Exhibit 4: Application to Fisheries Restoration Grant Program

ARROYO HONDO CULVERT MODIFICATION PROJECT
Land Trust for Santa Barbara County

An application to the California Department of Fish and Game
Fishery Restoration Grant Program
May 2004

SECTION 1: SUMMARY INFORMATION

1. Applicant name: Land Trust for Santa Barbara County
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10. Type: Public Agency ☐ Nonprofit Organization ☒ Private Enterprise ☐ Indian Tribe

11. OSBCR Certified Small Business? ☐
If yes, specify the industry group and Small Business Reference Number: na

12. Past contractor? ☒

13. Federal taxpayer ID: 95-3797404

14. Project type: Instream Barrier Modification (HB)

15. Project title: Arroyo Hondo Culvert Modification Project

16. Amount requested: $804,140.00

17. Total project cost: $1,081,140.00

18. Salmonid species benefited: Chinook ☐ Coho ☐ Steelhead ☒ Cutthroat ☐

19. Project summary: Instream modifications will be constructed to support upstream migration of adult steelhead trout into the 2,800-acre Arroyo Hondo watershed. The primary focus of the project is on partial barriers to fish passage created when U.S. Highway 101 was constructed in 1949; a 300-foot concrete culvert at the mouth of the canyon, a 164-foot concrete flume (box channel) that forms a spillway for outflow from the culvert, and the habitat areas directly up- and downstream of these barriers. Several components to enhance passage through the tunnel and channel are proposed: 1) Re-location of the small transitional lagoon to provide stable habitat for in- and out migrating fish; 2) installation of 22 concrete baffles though the culvert; and 3) establishment of a resting pool at the upstream end of the culvert.

20. Stream: Arroyo Hondo

21. Tributary to: na

22. Major drainage system: na

23. County(ies): Santa Barbara

24. Within Coastal Zone? ☒ Within Trinity River basin? ☐ Within Klamath River basin? ☐

SECTION 2: LOCATION INFORMATION

1. Township, Range, Section: T: 5°N R: 31°W S: 1920 & 1921;

2. Latitude, Longitude (in decimal degrees): Latitude: 120°, 9min., West Longitude: 34°30 min North

3. Location description: The coastal watershed is located approximately 25 miles west of the City of Santa Barbara along the Gaviota Coast.

4. Directions: **From Santa Barbara**: Traveling northbound on U.S. 101 west of Santa Barbara, the Preserve is approximately 23 miles from the La Cumbre Rd. overpass. The entrance to the Preserve is approximately 4.5 miles past Refugio State Beach, and ½ mile after you see a concrete bunker-style building at the Tajiguas Landfill turn-off. Make a sharp right turn into the Preserve at the bottom of the hill *immediately* after Cal Trans Call Box #101-412.

   From Buellton: Traveling southbound on U.S. 101, approximately 6 miles past Gaviota State Park and soon after the Vista Point Rest Area, make a U-turn onto the northbound lanes of U.S. 101. In 1/2 mile, make a sharp right turn into the Preserve driveway at the bottom of the hill *immediately* after Cal Trans Call Box #101-412.

SECTION 3: WATERSHED INFORMATION

1. Major Drainage Name: Arroyo Hondo Watershed

2. Watershed Name: Arroyo Hondo

3. Watershed area : 2,800 acres

4. Watershed area included in this proposal: The lower 550 linear feet of the creek is included in this proposal.

5. Land use statement: As a private nature preserve, public access to the canyon is allowed by reservation only. Educational, docent-led hikes that often focus on the life history of the Steelhead Trout are offered to school and community groups through-out the year. The preserve is also used by researchers studying a variety of natural history subjects. No new construction is planned in the canyon and no changes in the above described land-uses are anticipated. The culvert beneath US Highway 101 is owned by Cal Trans. There is no new construction or renovation planned by Cal Trans for the highway or culvert in Arroyo Hondo canyon.

6. Project area ownership: % private: 90 % state: 10 % federal:
   The lower 1/3 of the watershed, including much of the project area, is owned and operated by the Land Trust for Santa Barbara County as a nature preserve. Cal Trans owns a small section of the project area where US highway 101 runs across the mouth of the canyon (Figure #11: Parcel map).

7. Project area with landowners supportive of proposal: While Cal Trans engineers have not yet reviewed the final proposed design, Cal Trans is supportive of the project concept.

8. Watershed length of blue line streams: 6 miles

9. Length of blue line streams affected by proposal: The proposed project will directly affect approximately 550 feet at the mouth of the canyon. Six miles of blue line stream will benefit because they will become accessible to steelhead for spawning and rearing.

10. Salmonids present: Southern steelhead trout (*Oncorhynchus mykiss irideus*)
    Steelhead trout are regularly observed in the creek both up, and downstream of the barrier, but no formal population survey has been undertaken.

11. Source(s) of above information: Maurice Cardenas, DFG Fishery Biologist, pers. comm.; Camm Swift, 1994

2000; Dugan, 2001; Brinkman, 2000, 2001, 2002; Conception Coast Project, 2001; Glowacki, NMFS biologist, 2002; Stoecker, 2002.

12. Salmonids historically present: Southern steelhead trout (*Oncorhynchus mykiss irideus*)

13. Source(s) of above information: Maurice Cardenas DFG Fishery Biologist, pers. comm., James J. Hollister, ranch owner, pers, comm., Camm Swift, fisheries biologist.

14. Limiting factors to salmonids: (1) water quantity, (3) riparian (lagoon) dysfunction, (5) spawning requirements, (6) rearing requirements, (7) estuary/lagoon issues.

15. Source(s) of above information: , Cardenas, 1999, 2000, 2001, 2002; Brinkman, 2000, 2001, 2002; Conception Coast Project, 2001, Glowacki, 2002; Stoecker, 2002; Questa, 2003.

SECTION 4. PROJECT OBJECTIVES

1. Background and Need

In October, 2001, the Land Trust acquired the 782-acre Rancho Arroyo Hondo, creating the Arroyo Hondo Preserve. The Land Trust purchased the property in order to protect and restore its many important biological resources and provide limited public use including opportunities for environmental education and ecological research. The Preserve, which encompasses the lower two miles of Arroyo Hondo Creek, will remain in Land Trust ownership and under Land Trust management for the foreseeable future. Strict deed restrictions ensure that the canyon will remain in its nearly pristine, undeveloped state in perpetuity. Any development beyond the existing historical adobe house where the preserve managers reside, and the wood-frame barn, will be minimal.

Arroyo Hondo Creek is a fairly pristine, perennial stream with a blue-line stream length of 6 miles. The approximately 2,800-acre coastal watershed is located in the Santa Ynez Mountains, approximately 25 miles west of Santa Barbara, California along the Gaviota Coast. Adult and juvenile steelhead are regularly observed in Arroyo Hondo Creek and lagoon, as are a handful of other state and federally listed species (Dugan, 2001, Brinkman, 2002, Conception Coast Project, in press, Glowacki, 2002).

The recent publication of a comprehensive report on the status of steelhead trout in local streams and the opportunities for enhancement of those streams, entitled Steelhead Assessment and Recovery Opportunities in Southern Santa Barbara County, (Matt Stoecker & the Conception Coast Project, 2002) (the"SARO report"), inspired the Land Trust to explore the feasibility of addressing the steelhead barrier issue. The Highway 101 culvert at Arroyo Hondo was listed in the report as having the second highest immediate benefit to the recovery of steelhead of all 44 coastal streams in the area if addressed. This classification was given to Arroyo Hondo because of the extremely high quality habitat that would be made immediately available to steelhead if the barrier was removed. The report states that, "Excellent salmonid habitat conditions exist in Arroyo Hondo Creek upstream of the highway. This is the only anthropogenic barrier on the creek and improving access at this culvert ensures access to all accessible habitat in the watershed." The SARO report ranked Arroyo Hondo as number one in terms of the quality of habitat available for steelhead in the watershed and in the top ten in terms of the potential for steelhead recovery (see Figure #10 from SARO report).

Only 2 of 44 coastal streams in southern Santa Barbara County are listed as high priority for restoration in DFG's Steelhead Restoration and Management Plan for California: Gaviota Creek and Rincon Creek. The mouth of Arroyo Hondo is located five miles east of Gaviota Creek and, as the report states, "may be an important source for recolonization [of southern steelhead populations]." The report observes that the populations of southern steelhead trout that exist in the small streams along the coast, like Arroyo Hondo, are important for maintaining genetic variability of southern steelhead because they may be adapted to the unique conditions of their local streams and can serve as feeder populations for those streams..

A cursory evaluation of the GEEN/GRAY/RED fish passage filter from Part IX (Figure17) of DFG's California Salmonid Stream Habitat Restoration Manual, puts the Arroyo Hondo Highway 101 culvert and box channel barrier in a GRAY category. This is because the slope in the culvert is only 1%. However, the filter is misleading because it is the low slope of the tunnel along with the broad tunnel bottom that creates the shallow depths through which fish cannot pass.

In 2003, the Land Trust sought and received funding to assess the feasibility of addressing the barrier, and develop a proposal for doing so. With support from the State Coastal Conservancy and DFG's Adaptive Watershed Management Program (2003/2004), the Land Trust hired Questa Engineering Corp to prepare a report on the current conditions of the lower watershed. The Existing Conditions Report was completed in December 2003, documenting the hydraulics, hydrology, biology, and geomorphology of the lower reach of the creek, and the structural characteristics of the culvert and box channel under the freeway.

Based on the findings in the Existing Conditions Report, a set of alternatives for fish passage and habitat enhancements was presented to the Land Trust in the Alternatives Analysis (February 2004). The Land Trust convened a meeting of our technical advisory committee to review the alternatives and make recommendations for a preferred design. The committee is made up of representatives from NOAA Fisheries, CDFG, State Coastal Conservancy and California Trout and a local fisheries biologist who authored the SARO report, Matt Stoecker. It is the input from this committee that resulted in the project design proposed in this grant request. Further approval of the design concept described herein will be obtained through additional consultation with agency biologists and engineers and will be finalized as part of the permitting process with those agencies. The current grant contracts do not include funding for permitting or bid-level engineered drawings.

2. Known Limiting Factors Addressed by project

(1) *water quantity* – due to the broad shallow shape of the culvert bottom, depth is one of the primary factors that limit salmonid movement through the tunnel. When there is sufficient quantity of water and depth is adequate for movement, often the velocities are too high for fish to travel up the 500 feet of concrete with no rest.

(3) *riparian (lagoon) dysfunction* – lack of shade, high nutrient levels and dramatic shifts in salinity levels due to tidal influence are limiting factors to the steelhead life cycle stages that depend on a lagoon environment.

(5*) spawning requirements* – The strongest limiting factor in the Arroyo Hondo system is the difficult passage conditions through the tunnel and channel. Excellent spawning habitat exists upstream of the barrier, but access to it is limited to an extremely narrow window of opportunity when conditions are acceptable for fish passage.

(6) *rearing requirements* – Excellent rearing habitat exists in the Arroyo Hondo watershed and lagoon, but is largely inaccessible due to the Highway 101 culvert.

(7) *estuary/lagoon* issues – In its current location which is artificially close to the ocean, the lagoon is subject to sudden and extreme changes in salinity and size due to the littoral sand movement, tidal influence and wave action. Those fluctuations impair lagoon function as a stable environment for in- or out- migrating steelhead. There have even been years when storm events are so mild and/or infrequent, and the scour capacity of the outflow so greatly reduced, that the lagoon has silted over completely for several months.

3. Limiting Factor Remediation

(1) *water quantity* – The proposed baffle design through the culvert would concentrate flows into a low-flow channel providing increased depth during lower flows. Also, resting pools would be created in the tunnel by concentrating flows.

(3) *riparian (lagoon) dysfunction* – Lagoon function would be enhanced, resulting in more stable (seasonal) salinity levels and temperatures, less influence of a constantly migrating sand bar, and more cover and shade with enhanced planting around its edges.

(5*) spawning requirements* – All of the project components are designed to accommodate fish passage above the Highway 101 barrier where the spawning and rearing habitat is excellent. According to fish passage protocols and hydraulic modeling of the Arroyo Hondo system, fish can currently pass through the tunnel at flows between 5 and 40cfs (although only hardy fish can swim the whole stretch at the high end of those flows). The proposed baffles would facilitate fish passage up the channel and culvert at flows of 1 to 75 or greater cfs – a 100% increase.

(6) *rearing requirements* – Passage improvements as described above, combined with resting pools and a more stable lagoon, will support all life stages of the steelhead and create a larger, healthier population in Arroyo Hondo that is less susceptible to disease or a natural disaster.

(7) *estuary/lagoon issues* – A lagoon that is less impacted by everyday tides, sand shifts and rapidly changing salinity levels, and has more shade and protective cover, will enhance the viability of

the steelhead population by allowing in- and out-migrating fish to acclimate to the change in salinity and temperatures.

4. Additional Objectives

Each project component is described in detail below, including an introductory statement about the benefit and/or objectives of that portion of the project. Additional objectives such as bank stabilization, sediment reduction, bank revegetation and better access to the tunnel and beach for maintenance, research and educational purposes are discussed in Section 5.

SECTION 5: PROJECT TASKS AND RESULTS

1. Detailed Project Tasks

This section provides a discussion of the benefit and background of each project component, followed by a detailed description of the proposed construction measures. Overall, the proposed project is generally linear and runs approximately 550 feet from the Pacific Ocean upstream, through a concrete box channel and arched culvert under the Highway 101 culvert. The attached Figures 2A through 2E show both the overall concept plans for the project as well as several design details. A station line has been drawn through the project and is referred to throughout this discussion. Project components are listed below in order of their occurrence in the stream; from ocean to the resting pool upstream of the culvert:

a. Lagoon Enhancements
    1) Concrete channel modification & lagoon re-formation
    2) Scour Protection around bridge foundations
    3) Biotechnical slope protection
    4) Exotic species removal and restoration planting
b Beach Access Route Construction
c. Culvert Modifications
    1) Culvert baffles
    2) Storm Drain Outfall Modification
    3) Maintenance path construction
    4) Upstream apron modifications
d. Upstream Resting Pool
e. Upstream bank Stabilization
f. Other Project Tasks

a. Lagoon Enhancements

Benefit: "The importance of lagoon and slough habitat cannot be underestimated as they can play a role in the steelhead productivity of a watershed" (SARO report). One of the goals of the Arroyo Hondo project is to enhance lagoon function as habitat for steelhead trout and other estuarine species. The current lagoon at the mouth of Arroyo Hondo is unnaturally located too close to the ocean's tidal influence and is therefore an unstable estuarine system that provides unpredictable habitat for steelhead. The instability of the lagoon is considered a temporal barrier to successful passage of steelhead into the watershed.

Background: Photos taken prior to the placement of the earthen berm across the canyon that now supports Highway 101, reveal that there was not a large lagoon complex at the mouth of the canyon (Photos 1 & 2). Prior to 1949, Arroyo Hondo creek had a more sinuous path and a lower slope gradient that created pool structures upstream of the tide and wave action zone. As described by former owner James J Hollister, these pools held water year round and had many fish in them. Shallow groundwater levels near the mouth of the canyon support these claims of year-round water, as does a tree survey from 1949 that indicates that there were large sycamores and willows growing in the creek under the bridges.

The construction of the tunnel and box channel had two significant impacts to the natural wetland system at the mouth of the canyon. First, the new channel extended the discharge point of the culvert very close to the high tide line of the ocean, thereby cutting off any freshwater flow into the historic floodplain and wetland area of

the canyon mouth. Second, it altered the velocity and hydraulic flow of the discharge, establishing a scour hole or lagoon artificially close to the wave action of the ocean (Photo 3).

This proximity to the ocean means that the lagoon habitat is subject to sudden and extreme changes in salinity and size due to the littoral sand movement, tidal influence and wave action. Those fluctuations impair lagoon function as a stable environment for estuarine species. There have even been years when storm events are so mild and/or infrequent, and the scour capacity of the outflow so greatly reduced, that the lagoon has silted over completely for several months.

Intermittently, the small, artificial lagoon provides habitat for of several estuarine species, including four special status species: Southern Steelhead trout, Tidewater goby (federally endangered), California Red-Legged frog (federally threatened), and Southwestern Pond turtle (federally listed species of concern). Each of these species has been observed in the lagoon, but on a sporadic basis. For example, Tidewater gobies were not present during 1993 or 1995 surveys, but were again seen in the pool in 2001 and 2002 (Swift). Steelhead of varying age classes are regularly seen in the lagoon, but at widely varying densities (Hollister, Duggan, Glowacki).

Lagoon Enhancement Proposal: While restoration of the natural estuarine complex in the lower floodplain of the canyon is not feasible, measures to substantially improve habitat conditions for the above-mentioned special status species can be taken. The concept for enhancement of the habitat between the highway berm and the ocean is to utilize the present culvert flow dynamics to create and maintain a self-sustaining lagoon system at the outlet of the Highway 101 culvert. At project completion, we envision a permanent functioning estuarine system fringed with Arroyo willow, sycamores and other native riparian species. To attain that vision four habitat enhancement components are proposed. They are described in the narrative below and are graphically depicted in Figures 2A, 2B and 2C.

1) Concrete channel modification and lagoon re-formation: Integral to the establishment of a more natural lagoon is the modification of the concrete box channel that currently extends 165 feet from the end of the tunnel to the beach. We propose to remove most of the channel, leaving only a 30 foot section extending from the tunnel. This 30 feet of the box channel will be left for several reasons. Currently, the channel walls retain portions of the roadway embankment including high elevations of soil. Removing the walls in this area would necessitate increased grading costs and could potentially destabilize portions of the Highway 101 embankment. Also, leaving even a short length of the box channel will lower the elevation of the entrance into the baffled culvert thereby reducing jump height and facilitating fish entry into the culvert. Photo # 4 shows the approximate location where the culvert would be modified.

The hydraulics of the culvert will remain relatively the same as in existing conditions, so we expect that a new scour pool (lagoon) will re-establish itself in the approximately the same geometry as the existing pool but further away from wave action. To initiate the formation of the relocated lagoon we are proposing to excavate a depression at the outlet of the shortened box channel with a depth of 25m and width of 35m. Over time, a stable lagoon configuration will establish itself based on Arroyo Hondo watershed's flow regime. This design should create a functioning lagoon system that is less likely to be influenced on a yearly basis by sand movement and size reduction.

2) Scour protection around bridge foundations: After removing most of the concrete box channel, the footings of the old Highway 1 bridge and railroad trestle will be periodically inundated with high flows. Historically, this was the case and is shown in the photos taken by Cal Trans in 1948 prior to culvert and box channel construction (Photos #1 and #2). However, the channel hydraulics has been altered significantly by the construction of the culvert. The culvert now concentrates and increases the velocity of the flow. In order to preserve the structural integrity of the bridge footings, two protection measures are proposed. The first is a flaring extension of the east wall of the box channel (Figure 2A). This structure will protect the old Highway 1 bridge foundation (station 0+70), which is immediately adjacent to the outlet of the tunnel and would be under the greatest amount of scour threat. The wall would also serve to deflect flows to enhance scour pool formation.

A second protective measure is planned for the six railroad trestle foundations that would be exposed to flows by the box channel modifications (station 0+45). These footings will be protected using placed stone revetment around the base of each one. The revetment structures will prevent scouring around and under

the trestle foundations. This stone revetment will be planted with Arroyo willow stakes which will add root-binding ability to the rock structures, provide increased habitat value to the lagoon, and enhance silt and sediment retention around the structures.

3) Biotechnical slope protection: The newly graded slopes of the lagoon will be treated with a biotechnical bank stabilization technique. Willow stakes and/or fascines will be used to ring the lagoon (Figure 2C). Other species will be planted in more upland areas to establish an appropriate coastal riparian vegetation association. Biodegradable erosion control fabric will be used to help stabilize the sandy soils prior to the establishment of the vegetation.

4) Exotic species removal and restoration planting: The area within the construction limit as well as the lower portion of the Arroyo mouth will undergo a revegetation program. First exotic species and noxious weed species will be removed. Additional riparian zone and coastal scrub planting will be completed to revegetate areas impacted by construction activity.

b. Beach Access Route Construction

Benefit: To maintain access to the beach from the Arroyo Hondo Preserve for management, emergency, research and educational purposes.

Background: When the berm for the new highway was constructed, the only access to the beach from the ranch was through the tunnel, out the box channel and onto to the beach. The arched tunnel was built – at the request of the Hollister family - with enough clearance that a horse and rider could comfortable walk through it. That access worked during low flow periods for many years, until the natural scour action of the outflow established a fairly deep pool at the end of the box channel, blocking any access to the beach during much of the year. The Hollister family was forced to build a raised wooden walkway attached to the eastern wall of the culvert (Photo # 4). That walkway remains the only beach access route from the Preserve.

Under the proposed project design, the box channel wall with the raised wooden walkway would be removed necessitating a new route around the lagoon to the beach.

Beach Path Proposal: Along with the lagoon reestablishment, a new access route will be created that extends from the culvert mouth to the beach. This path will be aligned along the west side of the lagoon tucked behind a rock outcropping that will protect it from large wave action (Photo # 5). A new trail foundation (station 0+25) based on placed rock will be needed in a short section immediately by the rock outcropping. Steps to the path from the tunnel outlet will be created. (Budget note: As this project component does not relate to fish passage enhancements, it will be funded by non-DFG grant money.)

c. Culvert Modifications

Benefit: The primary benefit of the proposed barrier modification project is improved access to six miles of spawning and rearing habitat that is currently unavailable to steelhead except under very limited flow conditions. It is estimated that the proposed culvert improvements will enhance flow conditions that support steelhead passage upstream by over 100%. Improving fish passage within the culvert requires increasing depth at low flows, reducing velocities during high flows and providing resting places at all passable flows.

Background: The arched culvert built in 1949 and expanded in 1984, is 307-ft long , 17’ high and 16’ wide (Photos # 6 and #7). It has a slope of 1%. The hydrologic and hydraulic analysis in the Existing Condition Report (Questa, December 2003) examines the existing flow data, describes the hydraulic structures through the project reach, and analyzes existing fish passage constraints. The hydraulic model results show that there is currently a very small window of flow regime where depth and velocities allow for successful fish passage through the culvert – between 5 and 40 cfs (and at 30 to 40cfs only the hardiest of fish are likely to be successful).

The hydraulic performance of the Arroyo Hondo system has been considered in relation to the swimming abilities of adult steelhead trout. An analysis of the structural integrity and storm capacity of the culvert and

channel in relation to the barrier modifications proposed herein has been completed. A preliminary analysis of the structural configuration of the culvert revealed that the bottom slab is integral to the stability of the culvert. Alternative designs that would create a more natural soft bottom through all or part of the culvert were examined and dismissed as infeasible because of the enormously high cost of installing stabilization measures.

A healthy population of steelhead has been regularly observed in the lagoon and upstream of the barrier complex. However it is not known how many of the upstream population are resident or transitional. No formal population survey has been completed in the watershed and documentation of steelhead moving through the culvert is limited to a handful of personal observations by the former landowner J.J. Hollister, and DFG biologist Maurice Cardenas.

Tunnel Modification Proposal: The proposed design will allow a greater opportunity for fish to move into the watershed and ensure greater spawning and rearing success. Instream passage structures have been designed using recommendations and methodology from the Hydraulic Design Option in Section IX of the California Salmonid Stream Habitat Restoration Manual. The components proposed for the culvert structure are discussed below and shown in Figures 2A, 2B, and 2C.

1) Culvert baffles: Installation of 22 baffles throughout the length of the culvert will be used to increase depth and reduce velocities of low flows. The configuration and geometry of the proposed baffles as shown in Figures 2D are 2 to 4 feet high and 10 feet across, occurring every 16.5 feet. A small amount of sediment will intentionally be retained in between the baffles, aiding in velocity reduction and creating a more natural substrate within the culvert bottom. This baffle design has been found to increase flow depths while minimizing sediment deposition behind individual baffles.

Hydraulic modeling, as recommended by the Hydraulic Design Option in Section IX of the California Salmonid Stream Habitat Restoration Manual, show that baffle installation would increase average flow depths and decrease flow velocities. This will extend the flow range and hence the duration that fish may pass through the culvert. The final configuration of the baffles will be reviewed by members of the technical advisory committee, and eventually approved by each of the permitting agencies.

2) Storm Drain Outfall Modification: The storm drain pipe from Highway 101 is currently located directly above the culvert outlet. During storms, runoff from the highway flows out the drain pipe and falls approximately 19 feet directly onto the low flow point of the box channel. This strong concentrated cascade of water onto the area where fish may be passing may be dangerous to the fish. It is recommended that the outflow pipe be redirected to the west bank of the box channel away from the centerline where the fish are moving.

3) Maintenance path: Access through the tunnel is essential to be able to maintain the baffle installations. Presently access through the culvert is accomplished by walking along the sloping bottom of the culvert. This is typically slippery and dangerous, and can only be conducted during the lowest of flows. The culvert is also the only connection between the Arroyo Hondo Preserve and the lagoon and beach. Access through the tunnel is needed for maintenance, monitoring, emergency, research and educational purposes.

A new pathway will be established along the north side of the culvert. This pathway will be approximately 6 feet wide and 2 feet above the lowest point in the culvert bottom. This pathway will serve as an access wide enough to utilize small “bobcat” maintenance equipment to remove sediment build up and/or repair the baffle structures. The pathway design has the additional benefit of concentrating low flows in the channel thereby providing more depth for steelhead passage.

4) Upstream apron modifications: Low flow collector walls will be installed at the inlet to the culvert (Figures #2A and 2B). These walls will be 12 to 18 inches high and will serve to concentrate and focus low flows into the baffle system. They will also increase depth on the entrance apron and help focus fish into the upstream pool. These walls will be located at station 1+80 to 1+85.

d. Upstream Resting Pool

Benefit: The lack of deep enough resting pool directly upstream of the culvert is another barrier to fish passage. The creation of a more permanent pool will provide a critical resting place for in-migrating fish and a staging area for out-migrating fish. A new self-sustaining scour pool at the inlet is an integral component of the proposed project.

Background: The Arroyo Hondo channel immediately upstream of the culvert was straightened in 1949 when the culvert was constructed. This straightening increased the gradient and likely destroyed numerous deep resting pools in that reach. Geomorphic studies in the Existing Conditions Report indicate that this stream section is an area of historic sediment deposition. The lack of a stable resting pool at the culvert inlet, and sedimentation from adjacent bank erosion are limiting factors for successful steelhead passage into the watershed.

Resting Pool Proposal: Creating a pool in this area of historic sediment deposition requires alteration of the hydraulic conditions so that turbulence and higher localized velocities prevent the accumulation of sediment in this area. In order to build a self-sustaining scour pool near the entrance of the culvert a complex of woody debris and boulders will be constructed (station 1+85). Rootwad structures will be anchored adjacent to each to form a interconnect structure (Figure 2E). The rootwads will create turbulence and narrow the channel for flows at or below the 5 to 10 year recurrence. This turbulence will create a scour action that should sustain the pool. It likely that some temporal fluctuation in the size and geometry of the pool will occur based on the year-to-year flow dynamics. The location of the pool can be seen in Photo #8.

e. Upstream Bank Stabilization

Benefit: The benefit of this project component is stabilization of the over-steepened banks immediately upstream of the culvert on both the east and west sides of the channel. Curtailing erosion of the banks will help reduce sediment input into the re-formed resting pool and baffle structures in the culvert.

Background: Because the stream segment above the culvert was straightened, concentrated flows have caused some erosion on the banks adjacent to the tunnel entrance. Stabilizing these banks is important because if left in the current state they could continue to fail and produce sediment that will fill the newly created scour pools and clog the baffle structure in the culvert prematurely.

Bank Stabilization Proposal: This component of the proposed project entails reducing the bank slope, securing the toe with boulders and utilizing willow stakes and biodegradable fabrics for temporary erosion control. On the western slope, the existing path leading down to the tunnel entrance will be reinforced as part of the bank stabilization project.

f. Other Project Tasks

1) Finalize Funding Contracts
2) Complete Engineering Designs, Bid package
3) Environmental documentation (CEQA)
4) Obtain Permits
5) Obtain Construction Bids
6) Construction Supervision
7) Environmental Monitoring
8) Maintenance
9) Project Management/coordination

2. Time Frame: The start month would correlate to the start date of the funding contract with DFG if this proposal is successful.

PROJECT COMPONENT/TASK	**Start Month**	**Months 1-6**	**Months 6-12**	**Months 12-18**	**Months 18-24**	**Months 24-30**
Construction Components						
Lagoon Enhancements						
Beach Path Construction						
Culvert Modifications						
Upstream Resting Pool						
Upstream Bank Stabilization						
Project Tasks						
Finalize Funding Contracts						
Engineering Designs, Bid package						
Environmental docs (CEQA)						
Obtain Permits						
Obtain Construction Bids						
Construction Supervision						
Environmental Monitoring						
Maintenance						+ 10 Years
Project Management						

3. DFG acceptable protocols used in project development and completion:

☒ DFG Restoration Manual
Part VII Implementation methods
Part VIII Evaluation & monitoring methods
Part IX Fish Passage
DFG's Interim protocols for effectiveness and validation monitoring of salmonid habitat restoration
☐ DFG Monitoring Protocols
List:
☐ Fish, Farms and Forestry Coalition Draft Protocols
List:
☐ PWA Road Assessment
☐ Star Worksheet Road Assessment
☐ V-Star residual Pool Volume
☐ Juvenile summer abundance estimation
☐ Out-migrant trapping and efficiency
☐ California Content Standards
☐ National Science Content Standards

4. Other protocols:

5. Deliverables:
- Final Engineered Drawings
- Bid Package
- Final Budget
- Permits
- CEQA document
- Construction timeline

6. Expected Quantitative Results:
   a. Stream length treated/assessed/made more accessible (distance in feet): The length of stream to be addressed is 550 feet. The length of stream made more accessible is 6 miles.
   b. Instream habitat structures to be installed (number): 22 baffles will be installed in the tunnel; 1 new upstream scour pool (resting pool) will be installed with rootwad bank stabilization and revegetation; 1 scour pool (lagoon) will be installed downstream of tunnel with willow fascine for bank stabilization, and rock revetments around railroad footings.
   c. Fencing length to be installed/repaired (distance in feet): na
   d. Road length treated/assessed (distance in miles): na
   e. Stream crossings treated (number): na
   f. Sediment prevented from entering the stream (volume in cubic yards): na
   g. Trees planted (number): na
   h. Area planted/preserved/assessed (area in acres): na
   i. Public meetings (number): na
   j. Public meeting attendees (number): na
   k. Students trained (number): na
   l. Juvenile fish produced: narereleased: na

7. Other products and results:
Improved habitat for several other species of special status which are known to occur in the present lagoon: Tidewater goby (federally endangered), California Red-legged frog (federally threatened), and Southwestern Pond turtle (federally listed species of concern). Safer access to the tunnel and beach for maintenance, monitoring , research and educational purposes will result from this project.

8. Applicant's qualifications and experience:

The contractors and subcontractors for this project have not yet been selected. As a nonprofit organization, the Land Trust has a small staff and relies heavily on consultants to perform project-specific tasks. The Land Trust has extensive experience in selecting qualified consultants and contractors to carry out complex, high budget projects as is evidenced from the successfully completed projects listed below.

Arroyo Hondo Preserve: Gaviota Coast canyon ranch acquired for $6.2 million in 2001; secured $900,000 endowment for management; during three years since purchase, secured and managed 12 private and public grants, totaling $315,000, for riparian habitat restoration, invasive weed management, facilities and trail improvement, outdoor education and public access programs. Grant partners include State Coastal Conservancy, Pacific States Marine Fisheries Commission, California Department of Fish and Game, U.S. Fish & Wildlife Service, and several local foundations.

Carpinteria Salt Marsh Reserve: Managed multiple contracts in 1985-97 totaling $1,500,000 for land acquisition and management plan. Partnered with City of Carpinteria and State Coastal Conservancy to prepare Carpinteria Salt Marsh Reserve Management Plan (1997), and to design and complete construction of an 8-acre Carpinteria Salt Marsh Nature Park (1998-99). In 2002, the land Trust completed $110,000 plan for habitat restoration and public access improvements on 35 acres owned by Land Trust. In 2003-04, the organization secured $1,675,000 for final design, permitting and construction of marsh restoration, in partnership with UC Natural Reserve System, City of Carpinteria, County Flood Control and adjacent private homeowner associations. Project is in permit process, with construction expected to begin Summer 2004. Grant partners include County of Santa Barbara, UC Natural Reserve System, State Coastal Conservancy, U.S. Fish & Wildlife Service and National Oceanic and Atmospheric Administration.

Santa Rosa Creek: Facilitated $170,000 grant for multi-agency and landowner creek stabilization and habitat restoration design study funded by State Coastal Conservancy in 1995-98.

Goleta Slough Wetland Mitigation: Under cooperative agreement with U.S. Army Corps of Engineers, $890,000 secured to complete restoration/enhancement project to mitigate loss of 12 acres of wetland habitat in the Goleta Slough watershed. Restoration site selected and consultant team engaged in final plans, permits, environmental review and construction management to restore 35-acre property owned by CA Department of Fish & Game.

Refugio Creek Restoration Plan: With grant from the Southern California Wetland Recovery Project, subcontracted with Cachuma Resource Conservation District to design plans and cost estimates to remove and control the invasive plant Arundo donax (giant reed) and arrest bank erosion along lower Refugio Creek on Gaviota Coast. A cooperative project with three private ranch owners. Federal and state grants pending for $165,000 to implement this project (2002-2004).

9. Previously completed projects and outcomes under grant program:
A $9,775 grant from DFG's 2003/2004 Adaptive Watershed Management Program helped to fund the pre-planning work for this implementation project. Specifically the grant partially funded an Existing Conditions Report, the Alternatives Analysis and the Final Report is due to be published in July, 2004. The pre-planning phase of the project would be considered "partially completed."

SECTION 6: LANDOWNERS, ACCESS AND PERMITS

1. Landowners granting access for project:
Please refer attach access letter from DFG Senior Fishery Biologist Specialist explaining that a Landowner Access Agreement does not need to be included at this time, and that no work will begin until the Land Trust has full permission (encroachment permit) from Cal Trans (Letter - Figure #5). A parcel map showing ownership is included as Figure 11.

2. Permits:
   - Cal Trans – Encroachment permit
   - DFG – Streambed Alteration Agreement (1601)
   - USACOE – 404 Permit
   - Regional Water Quality Control Board – 401 permit, Water Quality Certification
   - Santa Barbara County Land use permit
   - Coastal Development Permit
   - NOAA Fisheries

3. Lead CEQA agency: California Department of Fish and Game (?)

4. Required mitigation? ☐

SECTION 7: PROJECT BUDGET

1. Summary Project Costs (Please see attach detailed budget Figure #1):

Sources of Funds	In-kind Cash	In-kind (if applicable)	Total
Fisheries Restoration Grant Program			
Other State Agencies Name(s) and amount(s) of each: California Coastal Conservancy (un-committed)	$250,000		$250,000
Federal Name(s) and amount(s) of each:	0		0
Applicant : Land Trust for Santa Barbara County	$12,000		12,000
Other Sources Name(s) and amount(s) of each: Smart Family Foundation	$15,000		15,000
Total	$277,000.00		$277,000.00

2. Standardized Costs:

Anchored log structures are the only project components that fall under the standardized cost rates provided in the solicitation notice. The costs for the proposed rootwad structures are well within DFG's standardized cost rates.

3. Budget justification:
The attached cost estimate reflects the construction cost based on planning level conceptual designs. Estimating exact construction cost prices is problematic for this site because access is difficult, the site is somewhat remote, and the work type unique for the area. Local contractors are unlikely to have extensive experience with environmental restoration and baffle formwork. Mobilizing heavy construction equipment will have to be staged and an access route from old Highway 1 to the site will have to be constructed. Concrete will have to be pumped to the site and may require specialized trucks or pumps increasing costs. Additionally, the project is located near an urban area – Santa Barbara - known to have high construction costs. This adds a high level of uncertainty within the cost estimate. A high contingency amount of 25 percent has been used for this estimate.

Other budget considerations:

- No purchases of equipment are anticipated.
- Funding for the beach access path is not included in this grant request as it is not directly related to fish passage enhancements.
- The Coastal Conservancy staff has set aside the above referenced funding for project implementation. Final approval of that grant requires approval by the board of the California Coastal Conservancy. The Conservancy cannot consider the formal grant request until CEQA documentation is complete.
- The other sources of matching funds, which equal $27,000, are approved and available for immediate use.

4. Administrative Overhead:
A 5% administrative overhead fee is included in the cost estimate. This adminisrative fee will cover the grant administration costs including bookkeeping, Land Trust executive director's oversight, and office expenses.

SECTION 8: SUPPLEMENTAL OR SPECIALIZED INFORMATION

In the following order, please attach the following required items, as appropriate to the project type:

☒ 1. Project budget according to the sample in the Solicitation. See examples and instructions on pages B10-B14. (ALL)
☒ 2. Plan view diagram. See example on page B9. (CC, CF, FL, HB, HI, HR, HS, HU, MO, PM, SC, TW, WC, WD)
☒ 3. Project location topo map, 7.5 minute. See example on page B8. (CC, CF, FL, HA, HB, HI, HR, HS, HU, MD, MO, PM, RE, SC, TE, TW, WC, WD, WP)
☐ 4. Watershed map. See Section III. (HU, MD, MO, OR, PI, PL, WP)
☒ 5. Landowner access agreements. See examples on pages B2-B7. (All projects with on-the-ground work)
☐ 6. Project 10-year maintenance agreement. See examples on pages B3-B5. (HR, HU)
☐ 7. Written eligibility certification from CDF. See Section III. (CF)
☐ 8. Evaluation plan. (see Section III - ED, TE). Quality Assessment/Quality Control Plan (see Section III - MD, MO).
☐ 9. Land acquisition/easement information. See page 7, Section III. (HA)
☐ 10. Water purchase information. See pages 9-10, Section III. (WP)
☐ 11. Status report. See Section III. (OR, PI)
☐ 12. 5-year management plan (new projects only). See page 13-14, Section III. (RE)
☒ 13. Environmental project questionnaire. See form on pages B15-17. (CC, CF, FL, HA, HB, HI, HR, HS, HU, MD, MO, PM, RE, SC, TW, WC, WD, WP)
☐ 14. Project follows guidelines in the California Coho Salmon Recovery Strategy (RE) (Coho related projects must follow guidelines outlined in appendices H or I, view at http://www.dfg.ca.gov/nafwb/pubs/2003/CohoRecovery/RecoveryStrategy_20031105.pdf
☒ 15 Drug Free Workplace, Std 21 (Appendix B)
☒ 16. Non-Discrimination, Std 19 (Appendix B)
☒ 17. Payee Data Record, Std 204 (Appendix B)