Walk & Talk Notes

Client: Greenspace – The Cambria Land Trust

Site: Strawberry Canyon, Cambria

Site Visit Date: December 9th, 2024

General Notes and Recommendations

The 22-acre Greenspace Strawberry Canyon property is located in a portion of a valley that extends west from a saddle (area between two hilltops) within a primary ridge to the Pacific Ocean. The upper boundary of the valley within the subject property is located approximately 50ft downhill of the saddle (intersection of Burton and Kay streets), where the valley bottom has a gentle grade and is relatively broad. The lower boundary of the valley within the subject property is located approximately 100ft lower in elevation and 1/4 mile to the west (at the intersection of Benson and Randall streets), where the valley bottom also has a relatively gentle grade and broad width. The valley within the property between these two points alternates from steeper to more gently-sloped. The property extends partway up the hillsides forming each side of the valley, at which point residential development begins.

Figure 1: The utility road bisecting the broad and gently-sloped valley bottom at the top of the property, with the saddle/entrance to the property at the intersection of Burton and Kay streets in the background. Photo taken from highest access route drainage crossing on property.

Figure 2: The relatively broad and gently-sloped drainage channel at the lowest point on the property. Photo taken from the intersection of Benson and Randall Streets.

The property has a somewhat-intact closed-cone pine forest[1] plant community consisting of Monterey and other pines, coast live oaks, and their associated subcanopy species (Toyon, poison oak, gooseberry, wild strawberry, etc).

The primary goals communicated by members of the board of Greenspace – Cambria Land Trust are:

- reducing flooding at entrance and on low-lying portions of trails
- reducing erosion on steep or incised portions of trails and in steeper portions of existing drainage
- increasing fire resilience
- increased native Monterey pine/coast live oak ecology

NOTE: All recommendations provided below are based on the limited context of what we were able to observe and discuss during a water- and access-focused Walk & Talk, and are best taken as suggestions for further investigation and inquiry to help round out a holistic site development plan.

Water and Access

Notes/Observations

Some of the surface runoff that drains into Strawberry Canyon is collected on the saddle/Kay Street, but the majority of the surface runoff entering the property is collected on the roofs, hardscapes, and softscapes of the residences located on the western half of Lodge Hill. Much of this runoff drains onto Burton St, where it is funneled by curbs and allowed to gather volume and speed over long distances until it reaches two main culverts.

1 https://www.laspilitas.com/nature-of-california/communities/closed-cone-pine-forest

Figure 3: The uphill portion of Burton Road that drains into Strawberry Canyon. Photo taken from the Burton/Kay entrance to the property.

The first of these culverts drains onto a property not owned or managed by Greenspace, but which is uphill of and ultimately drains into the Strawberry Canyon Greenspace property. A massive headcut (erosive sheer drop in a drainage channel formed by fast-moving water) has developed just downslope of the culvert outlet. Its progress towards the culvert outlet has been temporarily arrested by a Monterey pine tree trunk, however it will eventually undermine the tree trunk and quickly erode the area uphill of it until it reaches the culvert outlet and ultimately undermines the western edge of Burton Drive.

Figure 4: The headcut in the drainage channel just below of the outlet of the highest-elevation culvert located on the portion of Burton Drive uphill of and that ultimately feeds onto the Greenspace Strawberry Canyon property. The progress of which has temporarily arrested by the dead pine tree trunk.

The second culvert uphill of the Greenspace Strawberry Canyon property and along Burton Drive is located just uphill of the entrance to the property at the intersection of Burton and Kay. This culvert drains into a small geologically-armored (rock) rundown just uphill of a utility access road which runs from Burton Street into the property directly downhill of the saddle. There is no sign of major erosion at this culvert outlet, however the water drained from it collects on the road (which has little to no slope at the entrance of the property, due to it originating from a saddle) and creates passability issues during rain events.

Figure 5: The outlet of second-highest culvert draining water across the portion of Burton Drive uphill of and that ultimately feeds onto the Greenspace Strawberry Canyon property. This culvert empties directly onto the Greenspace Strawberry Canyon property, where it pools on and drains down the utility access road shown. Photo taken from Burton Street.

A third culvert draining onto the Greenspace Strawberry Canyon property is located at the same elevation as the Burton/Kay entrance to the Greenspace Strawberry Canyon property. This culvert drains what little water collects on the small area of the saddle uphill of the entrance across Burton. The outlet of this culvert is located just north of, alongside, and slightly lower in elevation than the utility access road that enters the property from Burton/Kay. The drain channel from this culvert outlet quickly meets the grade of the utility access road however, at which point the runoff also collects on the road and pools.

Figure 6: The outlet of the lowest culvert draining water from the saddle across Burton onto the Greenspace Strawberry Canyon property. The shallowness of the downslope drainage channel can be seen, along with the outlet of the uphill culvert and the utility acess road between. Photo taken from Burton Drive.

Further down the valley, Strawberry Canyon becomes steeper and there is a more clearly-defined drain channel. The drain channel in this steeper portion of the valley is eroding and shows evidence that the rate of erosion is increasing (as is very common). The banks are fairly shear and have freshly exposed roots in many areas, indicating that the incision in those areas occured in just the past few years. The past few years have certainly seen some above-average rainfall rates and totals, however the most significant contributor is likely the increased amount of runoff per unit of rainfall that has been entering the drainage and its tributaries in recent years as a result of uphill changes in the landscape (namely, the recent installation of the new culvert, however also changes

in drainage from adjacent trails).

The main utility access road that runs through the property generally lies directly within the valley drainage channel (in the more gently-sloped, broad areas) or just uphill of it (in the more steeply-sloped narrow areas). Several trails also run along the drainage channel, and cross it in some areas. Valleys are an initially appealing place to install access routes as they are generally not very steep along their length or steep across their width, thus allowing for minimized earth-moving, but they prove problematic in the long term from an access, maintenance, and erosion-control standpoint if not designed with drainage in mind (or if they are installed directly within the drainage!). Access routes placed adjacent to or within valley bottoms act as “funnels” that concentrate and accelerate any water that runs onto them from uphill areas. Unless the access route is properly designed to account for drainage from the start (rare), the discharge of the concentrated and accelerated water from a valley access route often becomes erosive to both the road itself and the receiving drainage/creek alongside – and the rate of erosion increases year over year. This is true of the road alongside Sycamore Creek, which has a few areas where vehicle access is has an immediate risk of being lost due to steepening banks where the creek has become incised and adjacent headcutting, and several other areas that will be at risk within the next year or two if not rectified.

Figure 7: One of the main access routes on the property is located directly uphill of the drainage channel. This incised access route captures uphill runoff, which then increases in volume and speed until it ultimately enters the drainage. Erosion is evident along the road and in the drainage channel downslope.

Figure 8: An eroding trail. The incised nature of the trail does not allow water to drain, but rather erosively funnels it to locations further downslope.

Above the valley, the property has some trails that run along the hillsides. Most of the

portions of these roads do not show evidence of seasonal flooding, but are incised with few-to-no cross drains and thus funnel runoff downhill where is ultimately drains onto lower access roads or into the main valley drain channel, where it contributes to erosion.

Access routes cross the valley in two locations. Both are in areas where the drainage channel is very broad and gently-sloped, and thus water is prone to pooling in those areas rendering them impassable.

Recommendations/Next Steps

The following recommendations for mitigating the flooding erosion issues on the property and achieving healthier hydrology at the site as a whole[2] are ordered by elevation, from highest to lowest, as part of a watershed-wide, holistic approach to managing water[3] on the property – which, if properly addressed, will reduce the energy required to install and maintain all of the other design focus layers that make up a resilient and functional human habitat[4] (access, shelter, food-, fiber-, fuel- and/or habitat production, and energy).

The flooding at the Burton/Kay entrance to the propert can be mitigated by relocating the outlet of the recently-installed culvert draining water to a location further downslope, or by installing an additional drain (rolling dip[5] or culvert) across the utility access road and into an excavated drainage channel that is below the grade of the road down its entire length. Geologically-armored sediment deposition basins (which also serve as energy dissipation pools, aka "Zuni Bowls")[6] should be installed at any location in this drainage complex where the grade of the drainage channel becomes less steep (rolling dip/culvert outlets, etc) to facilitate the easy and regular removal of sediment from the system to eliminate potential clogs. If a new drainage channel is excavated alongside the utility access road at the top of the property, geological- and biological-armoring should be used in strategic locations and with very intentional placement to ensure that the drainage channel does not become erosive.

---

2 https://www.7thgenerationdesign.com/regenerative-hydrology/

3 https://www.7thgenerationdesign.com/regenerative-hydrology/

4 https://www.7thgenerationdesign.com/what-is-a-whole-site-design-and-why-do-one/

5 https://www.youtube.com/watch?v=PD-lRgtvxtY&list=PLJy8-1MQvUQzCQb1VI93BCPsTrj7rQ6pd&pp=iAQB

6 https://odysee.com/@7thGenerationDesign:f/incised-drainage-erosion-rehabilitation:3?t=413

Within Strawberry Creek and its tributary drainages (especially the off-property one that the highest Burton culvert drains into, if at all possible), rock-armored energy dissipation pools (aka "Zuni Bowls", which also serve as sediment deposition basins)[7] should be installed in any active headcuts to mitigate further erosion while the eroded drainage channel becomes revegetated. Creek aggradation structures like one-rock dams[8] and beaver dam analogs[9] should be installed in steep sections that have experienced erosion. The local Natural Resources and Conservation Service (NRCS) is beginning to provide grant funding[10] for the installation of such creek-restoring structures.

The access routes which are serving as funnels for the runoff generated from the uphill areas should be designed at the same time as the water system, ideally with the same site-wide, holistic approach recommended for water above. The design process[11] should consider new and/or improved routes that follow the ridges or traverse the hillsides and cross valleys along contour. Water should be drained from any existing or proposed new access routes as often as possible[12], and always at "first chance" and "last chance" locations. Water drainage elements that discharge runoff as shallow, non-erosive sheet flow[13] should be selected (like rolling dips[14] or water bars), and they should discharge onto gently-sloped ridges, geologically-armored flow-spreading structures such as "media lunas"[15], or into geologically-armored energy dissipation pools.

Consider relocating access route valley crossings to locations where the drainage channel is steeper, and utilize bridges (armored-fill crossings[16], if all-season access is not

7 https://odysee.com/@7thGenerationDesign:f/incised-drainage-erosion-rehabilitation:3?t=413

8 https://www.youtube.com/watch?v=hBCUeQbfFgY&list=PLJy8-1MQvUQxrBVYPtqjSkVjIn5j5m9XT&pp=iAQB

9 https://www.youtube.com/playlist?list=PLHj1MourztkeoMDPHoriLwoqOJePS3GIA

10 https://www.nrcs.usda.gov/sites/default/files/2023-10/E643D-Apri-_2023-fy24-new.pdf

11 https://www.7thgenerationdesign.com/designing-efficient-and-low-maintenance-access-systems/

12 https://www.7thgenerationdesign.com/designing-water-drainage/

13 https://www.7thgenerationdesign.com/vehicle-access-drainage-prescriptions/

14 https://www.youtube.com/watch?v=PD-lRgtvxtY&list=PLJy8-1MQvUQzCQb1VI93BCPsTrj7rQ6pd&pp=iAQB

15 https://www.youtube.com/watch?v=PEwTYpCo8Qg&list=PLJy8-1MQvUQymmCxrPDSm1HIH9mj44Qff&pp=iAQB

16 https://www.youtube.com/watch?v=Xqo7YSbKca4&list=PLJy8-

required), wherever any access road crosses the valley with significant drainage.

Any access routes selected for decommissioning should ideally be restored, however at the minimum simple drainage structures like water bars configured with media lunas should be installed along their lengths to prevent further erosion.

Additional Notes/Recommendations

- We have a series of articles on our website called Living with Fire[17] that provide detailed recommendations for shelter and living systems that promote greater harmony with the fire ecology we live in. These are primarily for residential landowners, however the design and management principles are universally applicable.

- An informative article[18] on the Las Pilitas Nursery website about helping oak tree to survive.

1MQvUQyMlpWAN3lQCSf_wXl3MMUx&pp=iAQB

17 https://www.7thgenerationdesign.com/living-with-fire-part-1-2/

18 https://www.laspilitas.com/groups/oaks/oak_tree_help.html