

# Case Study: Environmental Requirements and its Impacts Upon the Conservation Center for Wildlife Care

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## **Abstract:**

As the population of California continues to grow, urban spaces are rapidly being developed into areas considered to be environmentally sensitive. In order to prevent extensive damage to our state's delicate ecosystems, environmental regulations are often enforced by local organizations during the course of impactful operations such as construction projects. These regulations will often vary from one site to another, depending on a given site's location and proximity to the environmentally sensitive areas. No two jobs will possess the exact same specifications for dealing with this aspect of construction, and as such some will require more intense regulations than others. With this in mind, the case study that I will be reporting on is an example of a job requiring the more extensive end of regulations. This paper's objective will be to outline this specific project's details, requirements, and discuss how its intricate situation makes it a learning experience for future projects with a similar environmental scope.

**Keywords:** Environmental Requirements, California Red-legged Frog, SWPPP, EIR

## **Introduction**

To begin this report, it is important to clarify what environmental specifications are, and where they can be found. Environmental specifications (also referred to as environmental requirements) are often found as a part of a project's contract documents, and will outline various rules and regulations that are to be exercised by the contractors and subcontractors on site. Depending on the given job, these requirements can vary greatly. For instance, construction sites located within well developed city limits will most likely be distinct from that of a site in a more rural location. Based on the parties responsible for organizing these specs, certain documents, agreements and drawings may be excluded or included in this section. In some occasions, these kinds of requirements may contain an EIR, or an environmental impact report. The goal of reports such as this are to identify environmental concerns that may vary depending on the site's particular habitat, state or county, and may include unique mitigation protocols depending on season or weather.

In general, documents that will be included under the category of environmental requirements are administered by organizations run by federal, state, and local governments. Common agencies accountable for enforcing these regulations are the US Environmental Protection Agency, US Army Corps of Engineers, and the US and California Department of Fish and Wildlife. In some cases, agencies such as these have been in operation for hundreds of years. As cities in our country and state continued to develop further into habitats previously untouched by man, it became essential that regulatory groups were present to ensure wildlife and their ecosystems would not be affected by manmade developments, such as construction projects.

Despite no two jobs having identical specifications, there are certain protocols that are shared by nearly all projects. One example of this can be noted with stormwater runoff. Whether a site is located in the heart of a downtown area or a rural farm, every site will possess some form of stormwater pollution prevention plan. With this in mind, some SWPPP plans can be more rigorous than others depending on a site's given location. As this report progresses, I will be discussing the greater implications that a rigorous SWPPP has upon a project. Along with this stormwater pollution plan, many construction projects will have mitigation plans regarding the unintentional distribution of onsite material into the surrounding area. While some SWPPPs will consider this in their design, other measures may be implemented to ensure no foreign material interferes with the area and the animals living in it.

## **General Background**

The particular site that will be outlined in this paper is located west of the town of Saratoga, CA. Saratoga is located in the California bay area, east of the foothills of the Santa Cruz mountains. This mountain range separates the metropolitan area of the bay area from the Pacific ocean, stretching from the San Francisco peninsula in the north to the Salinas Valley in the south. One of the more unique features of this area is its particular biome, which is considered to be a temperate rainforest. While most of these forests are found along the coastal ranges of states like Washington and Oregon, the southernmost tip of this ecosystem ends in very close proximity to the location of the site. This specific biome is called home by a diverse collection of plant and animal life, and as such is considered an area in need of environmental protection.

The property in which this project was built on is located off of Highway 9, a two way road that begins in Saratoga and travels throughout the Santa Cruz mountains, eventually ending in the town of Santa Cruz itself. The name of this job is The Conservation Center for Wildlife Care. According to page three of the EIR, the primary function of this facility includes:

1. State-of-the-art rehabilitation of injured and orphaned native wildlife;
2. Captive propagation of small, rare (endangered, threatened, or imperiled) native species, working in collaboration with U.S Fish and Wildlife Service and the CA Dept. of Fish and Wildlife Service; and
3. Education programs for children and families about native wildlife and the natural environment

The 164 acre plot of land where the conservation center is located was previously held by a private owner before being bought by the current one. No residents had lived on the property for a number of years prior to groundbreaking, and as such the only standing structures on site were a few small abandoned homes. The construction for this center consisted of three main phases, which included partial demolition and reinforcement of an existing bridge, the guest and animal rehabilitation center, and a series of large animal enclosures located on the adjacent hillside. One characteristic shared by all phases of this project was their work in close proximity to the Saratoga Creek, and areas adjacent to the creek deemed biologically sensitive. The Saratoga Creek runs from the North West of the property and moves towards the South East, passing beneath the existing bridge and partially feeding into a nearby pond. This creek is an integral part of sustaining the ecology surrounding it, as it gives life to various plant species, including a host of towering redwood trees, native only to these forests. Many organisms call this area their home, and the owners of this project were keenly aware of this. Recognizing the primary goal of this project was centered around animal conservation, the owner focused the contract documents on ensuring no harm would come to the surrounding ecosystem during the construction process.

## **Literature Review**

While the Conservation Center for Wildlife Care site hosts a unique array of species and geographical features, it is not entirely uncommon for any one project's efficiency to be affected by the requirements within the EIR. While this is the case, the degree in which budget or schedule is affected can greatly range depending on where work is taking place. An instance in which notable precautions were taken to protect local habitat can be seen through the Gorgon gas project on the Barrow Islands in Australia. This project was spearheaded by the Chevron Corporation with the goal of creating a series of natural gas wells on Barrow Island, a refuge for a host of animal species. One of the largest concerns with construction on this atole was the presence of multiple species that have vanished from the Australian mainland. One high risk animal found on Barrow Island is the burrowing kangaroo, also known as a Boodie (Moro 2010). Due to the introduction of predatory non native species on the Australian mainland, Barrow Island is the only place this marsupial can now be found.

In order to protect the Boodie and many other species on the island, extensive preventive measures were implemented to ensure the safety of these animals. One procedure enforced on this project was the mandatory presence of authorized personnel in the case of handling the residence of Barrow Island. Only specially trained

individuals have the authority to remove animals found on site to a safe location. If any species is seen on site (and has the potential to be harmed), it is the responsibility of the crew present to call a member of the environmental team to properly handle the situation. Along with this, the members of the project's environmental team are required to be present for any form of vegetation clearing. Both prior and during clearing operations, these personnel perform a visual sweep of the designated area to ensure no animals are present. If any organism is found, they are to be removed from the excavation area, and out of danger (Chevron 2012). While the process of dealing with the inhabitants of the island may be strenuous, it is crucial that their work is both deliberate and thorough. Despite the schedule of this project being affected by the meticulous inspections during clearings, it is the contractual duty of the contractors to carry out the procedures protective agencies have deemed necessary. In any area as environmentally sensitive as the Barrow Islands, following environments requirements closely is essential in keeping good rapport with a host of groups, such as local governments, lobbyists, and the general public.

## **Methodology**

The methodology used for this study was primarily based on information gathered from contract documents, drawings, and specifications. Within these documents were reports written by various members and organizations involved with this specific project, from qualified biologists to regulatory agencies. My knowledge and access to the information regarding this job was made possible through an internship, in which I was assigned to this specific project. The analysis of this report involved the careful understanding of the literature, and making concise conclusions based on my findings. Along with this, additional documents found from government websites such as Caltrans offered important visuals that assisted in clarifying particular concepts.

## **Analysis**

### *Environmental Impact Report*

Considering this particular job site took place in a previously undisturbed ecosystem, a significant environmental concern expressed by the biologist was the protection of native species, specifically endangered ones. In accordance to the contract documents, it is required that all new laborers, personnel, and visitors to the site are to watch an informative training video. This training video, which was presented by the senior regulatory biologist, outlined the various species that could be found on the site, and how to properly handle an encounter with said species. Likewise, in the Environmental Impact Report provided by the County of Santa Clara planning office, specific mitigation measure were outlined in order to clarify procedures based on potentially damaging actions. Mitigation measure 3.3-1d regarding the California Red-legged Frog reads:

#### Mitigation Measure 3.3-1d - California Red-legged Frog

If a CRLF (or any amphibian that personnel think may be of this species) is encountered during project activities, the following protocol shall be implemented:

- a. All work that could result in direct injury, disturbance, or harassment of the individual animal shall immediately cease.
- b. A dedicated project contact (e.g., a supervisor) shall be immediately notified.
- c. The dedicated project contact shall immediately notify USFWS.
- d. With approval of the USFWS, a qualified biologist approved by USFWS to handle the individual CRLF shall move the individual to a safe location nearby and monitor it until it is determined that it is not imperiled by predators or other Dangers.

The California Red-legged Frog is listed by United States conservation groups as a vulnerable species, and are known to live in mountainous bodies of water within the Santa Cruz mountain range. For this reason, included in the requirements is a procedure that is to be executed in the case of encountering this one particular species among a list of many others. To name a few others, the EIR requires similar actions be taken if any personal is to come across a Dusky Footed Woodrat or a Western Pond Turtle. With this in mind and upon further examination of the mitigation

measures, one may notice the potential effects that an encounter with one of these animal can have upon a construction schedule.

Section d of the mitigation measures mandates the relocation of a Red-legged frog by a qualified USFWS biologist only. Along with this, section a states all work in the surrounding area must be postponed until a biologist arrives on site to properly handle the situation. In the case of the Conservation Center project, the qualified biologist would not be on site on a daily basis, and would require a call and visit to handle a situation such as this one. While it would seem very tempting to have an untrained personnel move an animal without his direction, this action is considered to be illegal under the Endangered Species Act of 1973 (U.S. Fish and Wildlife Service 2005). Regulatory agencies forbid this option in order to protect species from potential harm, as accidentally killing a species such as this is not taken lightly. According to the biologist assigned to this job, evidence in a breaching of the law (such as disposing of an animal corpse following an accidental incident) could result in steep fines or a complete stop in work while an investigation is conducted. Below is a schedule of penalties in accordance to the Endangered Species Act of 1973, found on page three of the penalty schedule.

**ENDANGERED SPECIES ACT PENALTY SCHEDULE**  
16 U.S.C. §1531 *et seq.*

VIOLATION	VIOLATION HISTORY - PENALTY AMOUNT		
	FIRST	SECOND	THIRD
Violate distance restrictions – watchable wildlife			
Commercial	\$1000 - \$3,500	\$2,000 - \$6,500	\$3,500 - \$9,500
Non-Commercial	\$500 - \$1000	\$1000 - \$1,500	\$1,500 - \$3,000
Failure to maintain records as required by federal regulation or permit	\$1,500 - \$8,500	\$2,000 - \$13,000 and/or permit sanction	\$2,500 - Statutory Maximum and/or permit sanction
Failure to allow inspection of records as required by federal regulation or permit	\$1,500 - \$8,500	\$2,000 - \$13,000 and/or permit sanction	\$2,500 - Statutory Maximum and/or permit sanction
Fail to comply with the terms and conditions of an incidental take permit	Revocation and penalties to fit facts and circumstances of the particular case up to statutory maximum	Revocation and penalties to fit facts and circumstances of the particular case up to statutory maximum	Revocation and penalties to fit facts and circumstances of the particular case up to statutory maximum

*Figure 1: Endangered Species Act Penalty Schedule*  
*Source: NOAA.gov*

In order to avoid project threatening conflicts with these agencies, it is crucial that contractors and subcontractors work closely with their biologists. Immediately reporting species related incidents to the onsite biologist lowers the risk of a project being stopped by conversation agencies. It is the biologist's duty to document and report any interactions between species during the construction process, and for this reason the more thorough a report is, the less likely an agency is to suspect negligent practices. Ultimately, closely following directions outlined by the EIR and practicing proactive species avoidance can save a project from a potential schedule delay and interference from third party environmental organizations.

*Stormwater Pollution Prevention Plan*

Another aspect of this case study that distinguishes it from other projects is its Stormwater Pollution Prevention Plan. Following a report prepared by one of the subcontracted engineers, it was determined that the site’s calculated risk level was three. Risk level three is the highest of the levels, and can be calculated by a given site’s rainfall amount, sediment type, and steepness of slopes surrounding it. A matrix on how this is determined can be seen below.

Table 7 - Combined Risk Level Matrix

Combined Risk Level Matrix				
Receiving Water Risk	Sediment Risk			
		Low	Medium	High
	Low	Level 1	Level 2	
High	Level 2		Level 3	

Figure 2: Combined Risk Level Matrix  
 Source: dot.ca.gov

While all SWPPPs consist of multiple action plans that make up the overall scope, there are some areas that are considered more critical than others. One area of considerable concern on this site was the unintentional deposit of hazardous materials into one of the number of water sources on site. One example of this was a material storage area located in close proximity to the Saratoga Creek, a potential home of California Red-legged Frogs. SWPPPs specifications callout construction materials that can contribute to pollutants during stormwater discharge, and among the list included cement materials associated with the PCC concrete paving operation, drainage structures, median barriers, and bridge construction. This kind of material could be found in the mentioned stockpiles, and in order to prevent its residue from spreading during precipitation, silt fences and fiber rolls were designed and implemented around the areas of concern, protecting the declines into the creek from material runoff. These measure can be noted in the drawing below.

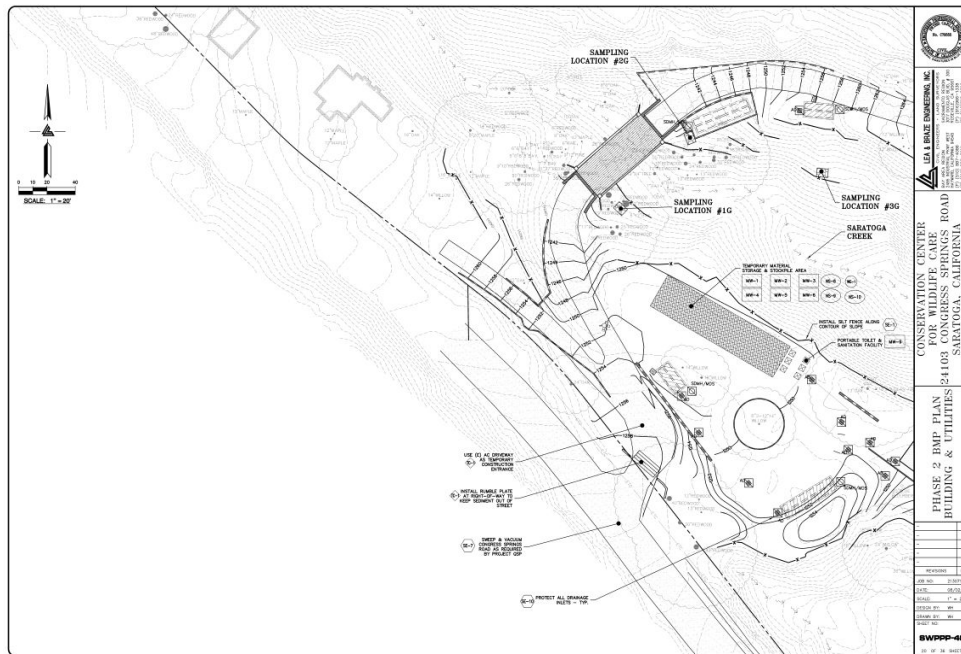


Figure 3: Placement of SWPPP Measures at Material Storage Area  
 Source: SWPPP Drawings

These measures are all performed within the scope of the Environmental Requirements, and on page eight of these documents reads:

1. Erosion Control Best Management Practices (BMPs)

Erosion control measures shall be utilized throughout all phases of operation where sediment runoff from exposed slopes or work areas threatens to enter waters of the State. All exposed soils within the work area shall be stabilized immediately following the completion of earthmoving activities to prevent erosion into the stream channel. Erosion control BMPs, such as silt fences, straw hay bales, gravel or rock lined ditches, water check bars, and broadcasted straw shall be used. Erosion control BMPs shall be monitored during and after each storm event for effectiveness. Modifications, repairs and improvements to erosion control BMPs shall be made as needed to protect water quality. At no time shall silt-laden runoff be allowed to enter the stream or directed to where it may enter the stream. All spoil piles from drilling operations and other construction activities shall be contained.

Considering 6% of the the 164 acre site was to be disturbed, and 4.7% was to be graded, there was a tremendous need for runoff control throughout the property. With this in mind, a relatively evident part of risk level three SWPPP is a need for more raw materials. Additional silt fences and hay bales add to the project's final budget, and when compared to that of a risk level one job, a difference is evident. If this project was located on a property in a developed, metropolitan area, the need for protecting sensitive areas such as a creek will be virtually non existent. When factoring costs into a project, it is important to consider the locations in which demolition, storage of materials and grading will be taking place. Designing preventative measures in these areas and monitoring their effectiveness is critical to avoiding complications with environmental agencies. The discovery of hazardous runoff from any given site is a guaranteed way to have work postponed. During this time of postponement, investigations into the degree of pollution will take place. This can result in delays to schedule, fines, and in severe cases serious legal action.

### *Vegetation Control*

A final impact noted in the process of this project is the large scale clearings of dense vegetation, and the rehabilitation efforts following such clearings. According to a survey performed by the U.S Fish and Wildlife Services, approximately 233 trees would need to be removed in order to clear room for structures, parking areas, and roads. Among tree species such as the Pacific Willow and California Bay, a number of significant coastal redwoods were needed for removal. To amend for the necessary destruction of habitat, certain requirements were imposed to improve the conditions prior to construction. On page 6 of the U.S. Army Corps of Engineers report, it states:

In total, 211,970 square feet (4.8 acres) will be planted with mixed oak woodland type vegetation, 92,240 square feet (2.1 area) will be planted with chaparral type vegetation, and 11,790 square feet (0.3 acre) will be planted with pond type vegetation.

Although a total of 10 acres were to be developed during the course of the construction process, measures were taken to ensure the ecosystem would not be stripped of an excess amount of vegetation, and that a portion of it would be replanted for the ecosystem's future health. Along with this, page 17 of the Environmental Impact Report notes the presence of on site invasive plant species, such as the yellow star thistle (*Centaurea solstitialis*), Scotch broom (*Cytisus scoparius*), and French broom (*Genista monspessulana*). Due to the rapid spread and destructive nature of these infestacous plants, the San Francisco Bay Regional Water Quality Board requires the removal of these plants if they are present on one's site. In the case of the Conservation Center for Wildlife Care project, a total of 5.4 acres of invasive plant species were surveyed and noted. As described in the contract documents, it would be required that these species were promptly removed from the area. The maintenance of local ecology through the removal of invasive species and the planting of trees are two important parts to protecting the organisms living in the surrounding area. Also, large scale clearings such as this one are important to contractors responsible for bidding the job as well. It is uncommon for any construction site to contain over seven acres of required revegetation. Since a majority of construction firms operate within developed parts of metropolitan areas, it may prove challenging to figure work like this into a budget. Selecting the correct subcontractors capable of work on this scale and at a reasonable bid is a significant component to be taken into account when proposing a final budget for a job such as this one.

## **Conclusion and Future Research**

The Conservation Center for Wildlife Care serves as an example of project management working to achieve absolute environmental management. Through the collaborative efforts of the contractors, owners, and environmental teams, careful preventative planning has ensured that the human presence in this delicate ecosystem will not have any lasting harmful effects. The presence of the California Red-Legged and other threatened species added many complexities to this project, and for that reason serves as an educational study for future jobs to come. Along with this, future research could dig deeper into the quantitative figures associated with EIR related costs. Increased costs of labor, equipment, and materials all could be compiled into a numerically based report, thus offering an additional analysis into how it affects a job. Although the conservation efforts surrounding construction may seem excessive at times, it is essential in ensuring a healthy environment for generations to come. As individuals in the construction field, it should be our responsibility to safekeep the outdoors, and lead by example, showing other industries our commitment to protecting our beautiful country.

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