**What is at stake for Fly Ranch?** Fly Ranch is a unique, sensitive landscape with the ecological potential to sequester carbon on a large scale. However, human occupation, grazing, climate change, and invasive vegetation have instead depleted the habitat of the Greater Sage-grouse and other birds, insects, and animals and set up the perfect conditions for catastrophic wildfires. This proposal begins with the assertion that Fly Ranch must not be a location of permanent human habitation, infrastructure construction, waste processing, or water extraction, as proposed in the competition brief.

Furthermore, Burning Man can never be sustainable - only less bad. With some thought, Burning Man *might* be transformed to be energy-neutral by converting vehicle fuel sources to biofuel or electric, processing waste and garbage differently, harvesting and pumping water using less energy-intensive means, and offsetting environmental impacts through carbon credits or utilizing the area at Fly Ranch. However, these activities are still inherently energy-intensive and ecologically extractive. A less bad Burning Man will never embody the festival’s larger sustainability ethos nor would it address the immediate existential threat of climate change.

Instead, by dramatically reconceiving both Burning Man and Fly Ranch, we can shatter the illusion of “less bad” and imagine an ecologically productive festival and landscape.

This proposal begins with the radical idea that large-scale human impacts can and must be generative. On a planet that is on fire and subsumed by rising oceans, there is no time left for off-setting and no benefit from mitigation. The ethos of “Leave No Trace” becomes the ethos of “Leave Catalytic Traces.” **Catalytic Traces** unites Burning Man and Fly Ranch to create a 4-dimensional artwork. Through **Catalytic Traces**, humans, microbes, plants, animals, wind, and water cycles generate cascading natural processes adapted to our new (dystopic) normal. Carefully choreographed human actions set the artwork in motion and direct its 50-year interspecies collaboration.

**AN ALTERNATIVE BURNING MAN @ FLY RANCH**

During the month-long Catalytic Traces Festival in March, humans, soil, water, microbes, plants, and animals “sculpt” the site. Humans **imprint** soil to create hollows where microbes and plants can build new biological soil crust. Humans **dig** soil to allow water to infiltrate and refresh aquifers. Humans **pile** compost to build organic soil volume that supports native plants and animals. Overtime, biodiversity increases and wildfire risk decreases. Threatened native vegetation, birds, animals, and insects reappear. Sounds of chirping and rustling return. And after 50 years, the humans leave the Festival - and Fly Ranch continues its cycles of long-term change and adaptation.

**SITE STRATEGY**

The site strategy for Fly Ranch emerges from understanding its existing conditions, including soil types, depths, and availability of water. This organizes the site into three zones: where high impact activities can happen without causing additional ecological damage, where specific vegetation can grow, and where it is suitable for intensive ecological restoration. Overlaying the map with documented zones of high invasive vegetation and site disturbance results in a site strategy diagram locating ecological and human programmatic elements tied to existing conditions and the site’s intrinsic carrying capacity. Interventions target areas with high levels of site disturbance, leaving the rest of the site undisturbed.

Materials, waste and infrastructure play an important role to the construction of Fly Ranch. Rather than disposing garbage off site, all waste is seen as resources, and used to construct the temporary infrastructure, paths, and shelter on site. Organic waste is processed on site and allowed to decompose, adding organic matter and nutrients to the soil. To minimize additional disturbance on site, human shelter is located at existing well sites easily accessible by existing road infrastructure and in areas with high levels of existing disturbance. Temporary wood sleeper paths provide low-impact access to other portions of the site, and can be assembled and disassembled depending on access needs.

The three landforming strategies for the site, **IMPRINT**, **DIG**, and **PILE**, transform the site’s soil, water system, and vegetation. Locations for each strategy are directly tied to the existing site conditions.

Over the first zone, where soil has a higher clay and silt content and lower sand content, **IMPRINTING** creates areas for water and plant litter to collect. Land imprinting is a simple technology where a vehicle or tractor pulls a land imprinting device, roughens the surface, slows material movement, and increases the capture of resources. Here, biological soil crust, made up of cyanobacteria, lichen, and mosses, can establish, adhering and stabilizing soil particles, improving water infiltration, sequestering carbon, and providing habitat for microorganisms. Over time the modified surface shelters establishing vegetation critical to the sage-grouse, such as Great Basin Sagebrush (Artemisia tridentata), Greasewood (Sarcobatus vermiculatus), and Rabbitbrush (Chrysothamnus spp.).

Where the soil is highly permeable, and not suited for sagebrush restoration or rebuilding soil crust, **DIGGING** creates pockets to infiltrate runoff water, recharge the aquifer, and saturated soil. This area is also generally flat and down slope from adjacent topography, has ephemeral streams, and has groundwater close to the surface. Along the edges of each depression, improved soil will encourage vegetation such as Dandelion (Taraxacum spp.), legumes (Fabaceae), and Western Yarrow (Achillea millefolium), and insects such as cicadas, western harvester ant, and Cabbage white butterfly, to establish and grow.

Through **PILING** organic matter, such as human waste, food scraps, and biodegradable paper and packaging, in areas with deep, sandy loam, and well-drained soil, compost can provide needed nutrients to the soil for native and adaptive vegetation to grow. These are also areas with high levels of invasive vegetation and disturbed soils, which out-compete the Great Basin Sagebrush (Artemisia tridentata) and create fire hazards. The act of piling new organic matter will suppress invasive vegetation, such as Saltcedar (Tamarix spp), Cheatgrass (Bromus tectorum), and Western Juniper (Juniperus occidentalis), in place, decompose, and enrich the soil.

During the festival’s lifespan, the most intense construction happens for the first 10 years, with human intervention and activity tapering off until disappearing after year 50. After the end of the festival, a small team of full-time residents are left at the site to actively manage and record landscape changes: removing invasive vegetation, measuring vegetation growth and sage-grouse population, and documenting impacts of climate change. Small groups of visitors would be allowed to visit the site for educational tours and other activities, only allowed at the permanent stations to minimize environmental impact.

**PROTOTYPE + TESTING**

At Fly Ranch, landscape change and adaptation over time becomes the sculptural intervention. As such, the prototype for this proposal is a test of the landforming strategy imprinting. The prototype or on-site testing would imprint a .25-acre site and measure changes over a year. Data collection would measure how the surface performs, how long the imprints last before degradation, how much organic material they collect, rate of vegetation growth, change the rate of water infiltration, and amount of vegetation diversity.

Studies by Dr. Robert Dixon (Chair and founder of The Imprinting Foundation, Soil Research Scientist) have shown dramatic landscape change in a year using imprinting, with vegetation germinating at a high rate. As well, Dr. Dixon’s research has indicated that the imprints last about a year before degrading, with results varying by soil condition and type. This prototype would test the strategy's effectiveness for restoration at Fly Ranch and length that the imprints stay intact.

The main costs associated with this prototype is in equipment - rental of a land imprinter and a tractor or other vehicle. Other costs include sensors and other measuring tools to engage in long-term monitoring of the imprints. This requires advising by researchers or other scientists on best tools, methods, and practices, particularly in measuring change over time.

**ENVIRONMENTAL IMPACT SUMMARY**

In this proposal, most of the site is left undisturbed (60% or 2,400 acres). Intensive restoration and human activities occur on the remaining 1,600 acres, which currently show high levels of disturbance by the impacts of human activity, vehicles, grazing, and invasive vegetation. Generative human activities, through digging, piling, and roughening the soil, set the landscape up for ecological change that works with site conditions, climate, and plant and animal habitat.

A series of interventions to the landscape spur ecological restoration, remove invasive species, rebuild biological soil crust, reduce erosion by wind and water, and increase organic matter in the soil. Each activity is in service of the Greater Sage-grouse - creating sheltered areas for vegetation critical to their habitat and food sources, such as Great Basin Sagebrush (Artemisia tridentata), Greasewood (Sarcobatus vermiculatus), Rabbitbrush (Chrysothamnus spp.), and Thurber’s Needlegrass (leymus cinereus), Dandelion (Taraxacum spp.), legumes (Fabaceae), and western yarrow (Achillea millefolium). Landforming suppresses invasive vegetation, such as Saltcedar (Tamarix spp), Cheatgrass (Bromus tectorum), and Western Juniper (Juniperus occidentalis), which out-compete native vegetation, increase fire risk, and do not provide habitat for native birds, animals and insects. The native vegetation of this region is not managed by a fire regime, where damage from a wildfire takes years or decades to recover from, where invasive species thrive and spread. Biological soil crust, native vegetation and the sage-grouse are highly sensitive to ecological change and require management and intervention to ensure their survival.

Each intervention (imprinting, digging, and piling) happens locations that are best suited for each activity - soil, topography, access, presence of water. This ensures that the design is suited to and emerges from the landscape, rather than imposing a design idea upon Fly Ranch. Vehicles to perform these landforming actions can run on biofuel rather than oil, lessening their carbon footprint.

Materials used on site are recycled and recyclable, brought by participants for construction. All structures and paths on site are built in a way that is temporary and can be disassembled when use has finished or left to decay over time. This proposal manages all organic waste on site through composting.

This strategy could be expanded beyond Fly Ranch, using the site criteria developed, and in turn, revegetate, manage water, and re-establish critical habitat. The proposal works in tandem with lichens, mosses, and sage grouse, and creates a new behavior and new relationship with our surroundings, turning our actions into generative rather than mitigative.