



U.S. Department
of Transportation
**Federal Highway
Administration**

FHWA Eco-Logical Case Studies Series

Example of Implementing Eco-Logical

A Novel Approach to Establish Programmatic Advance Mitigation for the M2 Program Transportation Projects

Eco-Logical is an approach designed to help transportation, resource, and regulatory agencies integrate their infrastructure development and conservation planning processes and arrive at a joint set of environmental priorities. It organizes current methods to address natural resource identification, avoidance, minimization, and compensation into a systematic, nine-step process that starts at the beginning of the transportation planning process and concludes with establishing programmatic approaches to recurring natural resource issues that are implemented at the project level. This is one case study in a series that highlights how transportation agencies around the country are implementing the nine steps of Eco-Logical.

Summary

The Orange County Transportation Authority (OCTA) engaged state and federal permitting agencies in an innovative approach akin to Eco-Logical to develop mechanisms allowing for advance compensatory mitigation for projects included in the OCTA M2 Highway/Freeway Program (M2 Program). The project-specific Natural Community Conservation Plan (NCCP)/Habitat Conservation Plan (HCP) (Conservation Plan), Section 404 Clean Water Act (CWA) letter of permission (LOP) Procedures, and Section 401 CWA assurance letter address permitting and mitigation needs for the M2 Program of projects. In turn, these mechanisms expedite the environmental review for individual M2 Program projects while improving environmental outcomes.



Key Elements

To provide advance compensatory mitigation and expedite the environmental review process, agencies partnered to:

- Prioritize sensitive habitats and species in Southern California by developing a suite of mitigation planning resources including the **M2 Conservation Plan** and **Preserve-specific Resource Management Plans (RMPs)** resulting in a comprehensive **Environmental Mitigation Program (EMP)**.
- Develop a programmatic approach for the review of Section 404 CWA permit applications and identification of appropriate and adequate compensatory mitigation for unavoidable losses of waters of the U.S. (WOTUS) resulting from M2 Program construction activities through **Section 404 LOP Procedures** established by the U.S. Army Corps of Engineers Los Angeles District (referred to throughout as USACE).
- Expedite the Section 401 water quality certification review process for waters impacted by M2 Program projects through an **assurance letter from the State Water Resources Control Board (SWRCB)**.
- Accelerate USACE's development of the Section 404 LOP Procedures and review of subsequent Section 404 CWA LOP applications for M2 Program projects through the development and implementation of a **Section 214 Water Resources Development Act (WRDA) Funding Agreement between USACE and OCTA**.

Benefits

The Conservation Plan, Section 404 LOP Procedures, and Section 401 assurance letter have **improved or will improve the efficiency of project coordination and approval for 13 transportation projects** under the M2 Program, currently funded through 2041 with dedicated funding. They allow for advance compensatory mitigation and expedite permit decision making and project delivery for the suite of transportation projects defined in the M2 Program. The Conservation Plan and Section 404 LOP Procedures have **reduced the permitting process time from several months to within 30 days of receiving documentation a project is consistent with the Conservation Plan, and within 45 days from receipt of a complete LOP application, respectively**. In addition, the Conservation Plan established seven Preserves totaling over **1,300 acres of preserved land, and additionally restored over 350 acres of habitat throughout Orange County**, affording managed recreational opportunities as well as safeguarding natural resources.

The Challenge

As the champion behind the M2 Program, OCTA sought to accelerate the permitting process and efficiently deliver transportation projects through the M2 Program. The M2 Program addresses long-term transportation needs in Orange County by planning and funding a suite of 13 transportation projects that include freeway and local interchange improvements over 30 years through a sales tax initiative (see Figure 1). OCTA's challenge was to develop an innovative approach that embraced environmental stewardship, collaborated with partners, and acted in the public's interest.

Mitigation approach: Rather than mitigate impacts on a project-by-project basis, OCTA sought an approach to develop program-level mitigation that would help expedite project delivery and establish a mitigation strategy for the life of the program.

Interagency coordination: OCTA needed to address the array of permitting and consultation challenges that would accompany the suite of planned transportation projects. OCTA also needed to find a solution acceptable to several State and Federal agencies, including the California Department of Transportation (Caltrans), USACE, SWRCB, the U.S. Fish and Wildlife Service (USFWS), and the California Department of Fish and Wildlife (CDFW).

Funding: By engaging Orange County citizens, OCTA has secured dedicated sales tax revenues through a referendum overwhelmingly approved by voters in 2006 to fund the M2 Program projects, with a portion of the funds dedicated to environmental mitigation (see the call-out box for more details).



Figure 1: Map showing the locations of the 13 planned M2 Program transportation projects in Orange County, labeled A-M.

Image: OCTA

Main Challenges

The main challenges for this effort included:

- **Ensuring protection of threatened and endangered species and sensitive habitats.** OCTA, in collaboration with the regulatory and resource agencies, sought to develop a solution for compensatory mitigation for unavoidable impacts to wildlife and WOTUS resources associated with constructing the M2 Program projects.

M2 Program Funding and Public Support

Sales Tax Funding Mechanism

In a bid to improve local transportation infrastructure, Orange County residents first approved Measure M instituting a half-cent sales tax increase to help fund a 20-year package of transportation improvement projects in 1990. The Renewed Measure M (M2, later rebranded OC Go) Freeway Program was approved in 2006 by 70 percent of voters, providing a 30-year extension of the tax, continuing the commitment to transportation improvements in the County. The M2 Program allocates 43 percent of anticipated revenues to a suite of freeway projects, with a subset (5 percent) dedicated to comprehensive environmental mitigation.

High Level of Public Support

The M2 tax measure required a two-thirds supermajority to pass, underscoring the importance of garnering support from environmentally motivated voters and organizations, who are often ambivalent or resistant to transportation infrastructure improvements. The commitment to comprehensive programmatic mitigation was instrumental in not only attracting the active support of more than 30 environmental organizations and the voters they represent, but also encouraging ongoing cooperation and collaboration in implementing the projects and associated mitigation program.

- Creating viable and efficient permitting solutions to satisfy multiple agency requirements for an entire project portfolio.**
 To account for existing and future transportation challenges for Orange County residents, OCTA identified 13 projects for the M2 Program over a 30-year horizon. This suite of projects may be subject to multiple Federal permitting authorities, including Sections 401 and 404 of the CWA, Section 14 of the Rivers and Harbors Act (33 USC 408, "Section 408"), and Sections 7 and 10 of the Endangered Species Act (ESA). Projects are also subject to State-level permitting for impacts to species protected by the California Endangered Species Act through the Natural Community Conservation Planning Act (NCCPA) Section 2835 or for impacts to streams or lakes that could adversely affect any fish or wildlife resource. Traditional permitting processes involve reviewing compensatory mitigation solutions on a project-by-project basis. These types of projects often require overlapping permits from multiple agencies, leading to cumbersome and sometimes conflicting mitigation guidance. OCTA and Caltrans needed a programmatic mitigation solution for proposed projects that require compensatory mitigation.

The Eco-Logical Approach

Eco-Logical's nine steps organize how agencies can partner and integrate plans to identify environmental priority areas and ecological considerations in project planning and delivery. Agencies can apply the steps in order or independently of each other.

The nine steps include:

- Step 1: Build and strengthen collaborative partnerships and vision
- Step 2: Characterize resource status and integrate natural environment plans
- Step 3: Create a Regional Ecosystem Framework (REF)
- Step 4: Assess effects on conservation objectives
- Step 5: Establish and prioritize ecological actions
- Step 6: Develop a crediting system
- Step 7: Develop programmatic consultation, biological opinion, or permit
- Step 8: Implement agreements, adaptive management, and project delivery
- Step 9: Update REF and plan

Implementing Eco-Logical

The interagency collaboration involved to develop the various mechanisms aiding in effectively and efficiently implementing the M2 Program projects align closely with many steps of the Eco-Logical approach. This case study walks through the Eco-Logical framework and details how elements of these efforts align with each of the steps of the Eco-

Logical approach. Figure 2 provides a timeline of key milestones.

Step 1 (Collaborate):

In October 2007, OCTA established the [Environmental Oversight Committee \(EOC\)](#) to

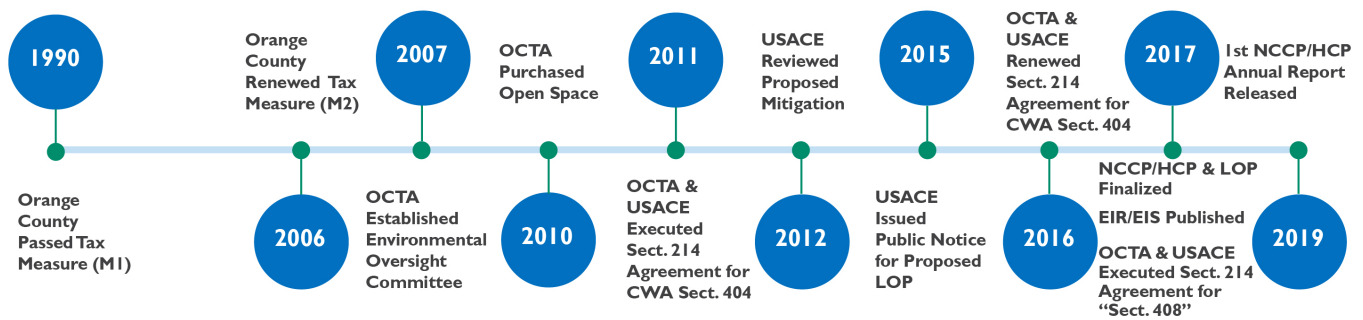


Figure 2: Timeline for process to develop the programmatic advance mitigation approaches for M2 Program transportation projects.

Image: FHWA/U.S. DOT Volpe Center

evaluate and make recommendations on the allocation of collected environmental freeway mitigation funds related to resource protection and regulatory requirements. The EOC is comprised of twelve members representing the agencies involved in the Conservation Plan and Section 404 LOP Procedures, environmental stakeholders, and public members, along with two members from the OCTA Board of Directors. Committee members serve a three-year term with no term limits and meet regularly.

The M2 Program dedicated 43 percent of the anticipated sales tax revenue to the freeway projects, 5 percent of which is dedicated to comprehensive environmental mitigation through the [Environmental Mitigation Program \(EMP\)](#). The EMP offers comprehensive, rather than piecemeal, mitigation to provide higher-value environmental benefits such as habitat protection, wildlife corridors, and resource preservation, which facilitates accelerated project approvals for the M2 Program as a whole.

As OCTA considered potential compensatory mitigation for potential unavoidable WOTUS impacts associated with constructing the M2 Program projects, it coordinated with SWRCB and USACE to address these impacts and potential mitigation options programmatically, with the goal of further expediting the project permitting process.

Coordination for wildlife resources: Initially the mitigation funds were focused to help offset impacts to wildlife resources. OCTA, USFWS, CDFW, and Caltrans (as a special participating agency rather than a signatory agency) collaborated to develop the M2 Program Conservation Plan focused on species conservation for federally and State-listed threatened, endangered, and candidate species (see more details in Step 3). Due to the nature of the resources and permitting requirements, OCTA's coordination with the two wildlife agencies, USFWS and CDFW, was relatively straightforward.

"[Developing the Section 404 LOP Procedures] really was an opportunity to come together and make sure that everybody's mandated requirements were addressed in a comprehensive, forward-thinking manner."

– USACE

Building Partnerships

The following partner agencies collaborated closely to establish programmatic advance mitigation for the M2 Program:

- Orange County Transportation Authority
- U.S. Army Corps of Engineers Los Angeles District
- U.S. Fish and Wildlife Service
- California Department of Fish and Wildlife
- California Department of Transportation
- State Water Resources Control Board

Coordination for aquatic resources: OCTA concurrently engaged USACE and the SWRCB to develop a parallel programmatic water resources permitting process to further accelerate M2 Program project delivery. Relative to the process for developing the wildlife mitigation plans, coordination on compensatory mitigation and permitting for potential impacts to aquatic resources was more complex. At the time, USACE Los Angeles District lacked an established procedure to programmatically address compensatory mitigation for a suite of planned construction projects impacting WOTUS such as those proposed under the M2 Program other than to establish a mitigation bank or In-Lieu Fee (ILF) Program. Many of these projects did not yet have defined impacts by aquatic resource type, size, and location, so USACE questioned how it could address Section 404 permitting requirements. Even with OCTA's restoration and compensatory mitigation commitments known, USACE may only approve compensatory mitigation at the end of its evaluation process, after determining proposed WOTUS impacts have been avoided and minimized to the maximum extent practicable.

After discussing several programmatic mitigation options allowed under USACE's [2008 Compensatory Mitigation Rule](#), OCTA made the case that advance permittee-responsible mitigation (PRM) (see more details in Step 6) authorized under LOP procedures would best address its mitigation needs for planned aquatic resource impacts associated with constructing the M2 projects, and would also honor the sales tax commitments made through the M2 Program (see the sidebar on next page for more detail on why the Section 404 LOP Procedures

mechanism was selected). While LOP procedures are not unusual for USACE, incorporating advance PRM into LOP procedures is a novel strategy.

Having the Conservation Plan already in place was an asset for discussions between OCTA and USACE and helped alleviate many of USACE's concerns about developing the Section 404 LOP Procedures. The Conservation Plan demonstrated that using conservative estimates for impacts could minimize risk while providing enhanced outcomes. However, engaging the USACE earlier, while the M2 tax measure was being developed, might have facilitated earlier agreement on a programmatic process for impacts to WOTUS.

To further facilitate the permitting process, OCTA identified which projects might be subject to Section 408 and engaged in additional collaborative efforts with the Engineering Division at USACE, which issue Section 408 permission decisions (Civil Works Program). Additionally, the USACE Los Angeles District developed and executed funding agreements with OCTA under Section 214 of the WRDA of 2000, as amended ("Section 214 agreement"), to help expedite permit application evaluations for OCTA's projects requiring permit decisions under Section 404 of the CWA and "Section 408". The Section 214 agreements provide funding for dedicated USACE

staff to work on the development of the Section 404 LOP Procedures, and continues funding dedicated permit reviewers at USACE to expedite the review of OCTA's priority permit applications. The original funding agreement for Section 404 of the CWA was executed in January 2011, and renewed in October 2016. A second agreement for "Section 408" was executed in March 2017.

Step 2 (Characterize Resources):

Projects in the M2 Program were expected to impact a variety of State and federally protected species and critical habitat, as well as WOTUS. By analyzing the overlapping impacts to several species, aquatic resources, and habitats, and considering other ecological concerns, OCTA established watershed-level mitigation priorities. Resources were characterized by natural community type and predicted species habitat. Generally, project footprints were compared to known natural community data and predicted species habitat models—using regional level habitat mapping for existing site conditions and county vegetation mapping coupled with known sensitive species (see Figure 3) occurrence data—to determine the amount of impact the projects would have. The Conservation Plan also identified key habitat linkage areas, using the County as the Planning Area. To

Selecting the LOP Procedures Mechanism

What are LOPs?

LOPs are a streamlined form of an individual permit. They are defined as "a type of permit issued through an abbreviated processing procedure which includes coordination with Federal and state fish and wildlife agencies, as required by the Fish and Wildlife Coordination Act, and a public interest evaluation, but without the publishing of an individual public notice" (33 CFR 325.2(e)(1)).

Activities authorized under an LOP neither require an individual public notice nor an environmental analysis under the National Environmental Policy Act (NEPA). Through its NEPA implementing regulations, USACE has determined that all LOPs are categorically excluded under NEPA.

USACE Districts must first establish "LOP procedures" to issue a Section 404 LOP. Regulations at 33 CFR 325.2(e)(1)(ii) describe the process required to establish Section 404 LOP procedures, which includes a public notice and programmatic NEPA Environmental Assessment (EA).

Why was an LOP selected?

Comparing ILF programs, mitigation banks, and advance PRM approved under the Section 404 LOP Procedures, OCTA ultimately decided the Section 404 LOP Procedures would be the most beneficial for addressing WOTUS impacts from the M2 Program transportation projects because it:

- Honored the sales tax commitments made through the M2 Program to provide comprehensive environmental mitigation for the M2 Program projects.
- Provided a programmatic mechanism for approving compensatory mitigation in advance of the planned M2 project impacts to WOTUS.
- Would remain valid and an available mechanism to support the remaining 20-year timeframe of the M2 Program projects.
- Provided a mechanism to approve compensatory mitigation for watersheds requiring in-watershed mitigation that was previously unattainable due to a lack of mitigation banks or ILF credits available for use.



Figure 3: OCTA's managed preserves provide habitat for 13 sensitive "covered species" under the Conservation Plan, such as the cactus wren, San Diego horned lizard, bobcat, and the intermediate Mariposa lily (listed from Left to Right).
Images: OCTA

address aquatic resource permitting needs, a Preliminary Jurisdictional Determination with a geographic delineation of non-wetland and WOTUS within the OCTA M2 Program area was completed in 2011; the boundaries for the delineation were developed using the planned project alignments as well as a buffer area.

The OCTA in coordination with USFWS prepared an [environmental impact report \(EIR\)/environmental impact statement \(EIS\)](#) under the California Environmental Quality Act (CEQA) and NEPA, respectively, for the M2 Program Conservation Plan in November 2016. The [EIR/EIS was published in the Federal Register](#) on March 31, 2017.

The EIR/EIS extensively referenced an existing Long Range Transportation Plan Programmatic EIR from 2006 addressing the infrastructure improvement projects. Each individual M2 Program project will also have a project-specific NEPA/CEQA analysis completed by OCTA and approved by Caltrans; the EIR/EIS provides supporting information for these future documents, particularly with respect to impacts to biological resources.

The USFWS was the Lead Agency for the NEPA action required for the Conservation Plan. OCTA was the Lead Agency under CEQA and was the permittee under the NCCP and HCP. CDFW was the Lead Agency under the NCCP. Caltrans was a special participating agency, as the owner/operator of the state highway system for which the improvements were being made. The EIR/EIS process happened in parallel with the development, finalization, and USFWS and CDFW approval of the Conservation Plan. These actions allowed Caltrans to utilize the mitigation provided by OCTA through the certificate of inclusion process. As part of its decision-making process for the issuance of the Section 404 LOP

Procedures, USACE prepared a programmatic NEPA EA that incorporated information from the EIR/EIS by reference.

The permits issued by the wildlife agencies address a defined set of species listed as threatened or endangered, or those that may become listed during the permit term, that may be impacted by covered activities, and that would benefit from Conservation Plan-related conservation and management.

The USACE participated in the EOC's mitigation site evaluation and approval process during the development of the LOP procedures to ensure that the mitigation plans included appropriate compensatory mitigation for unavoidable permanent impacts to WOTUS associated with constructing the M2 projects. USACE was the lead agency under NEPA, Section 7 of the ESA, and Section 106 of the National Historic Preservation Act for mitigation site activities that required Section 404 authorization.

Step 3 (Create a REF):

To offset anticipated direct and indirect impacts that the M2 Program projects might have to sensitive species and habitats, OCTA worked with its partner agencies to develop multiple ecosystem-level plans. The various plans and programs developed include:

- The M2 Program [Natural Community Conservation Plan \(NCCP\)/Habitat Conservation Plan \(HCP\)](#) (Conservation Plan), finalized in spring 2017, protect and enhance ecological diversity and function, and strengthen and enhance the integrity and connectivity of the existing protected lands in Orange County. The Conservation Plan addresses permitting requirements for impacts to federally and State-listed threatened and endangered species and

species that may become listed during the permit term, and develop avoidance and minimization measures to offset anticipated direct and indirect impacts from the M2 Program projects. The Conservation Plan designated funding to purchase land to be permanently preserved as open space by establishing seven Preserves and fund restoration projects to address the biological mitigation required relative to the M2 Program projects. OCTA collaborated with CDFW and USFWS during development of the Conservation Plan to ensure it met the requirements of the NCCPA and ESA, respectively. The RMPs are requirements of the Conservation Plan that ensure resources are conserved or maintained in perpetuity.

- [Resource Management Plans \(RMPs\)](#), developed in 2015 and finalized in late 2018, guide the management and monitoring of each of the seven Preserves, and ensure the ongoing protection, preservation, and management of the natural resources found within each preserve (see Figure 4).

To offset losses of aquatic resources that were expected under the M2 Program projects, the USACE required mitigation plans associated with either a USACE-approved Habitat Mitigation and Monitoring Plan (HMMP), or—for preservation-only sites—a USACE-approved Long-Term Resource Management Plan (LTRMP). OCTA proposed three specific PRM sites that were selected in accordance with a USACE-approved HMMP or LTRMP and approved as

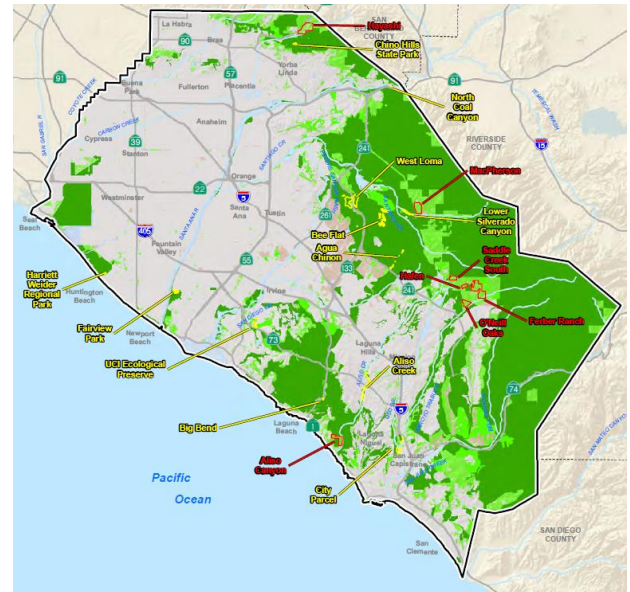


Figure 4: Sample map of the Plan Area used to overlay OCTA Preserves (in red) and funded restoration projects (in yellow) alongside other public space in the county.
Image: OCTA

compensatory mitigation by USACE in the special conditions of the established LOP Procedures. As such, these sites provide compensatory mitigation for the construction of M2 Program projects with unavoidable permanent impacts to WOTUS that are authorized using the Section 404 LOP Procedures. All three PRM sites are located within the Preserves and/or restoration projects established through the Conservation Plan. Two of these PRM sites propose compensatory mitigation through enhancement and rehabilitation projects, and one proposes mitigation through preservation. The PRM approach is further described in Step 6. Figure 5 shows a completed M2 Program project.

Linking the mitigation sites used to address WOTUS impacts with the Conservation Plan's biological mitigation sites in this way allows for landscape-scale mitigation addressing all impacted ecological resources. As the Conservation Plan was being developed, the USACE participated in the EOC and mitigation site evaluation process in tandem. This coordination helped ensure the enhancement, restoration, and preservation of aquatic resources alongside the upland habitat. It also resulted in a more comprehensive mitigation approach along riparian corridors, rather than traditional piecemeal mitigation.

In November 2010, the EMP allocated \$42 million to purchase open space in Orange County and fund



Figure 5: Interstate 5 Avenida Pico to San Juan Creek Road freeway project was completed in 2018 as part of the M2 Program.

Image: OCTA

habitat restoration projects to offset the environmental impacts of M2 Program projects. At OCTA's request, in August 2012, USACE provided a letter stating its preliminary determination that the proposed mitigation generally represented the type and location of compensatory mitigation that may be acceptable to offset potential unavoidable permanent impacts to WOTUS. In January 2018, shortly after USACE issued the Section 404 LOP Procedures, the SWRCB provided an assurance letter recognizing the USACE permitting strategy and concurring that the proposed mitigation and compensation ratios were consistent with the mitigation requirements for state waters impacted by the projects under the California Water Board water quality plans and policies. An actual certification was not issued, but the assurance letter has streamlined the process with the SWRCB.

Step 4 (Assess Effects):

OCTA worked with the regulatory and resource agencies to ensure that analyses for the programmed projects occurred within an appropriate footprint and were adequate to address the potential impacts of the projects.

Assessing impacts to wildlife resources: Since the footprint and impacts had the potential to vary significantly between projects, USFWS used conservative estimates of anticipated direct impacts

based on early project designs provided by OCTA, including a 300-foot-wide buffer around the existing roadways to ensure all effects of potential impacts were addressed in its analyses and mitigation requirements.

The allowable amount of take associated with the M2 Program projects was quantified by overlaying the direct and indirect effect footprints on natural communities, predicted species habitat, species occurrences data, and designated critical habitat. Because the take analysis is based on regional-level habitat mapping and the tracking of impacts is completed using project-specific field survey information, OCTA, in coordination with USFWS and CDFW, adjusted the amount of allowable take for each individual habitat types to account for the precision and accuracy of the regional-level habitat mapping data.

These analyses leveraged existing information from previous large-scale conservation planning efforts to map resources, limiting the need for new mapping and survey efforts. Project-specific surveys will be conducted as needed to ensure that impacts are consistent with those anticipated in the M2 Program Conservation Plan. The M2 Program Conservation Plan also includes a requirement that projects cannot impede wildlife connectivity and that any structural solutions necessary to mitigate impacts to wildlife connectivity will be part of the construction cost for the individual projects. For more information, see Chapter 4 of the [Conservation Plan](#).

Assessing impacts to aquatic resources: OCTA led the efforts with USACE and Caltrans to determine the footprints used to identify aquatic resources and potential impacts, conduct a formal aquatic resource delineation to identify all aquatic resources within the footprints, analyze and assess the potential impacts from construction of the M2 Program projects at a watershed scale (a reasonable worst-case analysis), and prioritize compensatory mitigation. Project footprints varied based on the level of completed planning. Some projects were further along in the development process with defined project footprints and some had not yet begun the planning process. The OCTA Transportation Investment Plan project descriptions were used for projects that had not begun the planning process. Project impacts were estimated based on planning documents or by establishing a conservative buffer based upon input from both

Priority Conservation Areas (PCAs)

Based on the evaluation of conservation opportunities throughout the Plan Area, PCAs were identified as part of the open space acquisition process. They include candidate parcels and properties that could be managed as preserved open space for mitigation purposes. A standardized criteria and prioritization process was developed to facilitate property evaluation and assessment.

Properties for acquisition and restoration/preservation were selected based on the criteria listed below:

- Contain habitats impacted by the freeway projects.
- Contain habitat for covered species.
- Enhance natural lands connectivity, including significant wildlife corridors.
- Has potential to mitigate covered activities.
- Adjacent to or in close proximity to already conserved lands.

OCTA and Caltrans project engineers. USACE used OCTA's aquatic resource delineation to issue a preliminary jurisdictional determination, which assumes all aquatic resources within a given area are jurisdictional. Through coordination with the USACE and as part of the Section 404 LOP Procedures application requirements, OCTA demonstrated all projects processed through these LOP Procedures would avoid and minimize impacts to WOTUS to the maximum extent practicable.

Step 5 (Prioritize Actions):

The M2 Program mitigation project selection occurred within OCTA with formal input from the resource agencies as part of the EOC. OCTA and a subset of the EOC—including USFWS, USACE, CDFW and Caltrans—developed criteria to evaluate and prioritize property acquisition and restoration projects, taking into account biological questions related to habitat, species, vegetative communities, and contiguity of riparian areas and watershed location, along with non-biological factors such as land cost valuation and property acquisition. The project review and selection process was as follows:

- OCTA issued a request for proposal to solicit proposals for mitigation projects, including sites on available open space lands as well as restoration projects on other lands.
- OCTA EMP staff, along with representatives from the wildlife agencies, Caltrans, and USACE, reviewed the mitigation proposals based on the developed criteria and ranking system. The group first ensured the proposal covered the necessary mitigation for the freeway project and then looked at other factors such as contiguity to other protected lands, threat of development, and quality of habitat. See the call-out box for more information.
- After the EOC reviewed and endorsed, the proposals were sent to the OCTA Regional Planning and Highways Committee for approval.
- After the OCTA Regional Planning and Highways Committee reviewed and approved the proposals, the OCTA Board of Directors considered the proposals for final approval.

USFWS project prioritization: The USFWS balances working to meet regulatory timeframes and working with applicants on their priorities, with a focus on

projects that will provide substantial conservation benefits. Caltrans provides a funded position with USFWS to have staff work exclusively on Caltrans priority projects.

USACE project prioritization: Under the USACE's traditional business practices, permit applications are reviewed on a first come, first served basis. However, OCTA and USACE's Section 214 funding agreement allows OCTA to fund the work of a dedicated reviewer at USACE that can expedite the review of OCTA's priority permit applications and related efforts.



Figure 6: Potential for M2 Freeway projects to impact WOTUS spurred collaboration between management and regulatory agencies to develop the Section 404 LOP Procedures.

Image: USACE

Step 6 (Use a Crediting System):

To implement Section 404 CWA compensatory mitigation for OCTA project impacts to WOTUS (see Figure 6), the established LOP Procedures utilize an advance [PRM](#) approach. PRM is defined as “an aquatic resource restoration, establishment, enhancement, and/or preservation activity undertaken by the permittee to provide compensatory mitigation for which the permittee retains full responsibility” (33 CFR 332.2). In contrast to a mitigation bank or ILF programs, PRM does not require an applicant to have mitigation credits available at the time a permit is issued. Although no formal credits are associated with the PRM sites, OCTA was required to provide final mitigation plans for USACE approval, which were presented in the form of the HMMPs and LTRMP. USACE's issued Section 404 LOP Procedures

incorporate these final mitigation plans for three specific PRM sites. The LOP Procedures also include an estimate of permanent WOTUS impacts for each of the planned M2 Program projects, approved mitigation ratios, and estimated compensatory mitigation amounts from the three PRM sites for each of the M2 Program projects. Under the approved LOP Procedures, OCTA and Caltrans can propose compensatory mitigation for M2 Program project unavoidable WOTUS impacts using the three approved PRM sites, in accordance with the PRM sites' USACE-approved final HMMPs or LTRMP.

Similarly, OCTA worked with the USFWS and CDFW to develop a standardized approach for crediting conservation efforts for sensitive, threatened, and endangered species based on the acres of suitable habitat conserved or restored for each species.

By looking at the required wildlife and aquatic resource mitigation comprehensively, OCTA was able to develop a funding and conservation protection strategy that focuses on large sites with a multitude of resources rather than multiple piecemeal sites. The comprehensive mitigation approach also allows OCTA to concentrate staffing, consulting, and/or attorney resources on larger mitigation sites that would satisfy the requirements for multiple projects/agencies.

Steps 7 (Develop Agreements) and 8 (Implementation): Conservation Plan and LOP

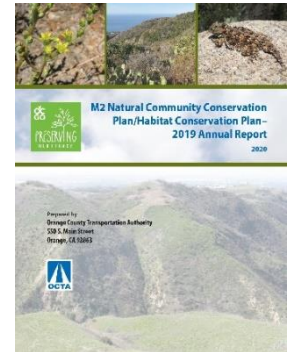
More recent activities by the group of partner agencies have aligned particularly closely with Steps 7 and 8 of Eco-Logical.

Natural Community Conservation Plan (NCCP)/Habitat Conservation Plan (HCP):

The USFWS and CDFW, in collaboration with OCTA, developed the Conservation Plan to address Section 10 of the ESA and Sections 2800-2835 of the State Fish and Game Code for impacts to wildlife resources, and establish the necessary avoidance and minimization measures to offset anticipated direct and indirect impacts from the M2 Program transportation projects. They developed the framework to establish the seven Preserves, fund restoration projects to address the biological mitigation required related to the M2 Program projects, and ensure that resources are conserved or maintained in perpetuity. Additionally, as part of the Section 404 LOP Procedures, the three PRM sites that allow for compensatory mitigation for

permanent impacts to WOTUS associated with constructing the M2 Program projects are either located within publicly owned lands under protection and management by Orange County or are within an OCTA Conservation Plan Preserve.

The Annual Report, shown in Figure 7, is a requirement of the Conservation Plan, and focuses on OCTA's obligations and commitments for wildlife resources. It does not address impacts to WOTUS. OCTA is responsible for producing the Annual Report and it is posted on the [OCTA EMP website](#).



*Figure 7: The 2019 Annual Report.
Image: OCTA*

Implementing the Conservation Plan:

The Conservation Plan established a programmatic approach for the review of projects and identification of appropriate and adequate compensation for impacts to species listed pursuant to the State and Federal ESA. It issues up-front permits pursuant to Section 10 of the Federal ESA and NCCPA that address all impacts to State and federally threatened and endangered species from M2 Program projects. The review of individual projects permitted under the Conservation Plan is completed within 30 days of receiving documentation that a project is consistent with the plan, as opposed to between 60 and 135 days for activities that require project-specific consultation under the Federal ESA.

Through the considerations of the Conservation Plan and agency collaboration, the EMP has allocated \$42 million to purchase over 1,300 acres to establish the seven Preserves, and funded 12 restoration projects throughout Orange County, allocating another \$10 million to restore over 350 acres of open space land for both the Section 404 LOP Procedures PRM sites as well as the wildlife resource mitigation sites. These efforts have helped clean up local waterways and have successfully ensured the protection of 13 sensitive species in their native habitats. Figure 8 shows one of the seven Preserves established through the M2 Program.

The RMPs are to be reviewed every five years and updated as necessary to continually address



*Figure 8: OCTA's Environmental Mitigation Program has allowed for the purchase 1,300 acres to preserve a variety of important habitats
Image: Courtesy of OCTA*

potential modifications to the management activities of the Preserves in response to any changes in the Preserves' needs. Should any changes be necessary, the RMPs must receive approval from the USFWS and CDFW and will be available for public review.

The first two Annual Reports for the established Conservation Plan have been published following review and approval by USFWS and CDFW. Together, they cover all activities up to December 31, 2019, including impacts associated with covered activities, status of OCTA Preserves and related activities, the progress on implementing OCTA-funded restoration projects, and additional Plan administration and public outreach activities.

Letter of Permission (LOP):

The USACE Los Angeles District's Regulatory Division, in collaboration with OCTA, developed and issued the project-specific CWA Section 404 LOP Procedures to address permitting and mitigation needs for the M2 Program projects. USACE issued a Special Public Notice for OCTA's M2 Program projects in April 2015, proposing the LOP procedures as an alternative regulatory mechanism to the typical evaluation of permit applications. A final public notice announcing the establishment of the final LOP procedures was issued in December 2017. The LOP procedures were established for 30 years, through December 2047.

Implementing the LOP:

The Section 404 LOP Procedures were developed specifically for OCTA's M2 Program projects. To

obtain project-specific approval under Section 404, the LOP procedures require OCTA or Caltrans to submit a permit application to USACE that identifies the proposed WOTUS impacts of a given M2 Program project, all avoidance and minimization measures that have been incorporated into the project, and the compensatory mitigation required through use of one or more of the three-approved PRM sites. The LOP procedures includes spreadsheets that are used to calculate the amount of compensatory mitigation required based on the approved compensatory mitigation ratios. The spreadsheets also allow for tracking the amount of compensatory mitigation available at each of the three PRM sites based on the amount of the site that is meeting performance standards, and the amount of compensatory mitigation that has already been used to mitigate impacts from other projects. Excess or "rollover" compensatory mitigation may be used for projects that are in non-compliance or for projects in which impacts were underestimated at the planning level.

The Section 404 LOP Procedures reduce the uncertainty about the applicable USACE requirements for this set of projects during the life of the M2 Program. Regulatory requirements can and do change over time – for example, USACE Nationwide Permits (NWP) are typically reevaluated and reissued every 5 years by USACE Headquarters through a rulemaking process, with the possibility for changes in the permit terms and conditions. The Section 404 LOP Procedures were tailored specifically to the types of projects OCTA was proposing, are valid through the lifespan of the M2 Program, and are not subject to these sorts of rulemaking changes.

An additional benefit of the established Section 404 LOP Procedures is that it approved compensatory mitigation in watersheds that did not have any mitigation bank or ILF credits available for use. The Section 404 LOP Procedures provide a streamlined approach for some of the M2 projects that occur within Special Area Management Plans (SAMPs) areas, within which the Los Angeles District has revoked the NWPs and only PRM is accepted.

The Section 404 LOP Procedures state that USACE will make a decision within 45 days of receipt of a complete project-specific LOP application, unless a Section 408 permission decision, Section 7 of the ESA consultation, or Section 106 of the National

Historic Preservation Act consultation is required. This is well below the USACE Regulatory Program's national goal of issuing decisions for applications requiring an individual permit within 120 days. As such, the integration of the Conservation Plan and Section 404 LOP Procedures further expedites environmental review and application processing.

Key Results & Outcomes

Developing the Conservation Plan and Section 404 LOP Procedures were high priority activities for the agencies involved since these mechanisms would:

- Allow OCTA and Caltrans to accelerate delivery of a suite of vital transportation projects; and
- Provide substantial protection, conservation, and restoration benefits consistent with USACE, USFWS, and CDFW missions.

Figure 9 shows the various agency collaborative efforts key to the successful development of the Conservation Plan and Section 404 LOP Procedures.

The Conservation Plan and LOP procedures have shortened the expected permitting process for the M2 Program projects from several months to within 45 days, saving agencies staff time and money. The Conservation Plan establishes a programmatic approach for covered species and covered activities in the Plan Area, so USFWS and CDFW only need to confirm a project falls within the scope and constraints of the Conservation Plan to rely on the issued permits. If an individual project covered by the established Section 404 LOP Procedures includes a "may affect" determination for federally listed species or critical habitat not covered under the Conservation Plan, Caltrans, as assigned by FHWA under the NEPA Assignment Memorandum of Understanding, or USACE will initiate appropriate Section 7 consultation with the USFWS for the individual LOP project. As such, the Section 404 LOP Procedures and Conservation Plan can expedite environmental review and permitting processes, and reduce duplicative efforts. By engaging in agency collaborative efforts, estimating project impacts to WOTUS upfront, and establishing the PRM and Section 404 LOP Procedures, USACE is able to confirm if a project application's proposed regulated activities comply with the general conditions of the Section 404 LOP Procedures, and write an individual LOP to authorize that project's regulated impacts.

While difficult to assign a dollar value to expedited processes under the Conservation Plan and Section 404 LOP Procedures, this coordination provided a multitude of long-term benefits, including:

- **Provided a programmatic approach that addresses projects up to 30 years into the future and expedites environmental review:** The Section 404 LOP Procedures allow for a programmatic approach to authorizing advance PRM. This results in a consistent and efficient permit evaluation process for large-scale and potentially high-impact projects that often require compensatory mitigation in an area that is lacking in third-party mitigation options or within SAMPs restricted to PRM, and thus are often unable to capitalize on efficiencies built into USACE's existing NWP program. Also, as compared to the NWPs, which are typically reevaluated and reissued by USACE every five years, the Individual Permit that authorizes the Section 404 LOP Procedures has an expiration date of December 8, 2047, which make the Section 404 LOP Procedures an innovative regulatory mechanism to support the 30-year timeframe of the M2 Program projects. The Conservation Plan established a programmatic approach to satisfy consultation and permitting requirements pursuant to the Federal and State ESA for covered activities in the Plan Area.
- **Established an advance mitigation framework that accelerates project-level approvals:** The established Section 404 LOP Procedures and Conservation Plan helps guarantee that established mitigation requirements and sites developed in advance will be approved for offsetting impacts resulting from the M2 Program projects, including those under construction and planned to occur in the future.
- **Established a coordinating body that dedicated time and resources for agency collaboration:** Establishing the EOC and dedicating time to develop and complete the Conservation Plan and the Section 404 LOP Procedures built and enhanced interagency relationships and trust through increased communication and understanding of the various partners' missions and operations. These enriched relationships will likely foster future early coordination and collaboration amongst all agencies involved.

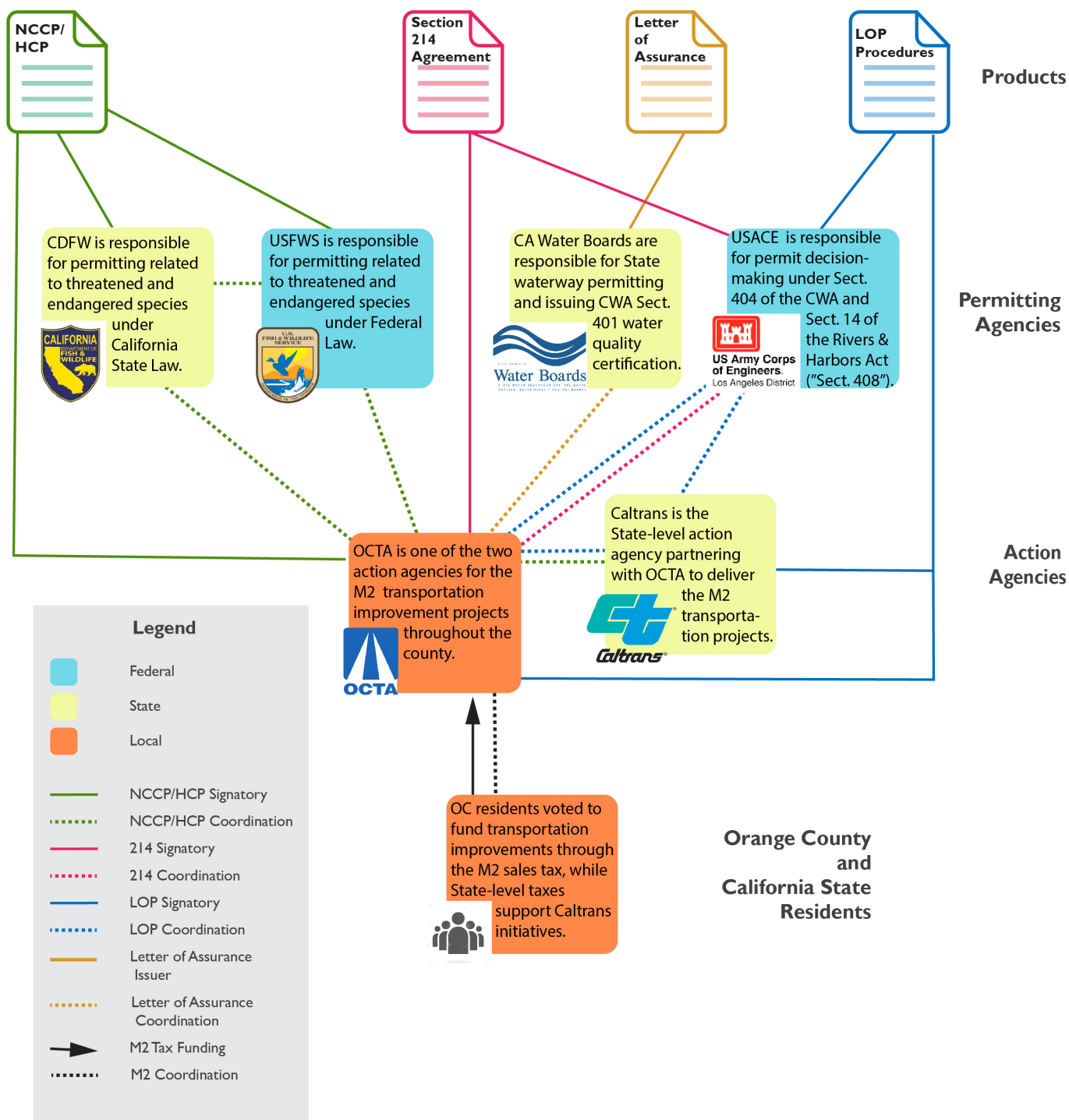


Figure 9: Collaborative efforts, agency coordination, and supporting milestones involved in the successful development and implementation of the Conservation Plan and Section 404 Letter of Permission (LOP) Procedures. Note that the USACE recently updated their procedures to not require an applicant signature on LOP Procedure documents.

Image: FHWA/U.S. DOT Volpe Center

- **Provided consistency and certainty that reduces project risk:** Risks for the regulatory and resource agencies (USACE, USFWS, and CDFW) and applicant agencies (OCTA and Caltrans) are reduced through the standardized process and requirements established in the Section 404 LOP Procedures and Conservation Plan, which set clear expectations for the agencies involved. For example, terms and conditions have been set for the Section 404 LOP Procedures, so there is predictability and certainty regarding USACE's requirements for the regulated aspects of the M2 Program projects now and in the future.
- **Enhanced conservation measures that provide improved environmental and community outcomes:** Considering the likely impacts of the entirety of the M2 Program of projects upfront allows for a programmatic approach to impact identification and mitigation on a landscape level, resulting in improved species conservation and aquatic resource mitigation outcomes that would not be attainable through traditional project-by-project review processes. Implementing mitigation in advance of authorized impacts also provides an opportunity to reduce temporal loss between when project impacts occur and when functional gains are realized at a mitigation site; this, in turn, can result in less required mitigation and lower costs. The Conservation Plan and

Section 404 LOP Procedures incorporate OCTA's comprehensive mitigation approach providing higher-value environmental benefits in tandem with an accelerated project approval process.

- **Provided managed recreational opportunities for the public:** The primary focus of the Preserves is addressing the needs of the biological resources, however recreation is offered as a co-benefit when feasible. Where aligned with the preservation goals, multiple Preserves established through the Conservation Plan provide opportunities for managed recreational activities. Since 2010, the EMP has held 56 Hike and Equestrian Ride Events, with over 1,070 total participants (see Figure 10).



Figure 10: Hiking and horseback riding are popular activities in the OCTA Preserves, established through the M2 Program mitigation efforts.

Image: Courtesy of OCTA

Lessons Learned and Best Practices

There are a number of lessons learned and best practice takeaways from the development and implementation of the Conservation Plan and Section 404 LOP Procedures.

Lessons Learned

The major lesson learned through the development of the Conservation Plan and Section 404 LOP Procedures is to **engage all potential stakeholders in early coordination**. Early coordination ensures all involved agencies' constraints and requirements are considered early in the planning process, and reduces the potential for duplication of efforts. Engaging USACE and SWRCB early on during the development of the M2 tax measure would likely have facilitated establishing an agreed upon comprehensive mitigation process for impacts to WOTUS as part of the EMP.

Best Practices

There are several best practices that are integral to the successful development and implementation of the Conservation Plan and Section 404 LOP Procedures, summarized in the following table.

Best Practice	Benefit to the Conservation Plan & Section 404 LOP Procedures Development and Implementation	General Application
Identify all impacted resources	Developing the Section 404 LOP Procedures to complement the Conservation Plan allowed OCTA to accelerate the M2 Program projects for both wildlife and WOTUS permitting requirements.	<i>Agencies may be working to improve and find efficiencies in processes to satisfy certain resource or agency requirements, but projects could still be delayed by other requirements. Projects should consider impacts to all resources, permitting needs, and agency requirements.</i>
Dedicate staff and document efforts	The EMP provided dedicated, consistent staff with both biological and transportation perspectives to efforts for developing and implementing the Conservation Plan and Section 404 LOP Procedures. Establishing agreements such as the Section 214 WRDA funding agreement and similar arrangements between Caltrans and USFWS to fund a dedicated reviewer at the regulatory/resource agency expedited priority projects' approval. Documenting the Conservation Plan and Section 404 LOP Procedure development processes helped retain knowledge and improve agency relationships throughout the various stages of agency engagement.	<i>Consistent staff dedicated to developing and implementing solutions is critical and helps with knowledge retention, improves understanding of the processes and goals, and assists with relationship-building for effective development and implementation. For programs with extensive permitting needs, a liaison agreement, or similar position can help expedite project delivery. Documenting the process development and detailing why decisions were made retains knowledge, maintains agency relationships, and serves as a training resource when new staff join the effort.</i>
Dedicate funding	The forward-thinking, strategic mitigation policies developed in the M2 measure dedicating tax dollars to comprehensive environmental mitigation allowed for the successful agency collaboration necessary to develop the Conservation Plan, Section 404 LOP Procedures, and mitigation sites. Providing dedicated funding allowed the M2 Program to take a proactive stance for project impacts.	<i>Dedicated funding facilitates the development of programmatic solutions such as LOP procedures, and allows for proactive measures in avoiding and minimizing effects to impacted resources, and implementing mitigation where effects are unavoidable.</i>
Create partnerships	The development and success of the Section 404 LOP Procedures would not have been possible without the confidence and support from senior management at USACE, OCTA, and Caltrans.	<i>Support from senior management, committed staff, successful problem-solving, and increased communication help establish and reaffirm stronger partnerships between all parties, and is essential to the successful development of innovative solutions.</i>
Consider long-term benefits over short-term costs	The Section 404 LOP Procedures create an accelerated Section 404 permitting mechanism for projects requiring compensatory mitigation. The Conservation Plan creates a programmatic approach to satisfy consultation requirements for wildlife resources. These mechanisms were developed through an up-front investment of resources and effort, including early agency coordination, impact analyses, and mitigation determinations, which ultimately result in future savings of staff time and money, and improved environmental outcomes.	<i>Developing proactive or programmatic procedures may initially be cumbersome for the agencies involved, but they provide long-term benefits that save future staff time and money for applicants and regulators, and provide improved environmental outcomes.</i>

Looking Ahead

There are a number of next steps for OCTA and stakeholders to continue these efforts and ensure the successful implementation of the M2 Program transportation projects and associated compensatory mitigation.

Continue regular interagency communication to maintain the enhanced agency relationships and allow for future collaboration: Developing the Conservation Plan and Section 404 LOP Procedures required extensive collaboration and engagement among the agencies that built lasting partnerships. These stakeholders aim to maintain positive relationships and interdisciplinary collaboration by continuing to work together and engage each other early in project planning processes and to continue successful project implementation and mitigation for the M2 Program and any new initiatives

Honor mitigation commitments, apply adaptive management strategies, and strive to improve preservation: OCTA and its partners will strive to uphold the mitigation commitments established through the Conservation Plan and Section 404 LOP Procedures, apply adaptive management strategies for continuous improvement, and continue to look for opportunities to expand preservation and conservation measures.

Monitor mitigation commitments and report progress annually to partners and the public: OCTA will continue monitoring and reporting efforts for the Annual Report, detailing OCTA's obligations and commitments for wildlife resources including the status of covered activities and the Preserves, and implementation of the restoration projects, Plan administration, and public outreach activities.

Perform long-term monitoring and management to conserve the Preserves in perpetuity: Based on requirements in the Conservation Plan, OCTA has completed baseline monitoring and established a schedule for monitoring its Preserves through 2040. OCTA is in the process of setting up an endowment that will fund the monitoring and management of its Preserves beyond the existing M2 funds that are currently allocated to preserve management.

Compensatory mitigation sites for WOTUS will be monitored and maintained to achieve the USACE-approved performance standards and success criteria. All sites will be managed in perpetuity per the approved LTRMPs, which include providing adequate site protection and endowments.

Advancing and Implementing the Eco-Logical Approach

Through the Implementing Eco-Logical Program, the FHWA continues to advance the state of the practice and share noteworthy Eco-Logical practices, such as the efforts highlighted in this case study.

Eco-Logical is a landscape-scale approach for planning and developing infrastructure projects. Transportation agencies collaborate with partners and stakeholders during the planning process to understand transportation needs, identify and prioritize ecosystem and cultural resources, and discuss strategies to avoid or mitigate impacts in advance of project design.

To learn more about how to implement the Eco-Logical approach visit [FHWA's Environmental Review Toolkit](#).

Using the Eco-Logical approach can:

- **Strengthen partnerships** by bringing together transportation, resource, and regulatory agencies, along with other partners;
- **Improve environmental outcomes** by incorporating and using natural resource and transportation data for infrastructure, conservation, and mitigation planning and decision-making and avoid critical environmental resources while meeting infrastructure objectives; and
- **Accelerate project delivery** by establishing joint priorities among agencies, developing agreed-upon mitigation strategies, and delivering timely permit decisions.

For More Information

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Resources

- [Implementing Eco-Logical](#)
- [USACE/OCTA Section 214 agreement](#)
- [USACE Special Public Notice](#)
- [USACE Final Public Notice](#)
- [OCTA Conservation Plan](#)



Acknowledgements

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In-text hyperlinks:

- Environmental Oversight Committee (EOC) (page 3): <https://www.octa.net/About-OC-Go/OC-Go-Environmental-Programs/Environmental-Oversight-Committee/>
- Environmental Mitigation Program (EMP) (page 4): <http://www.octa.net/About-OC-Go/OC-Go-Environmental-Programs/Environmental-Mitigation-Program/>
- 2008 Compensatory Mitigation Rule (page 4): https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/mitig_info/
- Environmental impact report (EIR)/environmental impact statement (EIS) (page 5): https://www.fws.gov/carlsbad/hcps/documents/OCTA_M2_NC_CP_HCP_EIREIS_Final.pdf
- EIR/EIS was published in the Federal Register (page 5): <https://www.federalregister.gov/documents/2017/03/31/2017-06214/orange-county-transportation-authority-octa-m2-natural-community-conservation-planhabitat>
- Natural Communities Conservation Plan (NCCP)/Habitat Conservation Plan (HCP) (page 6): <https://www.octa.net/pdf/NCCP%20HCP%20FINAL.pdf>
- Resource Management Plans (RMPs) (page 6): <https://www.octa.net/About-OC-Go/OC-Go-Environmental-Programs/Preserve-Management/>
- Conservation Plan (page 8): <https://www.octa.net/pdf/NCCP%20HCP%20FINAL.pdf>
- PRM (page 9): <https://www.epa.gov/cwa-404/mechanisms-providing-compensatory-mitigation-under-cwa-section-404>

- OCTA EMP website (page 11): <https://www.octa.net/About-OC-Go/OC-Go-Environmental-Programs/Preserve-Management/>
- FHWA's Environmental Review Toolkit (page 16): https://www.environment.fhwa.dot.gov/env_initiatives/eco-logical.aspx

For More Information section hyperlinks:

- Implementing Eco-Logical: https://www.environment.fhwa.dot.gov/env_initiatives/eco-logical.aspx
- USACE/OCTA Section 214 agreement: https://www.spl.usace.army.mil/Portals/17/docs/regulatory/WRDA/OCTA_MOA-Expires10312022.pdf?ver=2017-02-02-141507-830
- USACE Special Public Notice: https://www.spl.usace.army.mil/Portals/17/docs/publicnotices/SPL201300830_OCTA_PN_20150401_final%20.pdf?ver=2015-04-01-145442-187
- USACE Final Public Notice: https://www.spl.usace.army.mil/Portals/17/Users/029/21/1821/SPL2012-00830-VCL_OCTA_LOP_SPN.pdf?ver=2017-12-28-124818-487
- OCTA Conservation Plan: <http://www.octa.net/About-OC-Go/OC-Go-Environmental-Programs/Preserve-Management/>

Appendix A: Accessible Version of Figure 9 Infographic

