Protective biological measures were completed per MROSD permit applications and approvals. These included: pre-construction surveys (augmented with daily surveys), worker biological training, and the installation of biological exclusion fencing surrounding the active work site.

Erosion and sediment control measures were installed during project implementation and at the completion of the grading for final project surface stabilization, as recommended on the Erosion Control Plan sheet, and Revegetation Plan developed for the project. These included the installation of silt fencing, straw bales, straw wattles, extensive creek protection measures (described in Field Implementation Report), straw mulch, hydroseeding, and site plantings of native blackberry, and willow cuttings. Additionally, the near creek environment was treated with native woody material for additional erosion control and creek restoration/ wildlife habitat benefits (photo's next page).



**Figure 6.** Creek protection, restoration.

### **Section b. Project Performance**

The project was implemented well by the contractor, Environmental Remediation Resources Group (ERRG). There were no substantial alterations to the project design or implementation that arose during the course of the project. The project was well guided by geotechnical and air quality monitoring and testing (Geocon), and with MROSD staff onsite. This provided for quick, efficient, well informed decision making and coordination during implementation, which kept the project running smoothly.

Per the Project Assessment and Evaluation Plan (PAEP) the Hicks Flat Remediation Project stabilized and restored 120' of streambank, and prevented approximately 10 pounds of total mercury mass from failing into Hicks Creek. Per the PAEP the Geotechnical engineer has accepted project grading, erosion control and drainage as being in general conformance with the engineered plans and specs prepared for the project, including stable re-graded slope configurations (Attachment 1).

### Section c. Lessons Learned

The project was completed well, without any substantial changes. This confirmed that the initial design and technical work completed for the project, as required, was scoped and completed well, leading to smooth project implementation. There was also a bit of good luck, no substantial surprises emerged from within the undocumented fill that was removed.

The project involved grading steep banks adjacent to an intermittent stream channel, with very rocky substrate. A little extra emphasis on stream protection maintained the active channel in excellent condition, requiring very little clean-up. This required additional encouragement and participation by MROSD staff to convey and execute properly. Silt fence was staked to the top of a row of straw bales placed tightly against the stream bank. The fence was offset to approximately the middle of the bales. This allowed the excavator bucket room to pull the slope edge, and contain loose soil ravel that would have over-topped the straw bales alone, spilling into the stream bed. Gaps or voids were plugged with straw wattles which were easily cleared of soil, and removed at the end of grading. Additionally, lining the channel with fabric allowed for easy location and removal of the minimal volume of soil clods and rock that happened to make it over the silt fence.



**Figure 7.** Creek protection practices.

Straw bale placement was utilized to elevate the toe of the excavated slope above the ordinary high water mark of Hicks Creek. This was beneficial regarding permit streamlining, but also had the additional benefit of maintaining native vegetation roots and stems intact. The majority of this vegetation is native blackberry and poison oak, and it is anticipated that the toe of the re-graded slope will re-establish vegetation more quickly due to the preservation of this root zone.

The near stream wood placement was an unfamiliar concept to the contractor foreman, so the stockpiling, sorting and placing of woody material took a little extra work/ time. However, this is a beneficial, widely used biotechnical restoration practice, which was well worth the additional half-day of excavator time.

Blackberry plantings were installed prior to hydroseeding. These plantings should have been covered with the planting pots prior to hydroseeding. The hydroseed mix had to be manually removed from the



blackberry leaves, lesson learned. Blackberries have been watered manually by MROSD since installation, awaiting rain, and are alive and producing new growth. Willow poles planted on site are also exhibiting new growth (photo below).



**Figure 8.** Blackberry and willow growth.

#### **Section d. Outreach**

Outreach has been conducted through public notifications regarding the project. Public notifications have included three separate staff reports and presentations prepared for the MROSD Board of Director's at noticed public hearings. The last of these, for award of construction contract, was also specifically mailed to private property owners near the project site, and to Santa Clara County Parks who operate the adjacent New Almaden Quicksilver County Park. This notification occurred approximately one month prior to construction, for outreach purposes, and to allow time to accommodate possible inquiries. The staff report contained specific information regarding the purpose of the project, timeline, and operational issues that might have been a concern, such as dust monitoring and management practices, and traffic. Additionally, the site was posted with an informational sign regarding the project, visible from Hicks Road (public) two weeks in advance of grading, with contact information provided (Attachment 3). Project inquiries were not received by the District following this informational outreach. An outreach letter containing project completion information has also been sent to the same stakeholders as previously notified (Attachment 4).

#### **Section e. Project Funding**

The Hicks Flat project budget was initially projected to cost a total of \$390,000 which included \$285,000 available through grant funds, and a MROSD match of 25%. The project was successfully completed substantially below the initial cost estimates. A total of \$222,885 was actually spent to complete the

project. Of this amount, MROSD's match contribution is \$63,221. MROSD has met its grant match through "in-kind" staff time totaling \$39,616, and by funding a portion of the geotechnical construction oversight (\$23,605). This leaves the remaining costs funded by the grant. Grant funded costs upon project completion total \$159,664.

#### **Section f. Project Follow-up**

Project follow-up will be consistent with the November 2010 Monitoring Plan developed for the project. Planned follow-up activities include visual monitoring surveys and photo monitoring of the project site during the first winter following construction. The principle focus of this initial monitoring period is to insure that the erosion/sediment control measures implemented perform well, and if problems arise, they are addressed quickly. Photo points have been established at the site, and will be utilized to document the recovery of the site following remedial grading. Site and photo monitoring will continue for an additional two years (following initial winter period), with monitoring reports submitted to the Grant Manager in June of each year. Restoration plantings have been hand watered by MROSD staff approximately every 10-14 days since they were planted, since the weather has been unusually dry this fall. Hand watering will continue as needed. All plantings are alive, with most exhibiting new growth. If mortality occurs, replacement plantings will be provided by MROSD.

Section g. Photo's



**Figure 9.** Photo point 5 sequence. Slope flattening, creek-side restoration, final erosion control implementation.



**Figure 10.** Photo point 4 sequence. Slope flattening through erosion control completion.



**Figure 11.** Photo point 3 sequence. Waste disposal (fill) placement through grading completion.

**Section h. Items Submitted** (per Table of Items for Submittal, and reference #'s):

- 1) Field Implementation Report (separate cover). (B.3.3)
- 2) Record Drawings (revised Revegetation Plan sheet). (B.3.3)
- 3) Project Completion Information to Stakeholders. (B.4.1)
- 4) Draft Project Report. (E.3)

Attachments:

- 1) Final Report of Geotechnical Testing and Observation, Geocon Consultants, Inc., October 31, 2013.
- 2) Air Monitoring Report, Geocon Consultants, Inc., October 31, 2013.
- 3) Project Outreach Sign.

# Hicks Flat Remediation Project Field Implementation Report

Sierra Azul Open Space Preserve  
Midpeninsula Regional Open Space District



Prepared by Matt Baldzikowski, Resource Planner III, CPESC #828

October 2013

The site grading for the Hicks Flat Remediation Project, located within the Sierra Azul Open Space Preserve, Santa Clara County, was successfully completed in September 2013. The remedial grading was completed in conformance with the engineered grading plans, geotechnical reports, Health and Safety Plans, and resource agency approvals. The project site was staked and flagged to clearly mark construction boundaries and effectively manage grading to minimize site disturbance.

Geotechnical construction observations were conducted throughout the period of site grading, with geotechnical testing completed as required. These observations and tests insured that the primary project objective, re-grading the site to a stable slope configuration, was achieved.

Substantial air quality monitoring was undertaken during the active grading portion of the project, consistent with the recommendations of the Health and Safety Plan prepared for the project. This monitoring documented that the intensive dust control measures undertaken during site disturbance activities were effective in controlling the pollutants of concern (mercury, and naturally occurring asbestos).



Air quality monitoring.

Pre-construction biotic surveys and related worker education training was completed in advance of project initiation, as proposed by MROSD, with concurrence by permitting agencies. Additionally, daily pre-construction surveys and construction monitoring continued throughout the active grading portion of the project. MROSD staff was onsite for project coordination, observation, and recording, and could also accommodate ongoing biological monitoring while already on site. Sensitive species were not observed at or near the project area during the construction period.

The project area was surrounded with biological exclusion fencing during active grading, as proposed by MROSD, with concurrence by permitting agencies. Some of this fencing also doubled as BMP's designated on the grading plans for erosion/sediment control purposes.

Stream protection measures during construction were extensive, and very effective. These included straw bales placed tightly against the channel bank, augmented with straw wattles to fill gaps as needed. Silt fence was also tightly staked on top of the straw bales to contain soil



and rock which could roll down during slope grading. Additionally, the entire channel was lined, bank to bank, with geotextile fabric to contain any soil/ rock that made it over the silt fence. Loose soil and rock dislodged during construction was carefully removed by heavy equipment and then finished off by hand as the temporary construction BMP's were removed.



Creek protection BMP's.

Final erosion control BPM's were installed per the specifications of the engineered grading plans and the revegetation plan. These include: slope flattening, track walking, straw wattle and silt fence placement, hydroseeding, and surface straw mulch application. Additionally, woody slash (including two bay trees which had been undermined and had fallen last winter on the slope to be re-graded) was spread immediately adjacent to the intermittent stream channel at the graded toe of the project. This maintained the bay trees where they had fallen, and provided beneficial woody material adjacent to the stream, consistent with biotechnical stream restoration techniques detailed in stream restoration manuals (DFW, DPR).



Wood slash placement.

Since wood placement required an excavator, it had to be completed prior to hydroseeding. Therefore, prior to wood placement, the area was heavily seeded by hand with a standard

District seed mix that consists of three native grass seed species (Purple Needlegrass, Blue Wild rye, and California Brome), that were also recommended in the Revegetation Plan. This will provide adequate grass coverage for erosion control purposes in combination with the woody slash.

Difficulty was encountered with pounding willow stakes into the very rocky substrate at the toe of the project area. Instead, willow poles were left long 4-6', instead of cut into smaller stakes, and were planted within the trench beneath the lowest row of straw wattle on the slope. The willow poles had been soaked prior to planting, and were hand packed with moist soil beneath the wattle. Native Blackberry plants were planted on the slope above the wood slash and lower row of wattles with willow, and should aggressively re-colonize down the toe of the slope. Willows and blackberries have been watered every 7-14 days following planting, and both species exhibit new growth.



Willow and blackberry planting.



Willow poles planted in straw wattle trench.

The lowest 18" of creek bank was also maintained undisturbed which protected some native roots and plant growth. It is anticipated that the toe of the slope will quickly revegetate from this remnant vegetation (mostly native blackberry and poison oak), augmented by hand seeding and hydroseeding of native species. The very rocky stream bank substrate encountered also appears to provide adequate "armoring". The natural armoring and existing biotechnical benefits (roots and plants), augmented by new willow, blackberry plantings, and woody slash placement, are expected to adequately maintain the stream bank. Minimal erosion is anticipated.

In summary, the project was successfully completed in substantial conformance with the approved plans and specs, and included the necessary oversight and monitoring to achieve the projects goal. Some biotechnical restoration measures were added, or modified to accommodate restoration opportunities (wood), and difficult site conditions (rock), as detailed above. These changes are reflected in the revised record drawing of the Revegetation Plan (see Figure 1, next page).

# HICKS FLAT GRADING PLAN

SAN JOSE, CALIFORNIA

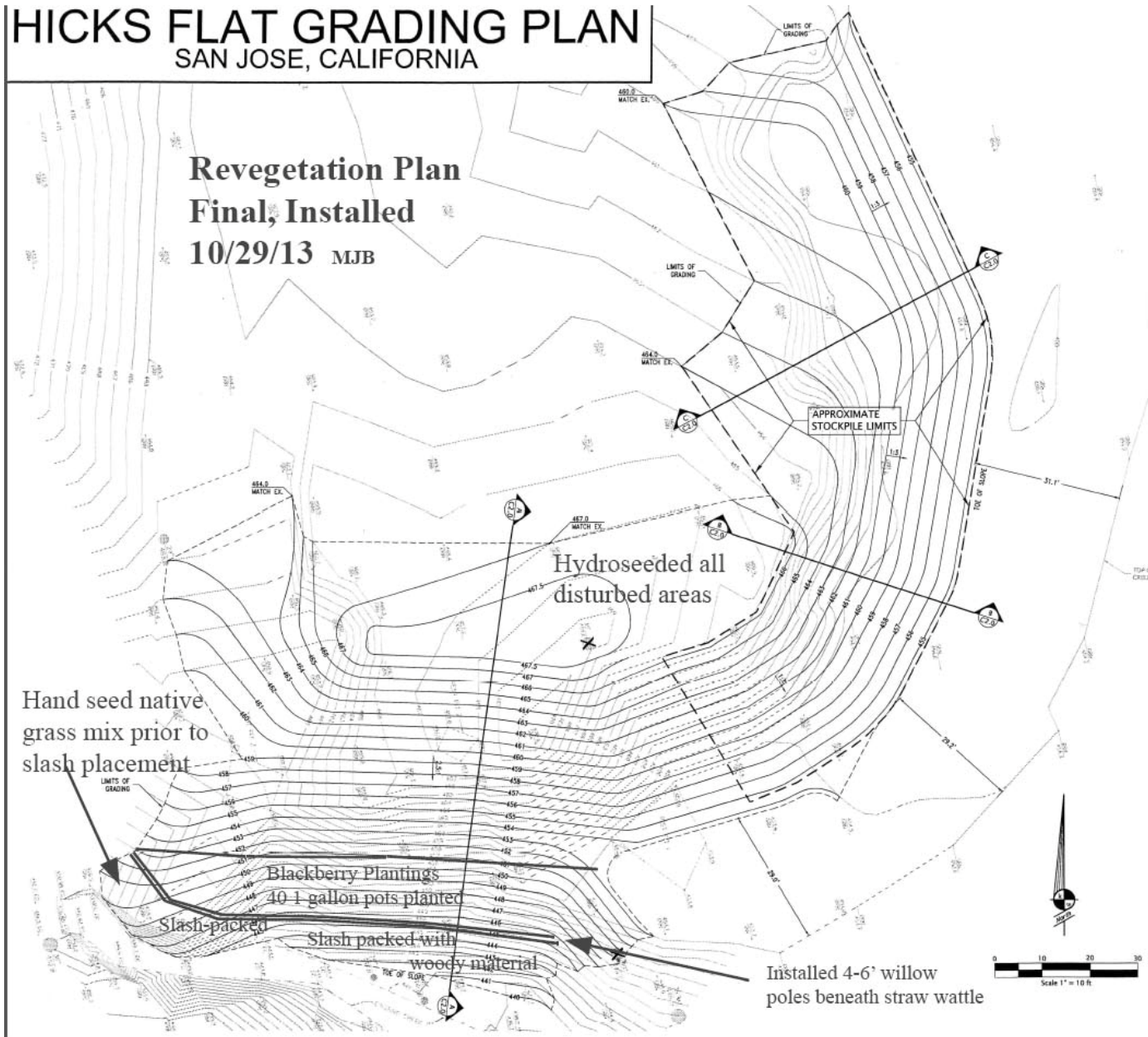


Figure 1. Record drawing: Revegetation Plan Final Installed

## Daily Field Log

9/6/13 Pre-construction biotic survey. 10 AM, air temp approx 80 degrees, 70 degrees in riparian woodland. Surveyed entire project site (waste dump, intermittent stream reach). Only two Western fence lizards encountered on top of slope by pepper tree. Also surveyed perennial creek downstream from project area (approx 200' upstream from confluence with intermittent tributary (project) downstream to bridge at Hicks Road. No terrestrial or aquatic species of concern encountered. Surveyed 1.5 hours.

9/9/13 Project start. 8 AM meet contractors on site (ERRG, Geocon). Exchanged contact information, introductions. Conducted site walk around project area. Noted highlights: cut area, fill area, stream protection, biotic protection, minimizing work area, off limits areas, geotechnical requirements, air monitoring, health and safety. Also did biotic survey, only two W. fence lizards top of slope. Initial safety meeting conducted by ERRG, primary issue dust. Naturally occurring asbestos training (Geocon), correctly implemented dust control measures for mercury (water spray, etc.) will also adequately address NOA. Important. Geocon detailed air quality monitoring: personal samplers on select ERRG staff, perimeter sampling, and ongoing handheld samplers by CIH during construction operations. Per ERRG HASP, half respirators required unless monitoring justifies downgrade. Biological training for construction staff completed, handouts.

9/10/13 6AM start. Bio survey negative. Water truck and bulldozer on site. Excavator delivery at 8:30. Straw bales installed along creek bank. Silt fence installation in process. Excavator began site vegetation stripping late morning.

**Note:** bio surveys were conducted first thing in the morning, as well as throughout the day when photographing site, or making rounds for general construction monitoring.

9/11/13 6:30 AM start. Bio survey negative. 8:30, additional creek protection measures installed prior to excavation beginning (silt fence on top of straw bales, and creek lined with geotextile fabric). Perimeter silt fence installation nearly done, last small section being installed. Excavator finishing vegetation stripping, piling slash. 1PM excavator benching top of slope in prep of main excavation. Water spray (water truck and separate trailer) ongoing. Approximately 50 cubic yards of fill removed from old road crossing location, south-west edge of project area. Slope laid back to approximately 3:1. On site air monitoring ongoing, results good. Geotech technician onsite PM.

9/12/13 6:30 start. Bio survey negative. Also walked Cherry Springs creek reach from bridge to bend upstream of confluence with Hicks Creek (project area). Also negative, no eye-shine evident from flashlight. Beginning major earthwork. Excavator removing main part of slope back, dozer pushing. Water spray for dust control ongoing. Geotech tech onsite (will remain for remainder of active grading portion of project). Fill area scarified, prepared to

receive fill. Geotech engineer ok with 85% compaction for fill (flat, stable area, no structures planned). Air quality monitoring ongoing, onsite measurements good. 11 AM first lift of fill being placed, 86-89% compaction, good. Excavator roughed out slope well, approximately 2' of fill placed and compacted. Compaction tests good, around 88%.

9/13/13 6AM start. Bio survey, negative. Exc pulling slope back, dozer pushing to fill site, compacting. Water spray ongoing. Approx 400 cubic yards of fill placed. Geotech onsite, Geotech engineer (GE) onsite at 9AM. GE tested slope material roughed out to 2.5:1, still loose, likely will need stability fill. GE will return Tuesday AM for final determination, when slope closer to finished grade. 2:30 PM fill up to 4' depth, compaction remains good. Scatter of old redwood lumber exposed at top of knoll, some burnt. No evidence of pressure treatment or creosote treatment, appears clear heart redwood. Also noted scattered recent plastic and glass fragments mixed in. Appears consistent with site disturbance from the 1970's/ 80's.

9/16/13 6AM start. Bio survey negative. Equipment continues to lay slope back and place fill. Water spray ongoing. Redwood lumber and other debris (broken glass, braded cable, plastic fragments) was a thin and scattered layer, heavily disturbed, includes 1970's 80's trash. Likely residual from prior debris clean-up completed in the late 1980's. Not culturally significant. After lunch, begin cut for stability fill. Geotech tech onsite. Air monitoring continues onsite, air samples back from lab, good, can downgrade from half respirators (sampling shows not needed). Excavator sorted slash piles (larger tree pieces and smaller brush) to prep for slash packing of graded slope adjacent to the intermittent stream.

9/17/13 6AM start. Bio surveys negative. Dozer working finished grades at fill site. Water spray ongoing. Excavation of stability fill keyway progressing. Geotech engineer on site early to approve keyway. Keyway trench deepened and lengthened, limits staked by GE. Picked up blackberry plants and additional native grass seed to seed area to receive slash (need to place wood while excavator still on site, prior to hydroseeding). 3 to 4' of stability fill has been placed at fill site, compaction exceeds 90%, as required. Called Jason.

9/18/13 6AM start. Bio survey negative. Stability fill construction continuing. Finished keyway (end taper) to receive fill. Water spray ongoing. Good compaction. Excavator staging wood for placement along stream margin. Cut and prepped willow cuttings, soaking for placement tomorrow. Removed straw bales from channel section adjacent to wood placement reach, fabric still covers channel bottom. Seeded channel margin heavily with MROSD native grass mix. Placed slash and logs along seeded stream margin (slash-packed with excavator bucket to attain good ground contact).

9/19/13 6AM start. Bio survey negative. Excavator clean up for pick up this morning. Last few lifts of stability fill completed. Compaction good. Geotech tech finished last compaction tests, geotech testing/oversight completed. Finished grade being track-walked by dozer to aid hydroseeding (scheduled for next Monday). Willow poles prepped and soaked for planting. Difficulty driving stakes into rocky substrate. Decided to keep poles long and plant beneath first row of wattles (planted in trench dug for wattle installation). Hand packed wet soil over approx

2/3's of pole, with 1/3 extending out from wattle. Wattles staked down into trench. Blackberry plants laid out on slope for planting.

9/20/13        6AM start. Excavator picked up in AM. Dozer all finished. Wattles in, spacing looks good, some a little loose. Rocky substrate was breaking wood stakes, Cesar getting more, stronger stakes. Will tighten up loose spots. Wattles, straw bales, and silt fence used to button up site for weekend. Light rain forecast. Hydroseed scheduled for Monday. Phone call with Jason re finish-up work.

9/23/13        Superior Hydroseed onsite. Seed tags match specs designated in reveg report. Hydroseed applied to site. Good coverage, application. Wait until tomorrow to spread straw so hydroseed properly dries.

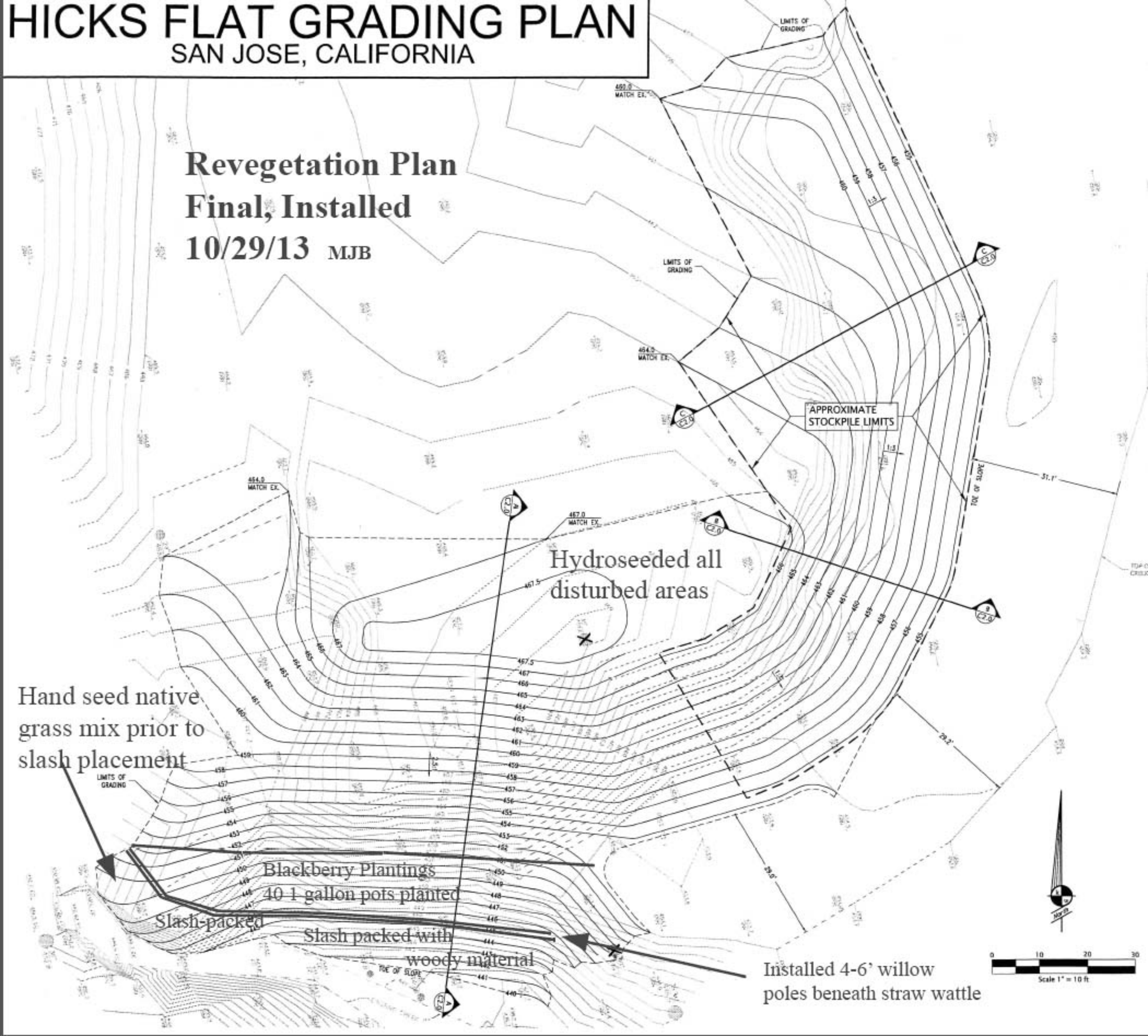
9/24/13        Final site walkover with Jason. Site work completed. Straw bales from creek protection spread on site over hydroseed for additional erosion control protection.

10/4/13        Final site inspection with Geotech. All ok, will prepare final letter report.

# HICKS FLAT GRADING PLAN

SAN JOSE, CALIFORNIA

**Revegetation Plan**  
**Final, Installed**  
**10/29/13** MJB





Midpeninsula Regional Open Space District

GENERAL MANAGER  
Stephen E. Abbors

BOARD OF DIRECTORS  
Pete Siemens  
Yoriko Kishimoto  
Jed Cyr  
Curt Riffle  
Nonette Hanko  
Larry Hassett  
Cecily Harris

November 20, 2013

Dear Neighboring Landowner,

In late July of this year the Midpeninsula Regional Open Space District (MROSD) mailed you information regarding the Hicks Flat Mine Waste Remediation Project, located off of Hicks Road. The Purpose of our prior letter was for outreach to the nearby community in advance of implementing the project, informing of: the project need, location, remediation project specifics, contractor selected, project timeframe, and how issues that might be of concern to the community will be addressed (dust control, and traffic).

The purpose of this letter is to inform you that the project has been successfully completed as proposed. Funding for this project has been provided in part through an agreement with the State Water Resources Control Board and the U.S. Environmental Protection Agency under the Federal Nonpoint Source Pollution Control Program (Clean Water Act Section 319). A MROSD "match" funded the remaining costs, approximately one quarter the total project. The Hicks Flat project was completed well below the anticipated project budget, while still effectively addressing water quality, biotic, and air quality objectives.

If you have any questions or concerns related to the project, please contact me at (650) 691-1200.

Sincerely,

Matt Baldzikowski  
Resource Planner III  
Project Manager



# Hicks Flat *Draft* Project Report



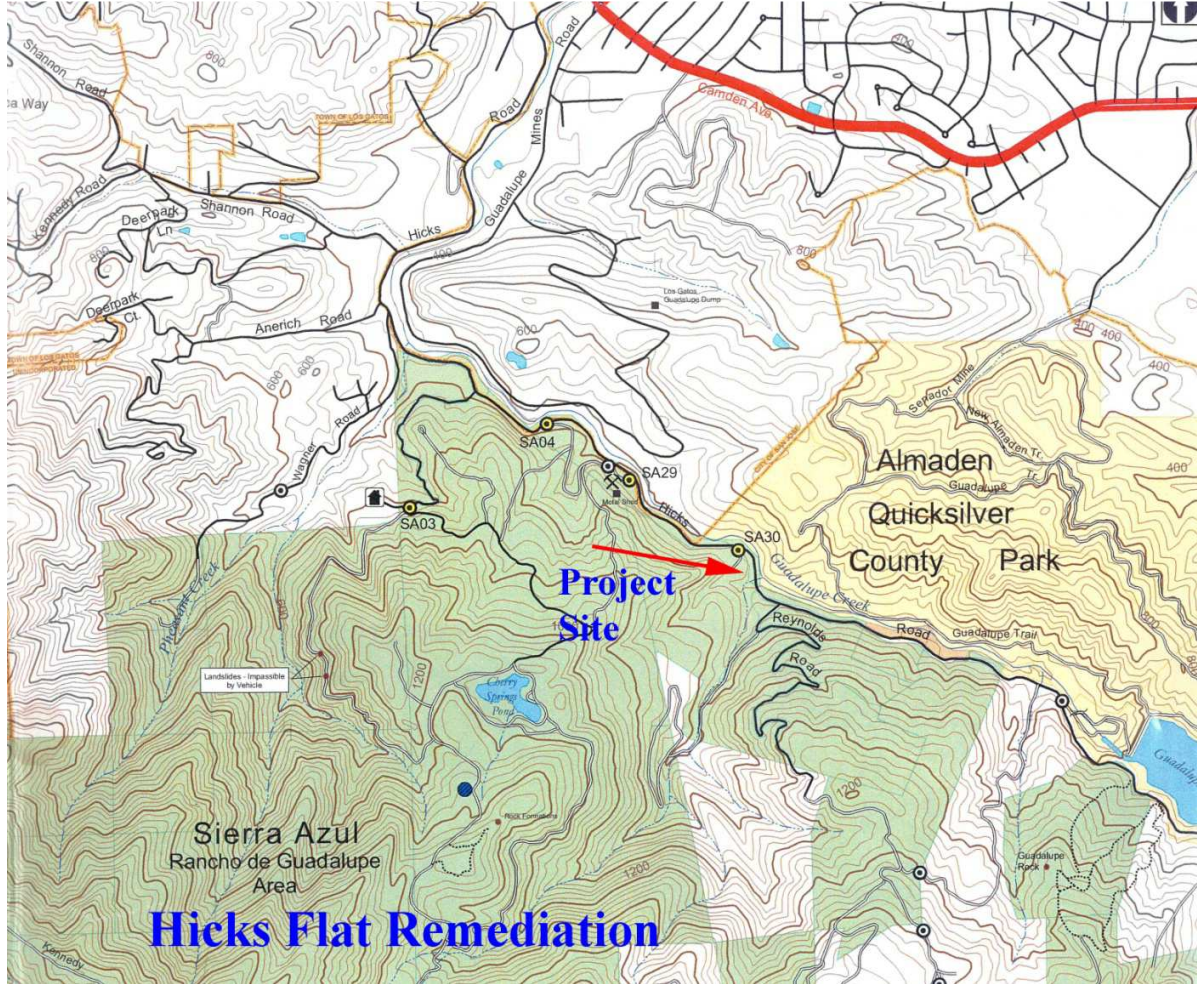
Prepared for the Association of Bay Area Governments, San Francisco  
Estuary Project, and the

State and San Francisco Bay Regional Water Quality Control Board

Prepared by Matt Baldzikowski, CPESC #828, Midpeninsula Regional Open Space District

November 2013

Section a.



Project Location Map.

## Hicks Flat Mercury Remediation Site Sierra Azul Open Space Preserve



### Stream Reach Location Map.

The Hicks Flat Remediation Project was successfully completed in September of 2013, per the project plans and reports prepared in advance of project implementation. Construction focused on removing approximately 800 cubic yards of perched, unstable mercury mine waste adjacent to Hicks Creek. This unstable mine waste was actively failing into the adjacent Hicks Creek. The slope was stabilized through the removal of approximately 800 cubic yards of over-steepened mine waste. Geotechnical investigations completed prior to construction concluded that a 2.5:1 slope would be stable. Waste material removed from the creek-side slope to achieve the 2.5:1 slope, was placed at a stable flat location onsite, where it was stabilized through grading and erosion control measures (photo's below).



Slope flattening to achieve stable slope configuration.



Stable waste (fill) disposal location.

The project Geotechnical Engineer, and/or Geotechnical Technician were onsite throughout the active grading portion of the project, to insure proper final slope configurations and proper compaction of fill. The Geotechnical Engineer also conducted a final project inspection. Geotechnical observations and conclusions are presented in the Final Report of Geotechnical Testing and Observation (October 31, 2013, Attachment 1 to this report), concluding that grading operations (project) were completed in general conformance with the grading plans, revegetation plan, and geotechnical recommendations.

The project was also extensively monitored for air quality during construction, to identify if dust control measures were adequately implemented, and to assess potential worker exposure to mercury and naturally occurring asbestos within the work zone. This monitoring was consistent with the air monitoring recommendations of the Health and Safety Plan and Remedial Action Workplan prepared for the project.



One of four perimeter air monitoring locations.

The monitoring effort and conclusions are presented in the final Air Monitoring Report (October 31, 2013, Attachment 2 to this report). The Air Monitoring Report concludes that dust suppression management practices were effective in controlling the pollutants of concern, and that there was a low exposure risk to workers, with exposures orders of magnitude below the Permissible Exposure Limit for airborne contaminants adopted by Cal/OSHA.

Pre-construction surveys and daily monitoring for sensitive species were completed during the project. No sensitive species were encountered during project implementation. Protective biological measures were completed per MROSD permit applications and approvals. These included: pre-construction surveys (augmented with daily surveys), worker biological training, and the installation of biological exclusion fencing surrounding the active work site.

Erosion and sediment control measures were installed during project implementation and at the completion of the grading for final project surface stabilization, as recommended on the Erosion Control Plan sheet, and Revegetation Plan developed for the project. These included the installation of silt fencing, straw bales, straw wattles, extensive creek protection measures (described in Field Implementation Report), straw mulch, hydroseeding, and site plantings of native blackberry, and willow cuttings. Additionally, the near creek environment was treated with native woody material for additional erosion control and creek restoration/ wildlife habitat benefits (photo's below).



### **Section b.**

The project was implemented well by the contractor, Environmental Remediation Resources Group (ERRG). There were no substantial alterations to the project design or implementation that arose during the course of the project. The project was well guided by geotechnical and air quality monitoring and testing (Geocon), and with MROSD staff onsite. This provided for quick, efficient, well informed decision making and coordination during implementation, which kept the project running smoothly.

Per the Project Assessment and Evaluation Plan (PAEP) the Hicks Flat Remediation Project stabilized and restored 120' of streambank, and prevented approximately 10 pounds of total mercury mass from failing into Hicks Creek. Per the PAEP the Geotechnical engineer has accepted project grading, erosion control and drainage as being in general conformance with the engineered plans and specs prepared for the project, including stable re-graded slope configurations (Attachment 1).

### **Section c.**

The project was completed well, without any substantial changes. This confirmed that the initial design and technical work completed for the project, as required, was scoped and completed well, leading to smooth project implementation. There was also a bit of good luck, no substantial surprises emerged from within the undocumented fill that was removed.

The project involved grading steep banks adjacent to an intermittent stream channel, with very rocky substrate. A little extra emphasis on stream protection maintained the active channel in excellent condition, requiring very little clean-up. This required additional encouragement and participation by MROSD staff to convey and execute properly. Silt fence was staked to the top of a row of straw bales placed tightly against the stream bank. The fence was offset to approximately the middle of the bales. This allowed the excavator bucket room to pull the slope edge, and contain loose soil ravel that would have over-topped the straw bales alone, spilling into the stream bed. Gaps or voids were plugged with straw wattles which were easily cleared of soil, and removed at the end of grading. Additionally, lining the channel with fabric allowed for easy location and removal of the minimal volume of soil clods and rock that happened to make it over the silt fence.



Straw bale placement was utilized to elevate the toe of the excavated slope above the ordinary high water mark of Hicks Creek. This was beneficial regarding permit streamlining, but also had the additional benefit of maintaining native vegetation roots and stems intact. The majority of this vegetation is native blackberry and poison oak, and it is anticipated that the toe of the re-graded slope will re-establish vegetation more quickly due to the preservation of this root zone.

The near stream wood placement was a seemingly new concept to the contractor foreman, so stockpiling, sorting and placing took a little extra work/ time. However, this is a beneficial, widely used biotechnical restoration practice, which was well worth the additional half-day of excavator time.

Blackberry plantings were installed prior to hydroseeding. These plantings should have been covered with the planting pots prior to hydroseeding. The hydroseed mix had to be manually removed from the blackberry leaves, ouch, lesson learned. Blackberries have been watered manually by MROSD since installation, awaiting rain, and are alive and producing new growth. Willow poles planted on site are also exhibiting new growth (photo below).



Blackberry and willow cutting growth.

#### **Section d.**

Outreach has been conducted through public notifications regarding the project. Public notifications have included three separate staff reports and presentations prepared for the MROSD Board of Director's at noticed public hearings. The last of these, for award of construction contract, was also specifically mailed to private property owners near the project site, and to Santa Clara County Parks who operate the adjacent New Almaden Quicksilver County Park. This notification occurred approximately one month prior to construction, for outreach purposes, and to allow time to accommodate possible inquiries. The staff report contained specific information regarding the purpose of the project, timeline, and operational issues that might have been a concern, such as dust monitoring and management

practices, and traffic. Additionally, the site was posted with an informational sign regarding the project, visible from Hicks Road (public) two weeks in advance of grading, with contact information provided (Attachment 3). Project inquiries were not received by the District following this informational outreach. An outreach letter containing project completion information has also been sent to the same stakeholders as previously notified (Attachment 4).

#### **Section e.**

The Hicks Flat project budget was initially projected to cost a total of \$390,000 which included \$285,000 available through grant funds, and a MROSD match of 27%, or \$105,000. The project was successfully completed substantially below the initial cost estimates. A total of \$222,964 was actually spent to complete the project. Of this amount, MROSD's obligation for a 27% match equals \$60,200. MROSD has met its grant match through "in-kind" staff time totaling \$29,317, and by funding a portion of the geotechnical construction oversight (\$30,883). This leaves the remaining costs funded by the grant. Grant funded costs upon project completion total \$162,764.

#### **Section f.**

Planned follow-up activities include visual monitoring surveys of the project site during the first winter following construction. The principle focus of this initial monitoring period is to insure that the erosion/sediment control measures implemented perform well, and if problems arise, they are addressed quickly. Photo points have been established at the site, and will be utilized to document the recovery of the site following remedial grading. Site and photo monitoring will continue for two years, with monitoring reports submitted to the Grant Manager in June of each year. Restoration plantings have been hand watered by MROSD staff approximately every 10-14 days since they were planted, since the weather has been unusually dry this fall. Hand watering will continue as needed. All plantings are alive, with most exhibiting new growth. If mortality occurs, replacement plantings will be provided by MROSD.



**Section g. Photo's.**



Photo point 5 sequence. Slope flattening, creek-side restoration, final erosion control implementation.



Photo point 4 sequence. Slope flattening through erosion control completion.



Photo point 3 sequence. Waste disposal (fill) placement through grading completion.

**Section h.** Items submitted per Table of Items for Submittal, and reference #'s:

- 1) Field Implementation Report (separate cover). (B.3.3)
- 2) Record Drawings (revised Revegetation Plan sheet). (B.3.3)
- 3) Project Completion Information to Stakeholders. (B.4.1)
- 4) Draft Project Report. (E.3)

Attachments:

- 1) Final Report of Geotechnical Testing and Observation, Geocon Consultants, Inc., October 31, 2013.
- 2) Air Monitoring Report, Geocon Consultants, Inc., October 31, 2013.
- 3) Project Outreach Sign.



Project No. E8576-06-01  
October 31, 2013

Midpeninsula Regional Open Space District  
330 Distel Circle  
Los Altos, California 94022

Attention: Mr. Matt Baldzikowski

Subject: HICKS FLAT MINE WASTE REMEDIATION  
SANTA CLARA COUNTY, CALIFORNIA  
FINAL REPORT OF GEOTECHNICAL TESTING AND OBSERVATION  
SERVICES DURING SITE GRADING

Reference: *Slope Stability Analyses and Grading Recommendations, Hicks Flat Mercury Mine Waste Remediation Project, Rancho De Guadalupe Area, Sierra Azul Open Space Preserve, Santa Clara County, California*, dated October 18, 2011.

Dear Mr. Baldzikowski:

In accordance with your request and authorization, we have provided compaction testing and observation services during recent grading operations at the subject site. Our services were performed during the period of September 11 through 19, 2013. The scope of our geotechnical services included the following:

- Observing the removal and/or processing of existing soils
- Observing the placement, processing, moisture conditioning and compaction of fill materials and benching operations to tie the new fill materials into the adjacent native soils
- Performing in-situ dry density and moisture content tests in fill placed and compacted at the site
- Performing laboratory tests to aid in evaluating the dry density and moisture content and shear strength of soils encountered and/or used for fill
- Preparing this final report of grading.

The purpose of this report is to document that grading operations were performed in general conformance with the recommendations presented in our referenced correspondence and that fill materials were properly placed and compacted.

## GENERAL

The grading contractor for the project was ERRG, Inc. of Martinez, California. The project grading plans are entitled *Hicks Flat Grading Plan*, prepared by Kier and Wright, dated June 2011 (Job No. A11033). An electronic version of the grading plan was used as the basis for our *NFDT Location Map* (Figure 1, attached).

## GRADING

The fill materials placed during grading were generated from cut operations along and above the northern bank of Hicks Creek, as described in our referenced correspondence. The fill materials generally consisted of gravelly to sandy clays with variable amounts of cobble.

Grading began with the removal of brush and vegetation from the area to be graded. The exposed soils at the base of proposed fill areas were scarified to a depth of approximately 6 inches, moisture conditioned to above optimum moisture content and compacted. Fill materials were generally placed in approximately 6 to 8 inch loose lifts on working platforms that were level or tilted slightly into slope, moisture conditioned with an onsite water truck or other devices, and processed and compacted with a Caterpillar D6 bulldozer. The new fills were properly benched into the surrounding native materials per typical hillside grading techniques. Near the conclusion of grading, slope faces were track-walked with the bulldozer.

Based on the soils conditions exposed after cut operations to regrade the slope above Hicks Creek to 2½:1 (horizontal:vertical) or flatter, we recommended that the stability fill (as discussed in our referenced correspondence) be constructed. Based on our observations during grading, the stability fill slope face was graded to an inclination of approximately 3:1.

During grading operations, compaction procedures were observed and in-place density tests were performed to evaluate the dry density and moisture content of the fill material. The in-place density tests were performed in general conformance with ASTM Test Method D 6938. The results of the in-place dry density and moisture content tests are summarized on Table I. Using methods suggested by ASTM D 4718, corrections were made to the laboratory maximum dry density and optimum moisture content on fill soils being tested containing rocks larger than ¾ inch. The values of maximum dry density and optimum moisture content presented on Table I reflect these corrections, where applied.

In general, the in-place density test results indicate that fill soils were compacted to at least 85% relative compaction above optimum moisture content in the 3:1 fill slope areas and at least 87% relative compaction above optimum moisture content in the stability fill, at the locations tested. The approximate locations of the in-place density and moisture content tests are shown on the *Field Density Test Location Map* (Figure 1, attached). We note that our referenced correspondence recommended that structural fill i.e. fills within the stability fill be compacted to 90% relative compaction. Some of our in-place density tests within the stability fill indicated relative compaction slightly below 90%; however, based on the as-graded configuration of the stability fill, the inclination of the finished slope face at the stability fill, and our laboratory shear strength testing, it is our opinion the as-graded slope configuration in this area possesses a factor of safety of 1.5 or greater against deep-seated slope instability.

Laboratory tests were performed on samples of material used for fill to evaluate moisture-density relationships, optimum moisture content and maximum dry density in accordance and shear strength. The results of the laboratory tests are summarized in Tables II and III.

After grading operations, the site was re-vegetated in general accordance with the project-specific plan entitled *Revegetation Plan for Hicks Flat Mercury Mine Waste Remediation Project, Midpeninsula Regional Open Space District*, prepared by Burleson Consulting, Inc., dated July 2011. Field adjustments and modifications were made at the direction of MROSD during grading.

Based on our observation and testing services reported herein, we opine from a geotechnical standpoint that grading operations were performed in general conformation with the recommendations presented in the referenced correspondence.

### **LIMITATIONS**

The conclusions and recommendations contained herein apply only to our work with respect to grading, and represent conditions at the date of our final observation October 4, 2013. Any subsequent grading should be done in conjunction with our observation and testing services. As used herein, the term "observation" implies only that we observed the progress of the work with which we agreed to be involved. Our services did not include the evaluation or identification of the potential presence of hazardous or corrosive materials. Subsurface conditions, and the accuracy of tests used to measure such conditions, can vary greatly at any time. We make no warranty, expressed or implied, except that our services were performed in accordance with engineering principles generally accepted at this time and location.

References to elevations, distances, and locations herein were based on existing features in the field and interpolation from topographic information presented in the aforementioned plans. Geocon did not provide surveying services during construction. Therefore, the elevations, distances and field density test locations represented herein should be considered approximate.

We will accept no responsibility for any subsequent changes made to the site by others, by the uncontrolled action of water, or by the failure of others to properly repair damages caused by the uncontrolled action of water. The findings and recommendations of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of three years.

If you have any questions regarding this report, or if we may be of further service, please contact the undersigned at your convenience.

Sincerely,

**GEOCON CONSULTANTS, INC.**

**DRAFT**

Shane Rodacker, PE, GE  
Senior Engineer

(1/email) Addressee

Attachments:

- Table I, Summary of Field Density and Moisture Content Test Results
- Table II, Summary of Laboratory Maximum Dry Density and Optimum Moisture Content Test Results
- Table III, Summary of Laboratory Direct Shear Test Results
- Figure 1, NFDI Location Map

**TABLE I  
SUMMARY OF FIELD DENSITY AND MOISTURE CONTENT TEST RESULTS**

NFDT No.	Location	Proctor No.	Approx. Elev.	Max. DD (pcf)	OMC (%)	In-situ DD (pcf)	In-situ MC (%)	Relative Compaction	Date	Comments
1	See Figure 1	2	456	126.3	9.9	108.4	14.2	86%	9.12.2013	with 10% RC
2	See Figure 1	2	456	122.9	11.3	109.6	15.8	89%	9.12.2013	
3	See Figure 1	2	456	122.9	11.3	106.2	14.9	86%	9.12.2013	
4	See Figure 1	2	456	122.9	11.3	106.1	15.0	86%	9.12.2013	
5	See Figure 1	2	457	126.3	9.9	111.5	18.0	88%	9.12.2013	with 10% RC
6	See Figure 1	2	457	126.3	9.9	109.7	15.4	87%	9.12.2013	with 10% RC
7	See Figure 1	2	457	126.3	9.9	113.1	17.0	90%	9.12.2013	with 10% RC
8	See Figure 1	2	458	129.9	8.6	111.3	15.1	86%	9.13.2013	with 20% RC
9	See Figure 1	2	458	129.9	8.6	114.9	14.2	88%	9.13.2013	with 20% RC
10	See Figure 1	2	458	129.9	8.6	113.8	14.7	88%	9.13.2013	with 20% RC
11	See Figure 1	2	459	129.9	8.6	115.3	14.2	89%	9.13.2013	with 20% RC
12	See Figure 1	2	459	129.9	8.6	119.5	13.7	92%	9.13.2013	with 20% RC
13	See Figure 1	2	459	129.9	8.6	113.2	12.4	87%	9.13.2013	with 20% RC
14	See Figure 1	2	460	129.9	8.6	113.2	13.7	87%	9.13.2013	with 20% RC
15	See Figure 1	2	460	133.8	7.2	124.8	10.9	93%	9.13.2013	with 30% RC
16	See Figure 1	2	461	129.9	8.6	117.6	11.1	91%	9.16.2013	with 20% RC
17	See Figure 1	2	461	129.9	8.6	115.8	9.5	89%	9.16.2013	with 20% RC
18	See Figure 1	2	461	129.9	8.6	116.0	9.2	89%	9.16.2013	with 20% RC
19	See Figure 1	2	462	129.9	8.6	117.3	10.4	90%	9.16.2013	with 20% RC
20	See Figure 1	2	462	129.9	8.6	117.2	10.8	90%	9.16.2013	with 20% RC
21	See Figure 1	2	463	129.9	8.6	112.6	8.7	87%	9.16.2013	with 20% RC
22	See Figure 1	2	463	129.9	8.6	111.7	10.9	86%	9.16.2013	with 20% RC
23	See Figure 1	2	464	129.9	8.6	114.8	12.8	88%	9.17.2013	with 20% RC
24	See Figure 1	2	464	129.9	8.6	115.0	13.9	89%	9.17.2013	with 20% RC
25	See Figure 1	2	455	129.9	8.6	117.1	11.8	90%	9.17.2013	with 20% RC
26	See Figure 1	2	457	129.9	8.6	114.9	12.1	88%	9.17.2013	with 20% RC
27	See Figure 1	2	466	129.9	8.6	113.2	11.3	87%	9.18.2013	with 20% RC
28	See Figure 1	2	458	129.9	8.6	114.9	12.3	88%	9.18.2013	with 20% RC
29	See Figure 1	3	459	126.2	10.6	110.3	11.9	87%	9.18.2013	
30	See Figure 1	3	460	126.2	10.6	110.5	12.8	88%	9.18.2013	
31	See Figure 1	3	461	126.2	10.6	112.6	13.1	89%	9.18.2013	
32	See Figure 1	3	463	126.2	10.6	112.4	10.3	89%	9.18.2013	
33	See Figure 1	3	464	126.2	10.6	109.3	11.8	87%	9.18.2013	
34	See Figure 1	3	465	126.2	10.6	111.4	11.3	88%	9.19.2013	
35	See Figure 1	3	466	126.2	10.6	117.2	11.1	93%	9.19.2013	
36	See Figure 1	3	465	126.2	10.6	116.1	13.4	92%	9.19.2013	

DD: Dry Density  
MC: Moisture Content  
RC: Rock Correction



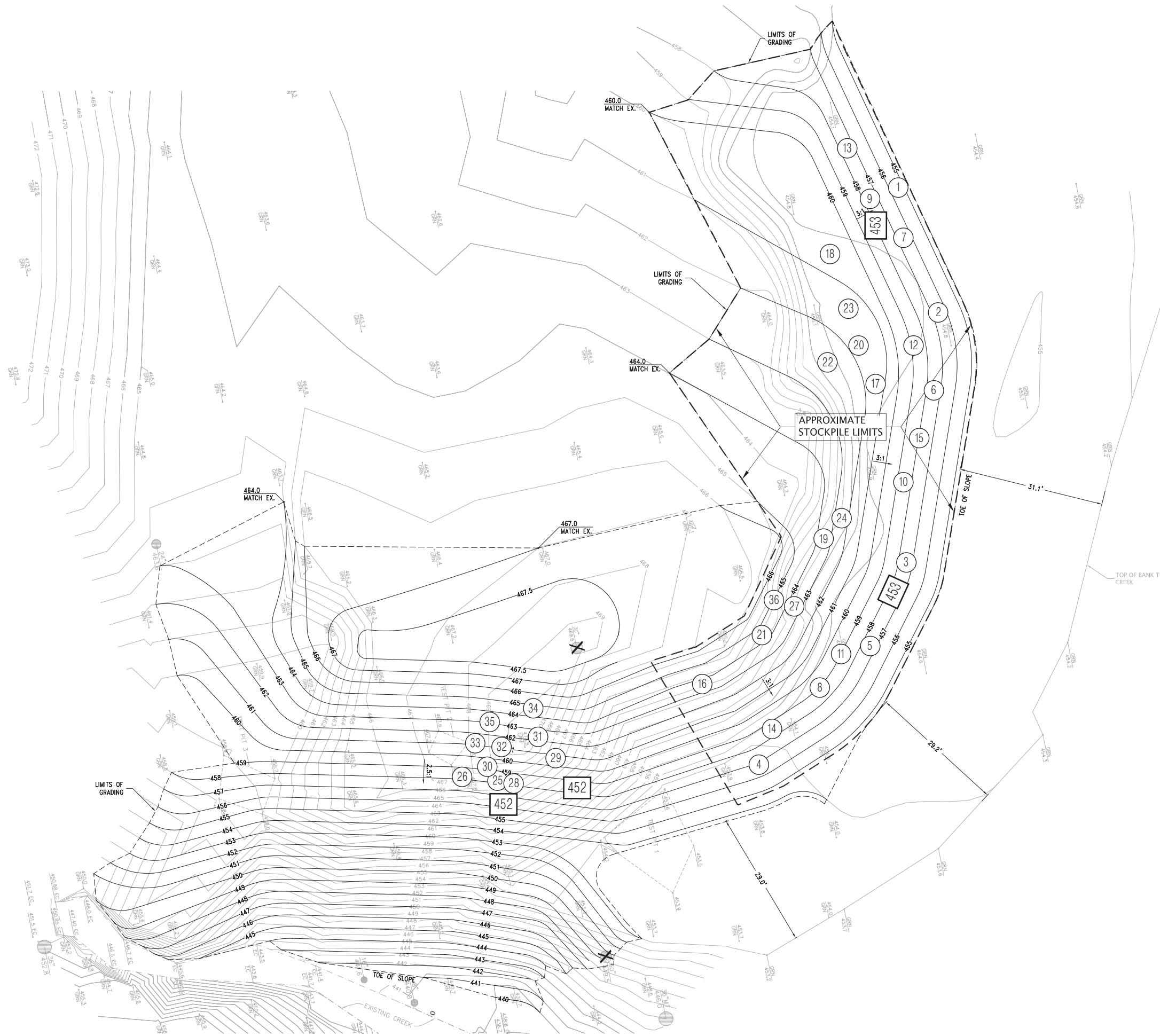
**TABLE II**  
**SUMMARY OF LABORATORY MAXIMUM DRY DENSITY AND**  
**OPTIMUM MOISTURE CONTENT TEST RESULTS**  
**ASTM D 1557**

Sample No.	Description	Maximum Dry Density (pcf)	Optimum Moisture Content (% dry weight)
2	Clayey SAND with gravel	122.9	11.3
3	Gravelly to Clayey SAND	126.2	10.6

**TABLE III**  
**SUMMARY OF LABORATORY DIRECT SHEAR TEST RESULTS**  
**ASTM D 3080**

Sample No. 4	Initial Average Dry Density (pcf)	Initial Average Moisture Content (%)	Cohesion (psf)	Angle of Shear Resistance (degrees)
4	111.0	10.6	420	32

Note: Sample was remolded to approximately 88% of the laboratory maximum dry density.



## LEGEND

- 20 : APPROX. FIELD DENSITY AND MOISTURE CONTENT TEST LOCATION
- XXX : APPROX. BOTTOM OF FILL ELEVATION (Project Datum)



<b>GEOCON</b> CONSULTANTS, INC. <small>6671 BRISA STREET - LIVERMORE, CA 94550          PHONE 925.371.5900 - FAX 925.371.5915</small>		
Hicks Flat Mercury Mine Waste Remediation Project		
Santa Clara County, California		
<b>NFD LOCATION MAP</b>		
E8576-06-01	October 2013	Figure 1



Project No. E8576-06-01  
October 31, 2013

Midpeninsula Regional Open Space District  
330 Distel Circle  
Los Altos, California 94022

Attention: Mr. Matt Baldzikowski

Subject: HICKS FLAT MERCURY MINE WASTE REMEDIATION PROJECT  
SIERRA AZUL OPEN SPACE PRESERVE  
SANTA CLARA COUNTY, CALIFORNIA  
AIR MONITORING REPORT

Dear Mr. Baldzikowski:

In accordance with your request, we are transmitting the findings of our industrial hygiene and environmental services to evaluate potential employee exposure and perimeter environmental air monitoring during soil and aggregate excavation and re-grading activities associated with the Hicks Flat Mercury Mine Waste Remediation Project in Santa Clara County, California. Our scope of services included conducting air monitoring and observations for personal and area perimeter samples for determining the potential release of mercury vapor and particulates, total particulates, and asbestos from impacted soils, submitting air samples to accredited laboratories for analyses, and evaluating and interpreting analytical laboratory data. The project location is depicted on the Vicinity Map, Figure 1, and Site Plan, Figure 2.

## **BACKGROUND**

Project information provided by you indicates that, between 1968 and 1972, the New Idria Mining and Chemical Company attempted to reopen the main shaft of a nearby historic mercury mine and resume mining operations. Waste rock generated during that operation was dumped at the subject site. The waste rock was characterized as consisting primarily of raw "country rock" associated with the Franciscan Formation (chert, greenstone, shale, serpentine, and greywacke). Previous sampling and analytical testing by others determined that the waste rock materials contain elevated levels of total mercury. The waste rock piles were re-graded in 1981 to establish the present site configuration, which includes an over-steepened slope on the northern bank of Hicks Creek. We understand that episodic surficial slope failure(s) and erosion of the over-steepened slope have resulted in the deposition of waste rock into Hicks Creek. The purpose of this project was to mitigate the potential for waste rock to slough or be transported by stormwater into Hicks Creek.

## **REMEDIAL EXCAVATION AND RE-GRADING**

Engineering/Remediation Resources Group, Inc. (ERRG) implemented remedial excavation and re-grading operations at the subject site from September 10 through 13, and 16 through 19, 2013. Ground disturbance activities included mechanical trenching for silt fence installation, and grubbing and excavation using an excavator and bulldozer. Dust suppression was conducted using a water truck and water tank/pumping equipment.

ERRG staff wore half-face air purifying respirators with high-efficiency particulate air (HEPA)/mercury vapor cartridges when working within the excavation area from September 10 through 16, 2013. Based on the personal air sample results discussed below, respirator use was discontinued on September 17, 2013 for the remainder of the project. Field measurements for mercury vapor using a Jerome 431-X direct reading mercury vapor analyzer continued to be conducted daily during the duration of the project to monitor for potential changing conditions.

## FIELD MONITORING AND OBSERVATIONS

Four perimeter air monitoring stations were operated daily during soil disturbance activities conducted from September 10 through 16, 2013. Geocon's air monitoring locations are shown on the Site Plan, Figure 2. Field measurements obtained from pDR-1200 real-time direct reading aerosol/dust monitors positioned at upwind and downwind air monitoring stations reported average daily concentrations ranging from less than (<) 0.001 to 0.007 milligrams per cubic meter ( $\text{mg}/\text{m}^3$ ) at the upwind location and 0.003 to 0.010  $\text{mg}/\text{m}^3$  at the downwind location.

Monitoring using a Jerome 431-X direct reading mercury vapor analyzer was routinely conducted each day within the excavation area in the morning through afternoon during soil disturbance activities. Monitoring results ranged from <0.001 to 0.017  $\text{mg}/\text{m}^3$  for readings at ground level. Mercury vapor was not detected above the analyzer's limit of detection (0.001  $\text{mg}/\text{m}^3$ ) for measurements made in worker breathing zones.

Weather at the site was monitored using a portable weather station. Temperatures during the project activities ranged from the mid-50s to mid-80s °F, wind speed varied from trace to approximately 8 miles per hour, with a predominant wind direction ranging from the north to northeast.

## AIR MONITORING

During soil disturbance work from September 10 through 16, 2013, Geocon conducted perimeter air monitoring at four (approximate upwind, two cross-wind, and downwind) locations for the following analyses:

- Asbestos using National Institute of Occupational Safety and Health (NIOSH) Method 7402 by Transmission Electron Microscopy (TEM);
- Mercury vapor using NIOSH Method 6009;
- Mercury particulate from impacted soils using Occupational Safety and Health Administration (OSHA) Method ID-145; and,
- Total particulates using NIOSH Method 0500.

Area air samples were collected using a combination of high- and low-flow vacuum pumps with sample media positioned at breathing zone height approximately five feet above ground level on tripods. A pDR-1200 real-time aerosol/dust monitor was also attached to the upwind and downwind air monitoring stations.

Geocon performed personal breathing zone monitoring of one worker operating a soil excavator and bulldozer, and one laborer performing manual activities (grubbing and water application) at the subject site from September 10 through 12, 2013. Personal air samples were collected using low-flow personal sampling pumps with sample media positioned in the equipment operator and labor's breathing zones. The sample results were also used to evaluate the effectiveness of dust control-water to allay potential airborne vapor and particulates to document Negative Exposure Assessments (NEA) for subsequent excavation and grading activities at the subject site. Workers were monitored for the following:

- Asbestos using NIOSH Method 7400 by Phase Contract Microscopy (PCM) with results calculated for exposure for an 8-hour Time-Weighted Average (TWA);
- Mercury vapor using NIOSH Method 6009;
- Mercury particulate using OSHA Method ID-145; and
- Total particulate using NIOSH Method 0500.

A calibrated floating ball rotometer was used to confirm the calibrated flowrate of each sampling pump/device at the beginning and end of the sample period. The total sample volumes were calculated by taking the product of the average flow rate (beginning and ending rate divided by two) and the total number of minutes each sampling pump was operated. The floating ball rotometer was calibrated prior to the beginning of the job using a BIOS DryCal DC-Lite Primary Flow Meter traceable to a primary calibration standard.

The air samples were submitted to laboratories accredited by the American Industrial Hygiene Association (AIHA) Laboratory Accreditation Program; the asbestos air samples were relinquished to EMSL, Inc., and the mercury and particulate air samples to Bureau Veritas North America, Inc. The samples were submitted under standard chain-of-custody procedures and analyses were requested on 24-hour turnaround times. Results of the air monitoring are summarized in the attached tables.

## **AIR MONITORING RESULTS AND CONCLUSIONS**

### **Perimeter Air Monitoring**

Laboratory analytical results for the perimeter asbestos air samples were <0.001 fibers per cubic centimeter (f/cc). These results are below the United States Environmental Protection Agency 0.01 f/cc threshold for re-occupancy of a building following an asbestos abatement project.

Mercury vapor and particulate analytical results were below their respective laboratory reporting limits.

### **Personal Air Monitoring**

The 8-hour calculated time-weighted (8-Hr TWA) average airborne asbestos and mercury (vapor and particulate) exposures were orders of magnitude below the respective Permissible Exposure Limit (PEL) for Airborne Contaminants adopted by the California Occupational Safety and Health Administration (Cal/OSHA) and published in Title 8 California Code of Regulations (T8 CCR) §5155 Table AC-1. The PELs are established to prevent adverse health effects to workers exposed to workplace contaminants during an average 8-hour work day over a 40-hour work week.

With respect to airborne dust, the levels measured in personal air samples were below the 5 mg/m<sup>3</sup> of air PEL for particulates not otherwise regulated (PNOR), i.e., non-toxic dust.

Based on these sample results and our professional observations, we conclude that the application of water to allay (suppress) dust and vapor within the excavation area was effective in controlling potential airborne asbestos, mercury and dust within the site boundaries. Additionally, calculated exposures to asbestos and mercury vapor/dust from operations observed at the subject site during the monitoring period represented low exposure risks to workers conducting excavation and re-grading activities. The measured levels of airborne constituents document that use of respirators was not required for work conducted at the subject site from September 17 through 19, 2013.

Tables summarizing the analytical laboratory reports, analytical laboratory reports, and chain-of-custody documentation are attached.

We appreciate the opportunity to provide our services on this project. Should you have any questions regarding this correspondence, or if we may be of further service, please contact the undersigned at your convenience.

Sincerely,

**GEOCON CONSULTANTS, INC.**



Chris Giuntoli, CAC  
Senior Project Scientist

Attachments: Figure 1, Vicinity Map  
Figure 2, Site Plan  
Table 1, Summary of Analytical Test Results – Asbestos in Air  
Table 2, Summary of Analytical Test Results – Mercury and Particulate in Air  
Site Photographs (1 through 8)  
Laboratory Report and Chain-of-custody Documentation (Asbestos Air Samples)  
Laboratory Report and Chain-of-custody Documentation (Mercury Total Aerosol and Mercury Vapor Air Samples)

(1/email) Addressee

# Hicks Flat Remediation Project



**Funding for this project has been provided in full or in part through an agreement with the State Water Resources Control Board and the U.S. Environmental Protection Agency under the Federal Nonpoint Source Pollution Control Program (Clean Water Act Section 319).**

**Project Duration: Summer - Fall 2013**

For additional project information contact Matt Baldzikowski at (650) 691-1200