

Sustainability and Resiliency Plan

Final

April 2025

This study was prepared under a contract with the Port Authority of Guam (PAG), with financial support from the Office of Local Defense Community Cooperation (OLDCC). The content reflects the views of the PAG and does not necessarily reflect the views of OLDCC.



In close coordination with the Port Authority of Guam (PAG), multiple consultants, and local stakeholders, this document was prepared to strengthen and align PAG's vision and goal for a more sustainable and resilient future for the Port, its staff, and the local community. Contributing entities provided valuable insight and expertise, as well as a broad view of recent and ongoing maritime port projects occurring across the United States and the world. The combined information provided by all contributors played a pivotal role in the development of this document. A list of primary contributors is provided below.

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Acronyms and Abbreviations

American Association of Port Authorities
advanced disposal fee
PAG Board of Directors
Department of Public Works
Environmental Management System
environmentally preferable purchasing
Guam Green Growth
Guam Code Annotated
Guam Economic Development Agency
greenhouse gas
Government of Guam
Guam Power Authority
General Services Agency
Guam Solid Waste Authority
Guam Environmental Protection Agency
International Association of Ports and Harbors
invitation for bid
kilogram(s) of carbon dioxide equivalent per year
light-emitting diode
Mayor's Council of Guam
metric ton(s) carbon dioxide equivalent per year
National Oceanic and Atmospheric Administration
Port Authority of Guam
Public Law
Sustainability and Resiliency Plan
Port of Guam
Recycling Revolving Fund
Sustainable Development Goal
Staging and Transshipment Operation of Priority Wastes
Shredding, Staging and Transshipment Operation of Priority Wastes
tire-derived aggregate
United Nations
United States Environmental Protection Agency
World Ports Sustainability Program



Sustainability and Resiliency Plan Summary

This Sustainability and Resiliency Plan represents a pivotal step towards ensuring a more sustainable and resilient future for the Port Authority of Guam and neighboring communities. This Plan embodies the Port's commitment to environmental stewardship and responsible resource management, building on a strong foundation of existing sustainability policies and initiatives including Resolution No. 2024-02, Resolution No. 2022-15, Guam's Priority Climate Action Plan and Zero Waste Guam, among others. A comprehensive roadmap aligned with eight United Nations Sustainable Development Goals, this document guides Port operations towards a zero emissions and zero waste future while integrating social and economic sustainability.

To navigate towards a zero waste future, the plan addresses waste streams where the Port's involvement can result in a significant impact. The waste streams the Plan focus on are waste generated by Port operations, abandoned junk vehicles, waste tires, and white goods. To address these waste streams, multiple strategic initiatives are recommended for implementation over a 5-year period. The primary strategy, establishing a recycling enterprise zone (REZ), underpins the following five strategies. Given how essential the REZ is to implement a successful zero waste strategy, the plan details the review process that resulted in the identification of four potential sites for the REZ. This process included two screening phases to address technical feasibility and social and environmental considerations. The other strategies primarily focus on using the REZ to collect, consolidate, and ship goods off-island by engaging recyclers. The plan to establish the REZ when combined with the remaining strategies presents a comprehensive zero waste plan that not only supports waste reduction but also minimizes environmental hazards, supports human health, and encourages economic growth.

To develop a zero emissions strategy, a GHG Inventory baseline was first established. The GHG inventory showed that operations directly controlled by the Port, scope 1 emissions, represent approximately 46 percent of Port emissions. The remaining 56 percent of Port GHG emissions is from indirect electricity consumption, scope 2 emissions.

Findings from the GHG Inventory informed the decarbonization roadmap which targets reaching Net Zero for scope 1 and 2 emissions by year 2050. The decarbonization roadmap centered on five key shorterterm solutions aligned with measures identified in the Guam Priority Climate Action Plan and five longerterm strategies for the Port to implement. All strategies were modeled to identify carbon reduction potential and confirm feasibility of the Port reaching Net Zero by 2050. The strategies require direct action by the Port to increase energy efficiency and transition towards electrification. Given that over one-half of Port GHG emissions are associated with electricity consumption and will grow with the implementation of electrification, the zero emissions strategy emphasizes the importance of collaborative action with the Guam Power Authority. Lastly, nature-based solutions are presented to support the existing mangrove habitat and future restoration that can offset residual GHG emissions. When combined, these three action categories result in reducing GHG emissions and increasing the Port's environmental, social and economic resiliency.

The Sustainability and Resiliency Plan reinforces the Port of Guam's leadership in the Pacific Islands maritime industry while showing that all three pillars of sustainability can and should be present to reach zero waste and zero emissions. The zero waste plan and zero emissions plan outlined in the document show that PAG is well positioned to continue to contribute to Guam's overall sustainable development goals.



1.0 Introduction

"Prioritizing sustainability isn't a trend. It's a vital strategy for securing the health and prosperity of an organization for years to come." (ISO 2024) Strong leadership that prioritizes sustainability with strategic approaches focused on developing more efficient operations, using fewer resources, and having a reduced environmental impact are critical to providing solutions related to creating a more sustainable future.

1.1 Purpose

The purpose of the Port Authority of Guam's (PAG) Sustainability and Resiliency Plan (Plan) is to create a comprehensive framework that enhances the operational resilience and environmental sustainability of the Port of Guam (Port). This Plan recognizes that sustainable port operations are vital to fostering economic growth, social development, and environmental stewardship. By integrating sustainable practices, the Plan aims to improve the Port's capacity to handle international and domestic freight efficiently while supporting local and national development, safeguarding environmental resources, and strengthening national security.

The Plan consists of a Zero Waste Strategy and Zero Emissions Strategy for the PAG. The Zero Waste Strategy includes evaluation of potential properties on or near the Port on which zero waste facilities can be located to increase recycling and reuse capacity in Guam. The Zero Waste Strategy also includes implementation of zero waste policies and practices at the Port that align with other island-wide zero waste and sustainability initiatives. The Zero Emissions Strategy involves a comprehensive assessment of the Port's scope 1 and 2 greenhouse gas (GHG) emissions (discussed in Section 4.0), establishing a foundation for targeted carbon reduction initiatives. It also includes evaluating climate change impacts, with data to be used in future phases for developing effective mitigation strategies. By identifying actionable next steps, the strategy aims to guide the Port towards achieving its Net Zero Emissions goal.



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1.2 Intent

"Prioritizing sustainability isn't a trend: it's a vital strategy for securing the health and prosperity of an organization for years to come." ISO 2024 This Plan intends to position the PAG as a leader in sustainable and resilient port operations by setting a benchmark for excellence in the Pacific Islands maritime industry. By fostering a balanced approach that meets the needs of commerce, military operations, local communities, and environmental stewardship, the Plan aims to contribute significantly to Guam's overall sustainable development and bolster national security. The PAG seeks to enhance

the Port's adaptability to future challenges, ensuring it remains a pivotal regional and global trade hub. This Plan aspires to create a replicable model of sustainable port development in the Pacific region that can inspire and guide other regional ports. As conditions in Guam and worldwide evolve, updates to the Plan should incorporate additional strategies, revised benchmarks and measures, and/or optimized sustainability strategies.



2.0 Charting a Course for Sustainable and Resilient Solutions

Climate change is a defining issue of our time. Recognizing this reality, the PAG is investing in sustainability initiatives and adapting its operations and facilities to be more climate resilient.

2.1 Background

The Port represents critical infrastructure for delivering consumer goods onto the island and is an important transportation hub linking the Commonwealth of the Northern Marianas. As the region's largest commercial port, the Port plays a vital role in shipment of goods throughout Micronesia, eastern Asia, and the western United States. As a vital part of Guam's economic infrastructure, the Port handles more than 90 percent of the island's total imports for cars, household appliances, food, and other goods (Guam Business Magazine 2023).



Public Law (PL) 13-87 was passed in 1975, establishing the PAG as a legal public corporation and an autonomous GovGuam agency. The PAG is accountable for meeting the needs of ocean commerce, shipping, recreational, commercial/boating, and navigation on Guam. The PAG is also responsible for the development and/or operation of recreational boating facilities, public harbors, small boat marinas, and other associated marine facilities in Guam (PAG 2023).

As of June 2022, the PAG maintains leases and agreements with more than 40 tenants within the Port's facilities. The PAG receives revenue from more than 140 tenants at its two public marinas, Agat Marina and Gregorio D. Perez Marina.

2.2 Triple Bottom Line of Sustainability

The interconnected pillars of environmental, social, and economic sustainability—often referred to as the triple bottom line of sustainability—must be balanced to ensure that businesses and governments thrive economically while contributing to a sustainable future. As the PAG looks to the future, demonstrating leadership in the Micronesia region, aligning with broader GovGuam and international sustainability initiatives, and engaging in best practices related to the triple bottom line of sustainability is of the utmost importance.

Promoting long-term economic growth with an integrated approach to environmental and social sustainability isn't just good for the planet, it makes good business sense.

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The use of energy-efficient measures and renewable energy can reduce operational costs. Implementing digital technologies that optimize ship arrival times can reduce fuel consumption and GHG emissions, leading to lower costs and improved efficiency (IAPH 2024). Increasing the beneficial reuse of recycled materials and recycling can result in a smaller environmental footprint. Creating space for recycling businesses to efficiently operate and increase capacity advances efforts for a circular economy on-island. Generating associated green jobs that pay a living wage will benefit Guam's economy.





Ultimately, engaging in these and other proactive mitigation techniques is a risk management technique that reduces exposure to climate change (IAPH 2024).

2.3 Resilience, Sustainability and Economic Growth

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The PAG is committed to taking positive action to limit the impacts of climate change to Guam's infrastructure, economy, and natural resources. The following forward-looking directives with actionable commitments approved by the PAG Board of Directors (Board) demonstrating the Port's commitment to limiting climate change, building operational resilience, embracing sustainability and attaining long-term economic growth were used to guide the development of this Plan:

Resolution No. 2024-02 (**Appendix A**) memorializes the Board's commitment to the principles of sustainability, resilience and environmental stewardship. This resolution adopts the *2024 Look Ahead* plan (PAG 2024) as the guiding framework for strategic direction, operational priorities and key initiatives in 2024 and beyond. Resolution NO. 2024-02 directs the Port's General Manager and all relevant departments and personnel to diligently implement the strategies, initiatives and projects outlined in the *2024 Look Ahead* plan, ensuring that the PAG continues to be a pivotal contributor to Guam's prosperity, security and sustainability.

Resolution No. 2022-15 (Appendix B) tasks the Port's General Manager with exploring and pursuing membership in the International Association of Ports and Harbors (IAPH) World Ports Sustainability Program (WPSP) (PAG 2022). Engaging in the WPSP provides the Port with the opportunity to enhance and coordinate future sustainability efforts with ports worldwide and foster international cooperation with partners in the supply chain. This resolution also directs Port management to identify sustainable port projects to pursue that will do the following:

- Strengthen the Port's role in national security
- Develop quality, reliable, sustainable, and resilient infrastructure
- Optimize operations through digital technology implementation, infrastructure upgrades, and an enhanced health, safety and security culture
- Explore renewable energy solutions, regenerative waste management approaches and nature-based solutions
- Implement environmentally friendly policies
- Create added value for the local communities and the Micronesian islands
- Foster collaboration and knowledge sharing
- Align with international best practices



The strategies, initiatives and actions recommended for implementation in this Plan are also designed to provide positive contributions to commitments made by GovGuam included in the following:

- Government of Guam Executive Order 2019-23, signed by Governor Leon Guerrero and Lieutenant Governor Tenorio, which enacts the Guam Green Growth (G3) Action Framework. Guided by the United Nation's Sustainable Development Goals (UN SDGs), the G3 Action Framework promulgates goals, objectives, metrics, action items, action leads, and partnerships to achieve a more sustainable future for Guam (<u>https://guamgreengrowth.org/g3-action-framework</u>).
- Guam's Priority Climate Action Plan, published in March 2024, which serves to increase the island's
 resilience to climate change by presenting a baseline GHG inventory of priority sectors and a priority
 list of GHG reduction measures to be implemented to meet Guam's goals for immediate and necessary
 climate action (www.epa.gov/system/files/documents/2024-04/guam-pcap.pdf).



3.0 Navigating Toward a Zero Waste Future

The Zero Waste Strategy presented in this Plan aligns with Guam's broader sustainability initiatives, including the following:

- PAG Resolution Numbers 2024-02 and 2022-15, which direct the Port's General Manager to pursue sustainability projects related to developing zero waste strategies.
- Zero Waste Guam/Guam's 2023 Zero Waste Master Plan (Guam EPA 2023), which contains a Zero Waste blueprint designed to move Guam forward toward achieving increased waste diversion goals outlined in the Zero Waste Law passed in late 2022 (<u>https://epa.guam.gov/wpcontent/uploads/2023/09/GUAM ZWMP2023.pdf</u>).
- The Islandwide Beautification Task Force created under Public Law 23-19 in 2011. The Task Force collaborates with the Mayors' Council, government agencies, private individuals and organizations to establish greater community participation in environmental protection and cultural preservation activities.



 Public Law 28-92, passed by the Guam Legislature in 2005, authorizes the establishment of a Recycling Enterprise Zone at the Port to foster the creation of additional recycling resources and capacity (Appendix C).

3.1 Vision for The Future

In April 2024, representatives of the Office of the Governor of Guam, the PAG, and key public and privatesector stakeholders met at the Ricardo J. Bordallo Governor's Complex in Adelup for a Vision and Action session. During this session, stakeholder input was sought regarding launching the Port's sustainability and resiliency efforts with respect to zero waste and zero emissions.





Imagining the future and making it happen

Key takeaways from the visioning session specifically related to zero waste include the following:

Increasing the island's resilience to climate change is a necessity.

Cleaning up the island, in part through the removal of abandoned junk cars and waste tires, is one of the Leon Guerrero/Tenorio Administration's top priorities.

Intergovernmental partnerships are important foundational building blocks for creating sustainable solutions to combat climate change.

Recognizing that no one approach will combat climate change, the Port is committed to improving environmental conditions for future generations, starting with the progressive development of zero emissions and zero waste strategies for/at Port-owned properties.

The Port seeks to engage in activities that will create opportunities that provide positive outcomes by reducing waste and GHG emissions, adding green jobs to the community and improving the quality of life on Guam.

Creating additional reuse and recycling capacity and resources in Guam is critical.

Time is of the essence in selecting a location for the establishment of a Recycling Enterprise Zone on/near Port property.



3.2 Targeted Wastes



Based on the outcomes of the visioning session and discussions with PAG management, the following target wastes are focused on in this Zero Waste Strategy:

- Wastes generated by Port operations, such as typical office wastes, maintenance wastes, and construction & demolition debris
- Priority wastes, including junk vehicles and waste tires
- White goods that are difficult to dispose of, including large electrical appliances used in residences such as refrigerators and washing machines

Existing conditions and relevant background information regarding the targeted wastes follow.

3.2.1 Wastes Generated by Port Operations

Port operations that generate solid waste include administrative services, industrial and waterfront cargo-handling operations, and engineering and construction. Tenant operations that generate waste include international shipping companies, marina operators, cruise commercial, transportation, and recreational maritime companies.



Port-owned and tenant solid waste management collection and disposal practices:

The PAG and tenants manage their solid waste via private hauler contracts.

Cardboard is collected in dedicated bins and hauled to the Mr. Rubbishman facility in Harmon, where it is baled for shipment to fiber markets in Asia. Non-hazardous waste is hauled to the commercial transfer station in Harmon where it is aggregated with other waste for transport in full-sized transport trucks to the Layon Landfill. Used oil and batteries are collected and processed for shipment off-island by recyclers.

- Types of waste generated by the PAG and tenant operations:
 - Cardboard
 - Office paper
 - Food waste
 - Plastics
 - Scrap metal
 - Used oil
 - Batteries

Solid waste quantities generated by Port operations from 2019 through 2023 are estimated to be approximately 300 short tons annually.



3.2.2 Abandoned Junk Vehicles



The removal of abandoned junk vehicles is a significant problem in Guam. Although over 5,400 abandoned junk vehicles were taken off Guam's streets from 2018 to 2022, informal estimates indicate that as many as 3,000 remain. Some of these abandoned junk vehicles have been stored in centralized collection areas, while others proliferate in illegal-disposal sites littered throughout the island.

Without a clear mandate on ultimate responsibility for the junk vehicles and enforcement mechanisms in place, the Mayor's Council of Guam (MCOG), in conjunction with Lieutenant Governor Tenorio's abandoned vehicle working group and several GovGuam agencies, has stepped in and attempted to clean up abandoned junk vehicles. A movement to initiate an advanced disposal fee (ADF) on imported cars did not pass the legislature due to push back from vehicle manufacturers and dealerships. Instead, the Recycling Revolving Fund (RRF) was developed to manage the recycling of priority wastes like junk cars and tires, but also for lower priority wastes. The RRF is funded by annual fees on vehicle registrations, generating several million dollars annually; however, use of this fund has not been successful at managing the removal of junk vehicles, because the funding still falls short of the need and is used for other competing needs related to recycling.

Currently, RRF payments go to village mayors for uses that include removal of junk vehicles. Some village mayors sign contracts with haulers to move junk vehicles from villages to centralized junk vehicle lots. There are currently insufficient contracts in place to process the junk vehicles that have been brought to the centralized location and get them shipped off-island to recyclers.

3.2.3 Waste Tires

The following text is largely excerpted from the Guam Environmental Protection Agency (EPA) 2022 Waste Tire in Construction Applications Report and 2022 Integrated Solid Waste Management Plan.



Waste tires present unique and challenging recycling and disposal problems because they are heavy, bulky, and take up valuable landfill space. They also create environmental concerns when buried or disposed of aboveground. With a hollow,

rounded shape, buried whole tires can trap methane gas generated during natural waste decomposition processes in a landfill and can bubble up, ripping through landfill liners in the process. Aboveground stockpiles of waste tires, either in organized piles or random remote locations, can be a breeding ground for pests and present a fire risk. Disease-carrying pests like rodents may live in tire piles, and mosquitoes can breed in the stagnant water that collects inside tires. Several rodents and mosquitoes carry vector-borne diseases, including hantavirus, plague, encephalitis, and dengue fever.

In Guam, waste tires have been banned from land disposal since approximately 2000. When purchasing new tires, retailers are required to dispose of old tires for a fee. Approximately 100,000 waste tires a year are legally disposed of in this manner. Consumers who seek to avoid this disposal cost and those who do not know how to dispose of waste tires often end up illegally dumping tires in ravines, the jungle, and underused industrial areas, along the side of the road, and on vacant lots. Tires in stockpiles are prone to heat retention and ignition, creating tire fires that are difficult to extinguish and can burn for months. These fires generate unhealthy smoke and contamination that leaches into the surrounding environment.

Although exact numbers are not available, as of September 2024, Guam EPA estimated that over 100,000 waste tires have piled up due to illegal dumping and cleanup activities undertaken in the aftermath of Typhoon Mawar. The cleanup of these waste tire stockpiles and other illegally dumped tires is ongoing.



The largest of the stockpiles are located at the Dededo transfer station, the old Tiyan carnival grounds, and Ypao Point (Guam EPA 2024).

3.2.4 White Goods



The illegal dumping of white goods—that is, large home and commercial appliances, including items such as washing machines, refrigerators and stoves—remains a persistent problem for communities in Guam. As with waste tires, consumers who have not paid for regular waste disposal services through the Guam Solid Waste Authority (GSWA) and seek to avoid disposal costs, as well as those who do not know how to dispose of white goods, often end up illegally dumping them in ravines, the jungle, and underused industrial areas, along the side of the road, or on vacant lots. Alongside the efforts to clean up abandoned

junk vehicles, the MCOG allocates funds from the RRF to remove white goods from the environment. In Fiscal Year 2020, approximately 2,000 abandoned white goods were cleared from various communities across Guam. However, this cleanup effort did not deter future illegal dumping, as another 1,150 abandoned white goods were found and removed in Fiscal Year 2021 (The Guam Daily Post 2021).

3.3 Zero Waste Strategy

Translating the PAG's values and directives into action, the Zero Waste Strategy presented in this Plan includes six strategic initiatives recommended for implementation over a 5-year period. The initiatives aim to foster a more sustainable and resilient Guam, targeting priority wastes to protect the island's resources, implementing zero waste policies and practices at the Port, and benefiting the island by increasing recycling capacity and green job opportunities. Descriptions of the six strategic initiatives (shown on Figure 1) follow in Sections 3.3.1 through 3.3.6.



Figure 1. Zero Waste Roadmap





3.3.1 Strategic Initiative 1: Recycling Enterprise Zone



The first strategic initiative involves establishing a Recycling Enterprise Zone. A Recycling Enterprise Zone on Port property offers strategic advantages to Guam in moving toward a more sustainable future driven by a zero waste philosophy and circular economy promoting recycling and beneficial reuse of materials to minimize waste and support sustainable development. The initial goal of this initiative is to select locations either inside the Port's boundaries or near the Port on which to develop operations that facilitate recycling, with a follow-on goal of getting the Recycling Enterprise Zone ready for operations.

Guam Public Law 28-92 (2005)

- Enacted to support recycling to protect the island's natural resources and to address more effective management of solid waste generated on the island.
- Authorizes the establishment of a Recycling Enterprise Zone at the Jose D. Leon Guerrero Commercial Port to foster the creation of additional recycling resources for the transshipment of recyclable materials, including junk automobiles, waste tires, and enameled white goods.

3.3.1.1 How the Process Works

A Recycling Enterprise Zone is a designated area where businesses involved in recycling and manufacturing recycled products for beneficial reuse receive various incentives and support to promote economic growth and environmental sustainability. Recycling Enterprise Zones aim to create a thriving recycling industry that contributes to economic development and environmental protection.

Establishing a Recycling Enterprise Zone can build local resilience, promote environmental sustainability, and drive economic growth. Opportunities associated with the establishment of a Recycling Enterprise Zone include the following (Hayes 2020; Eastman and Kaeding 2019):

- Economic Growth: Recycling Enterprise Zones can stimulate local economies by attracting new businesses and creating jobs in the recycling and materials reuse sectors.
- Environmental Benefits: These zones promote recycling and the use of recycled materials, reducing waste and conserving natural resources.
- Financial Incentives: Businesses can access tax breaks, grants, and low-interest loans, lowering operational costs and encouraging investment.
- Technical and Business Support: Companies can access technical assistance and business development services, helping them navigate regulations and improve efficiency.
- Infrastructure Improvements: Enhanced infrastructure in these zones supports recycling activities, making operations more cost-effective.

Guam PL 28-92 authorized the establishment of a Recycling Enterprise Zone at the Port in 2005. A recommended approach to turn that visionary legislation into reality is graphically presented on Figure 2, followed by a summary of action necessary to accomplish this strategic initiative.



Figure 2. Recycling Enterprise Zone Process



3.3.1.2 Implementation Process

Figure 3 presents the actions required for the implementation of Recycling Enterprise Zones. The following sections provide additional details on the actions necessary to implement this strategic initiative. Notably, considerable progress has been made since April 2024 in completing the first two actions identified for this strategic initiative.



Action 1	Action 2	Action 3	Action 4	Action 5
Develop site evaluation framework	Conduct screening and select sites	Establish a Management and Operating Structure	Prepare site for lease	Prepare lease agreement



|--|

Stakeholders	Responsibilities
PAG	Develop site-selection criteria applicable to Port and Recycling Enterprise Zone operations (completed)

Action 1 for the site-selection criteria initiative has been completed by the PAG developing a site evaluation framework using relevant environmental regulations, UN SDGs and G3 goals, and indicators from rating systems used worldwide to implement more sustainable and resilient maritime, waterfront, and infrastructure projects, including Green Marine, Waterfront Edge Design Guidelines (WEDG), and Envision (see **Appendix D** for further details) and Recycling Enterprise Zone operational objectives. The site evaluation framework included two screening phases, an initial site screening and secondary site screening (Figure 4), with differing evaluation criteria.

Initial Site Screening – Sites being considered for use in the Recycling Enterprise Zone were evaluated against the initial site screening criteria shown on Figure 5, using a pass/fail system for scoring. Sites that failed three or more of the criteria were removed from further consideration. Remaining sites under consideration were then evaluated in the secondary site screening.





Figure 5. Initial Site Screening Criteria



UN Sustainability Development Goals

- Minimize transport (SDG 13 Climate Action)
- Avoid impacts to valuable natural capital (SDG 13 Climate Action and SDG 14 Life Below Water)

G3 Action Framework

- Avoid impacts to nearby communities with noise (Healthy and Prosperous Communities),
- Avoid impacts to natural resources (Thriving Natural Resources)

Sustainability Rating Systems

- Protect existing biodiversity
- Minimize impacts (such as noise) to nearby communities

Source: UN 2023 Note: REZ = Recycling Enterprise Zone

<u>Secondary Site Screening</u> – Secondary site screening criteria are shown in Table 2. Sites advancing from the initial site screening phase were evaluated using the following criteria focused on technical and economic feasibility:

- Limited to no impact to wetlands or surface water bodies from operations
- Significant grading due to steep topography is not needed
- Availability of major utilities (electrical, water, telecommunications) onsite or nearby
- Minimal flooding potential during typhoons (see **Appendix E** for National Oceanic and Atmospheric Administration [NOAA] storm surge maps)



- Sufficient area to allow for heavy truck access and turning (see Appendix F for truck turn evaluations)
- Feasibility of providing site security and accessibility (such as fencing or paved access)
- No other considerations/operational restrictions that would preclude use
- Alignment with 2023 Master Plan

A pass/fail system was also used to score sites in the secondary site screening phase. Sites that failed fewer than two of the listed criteria were considered suitable for use as a Recycling Enterprise Zone location.

Action 2. Identify Initial List of Potential Sites, Conduct Site Screening, and Select Recycling Enterprise Zone Site(s)

Stakeholders	Responsibilities
PAG	Conduct site screening using evaluation framework described in Action 1 (completed)

In April 2024, consultants under contract to the PAG conducted interviews with PAG staff and solid waste stakeholders on Guam to develop an initial list of potential sites for use as a Recycling Enterprise Zone. Sites identified during the interviews and subsequent research were recommended for evaluation based on space availability, historical use and potential compatibility with Recycling Enterprise Zone program operations. Figure 6 presents a location map of the following 11 sites identified as potential candidates:

- 1) Heavily Vegetated Site along Route 1
- 2) Heavily Vegetated Site along Route 18
- 3) Old Hawaiian Rock Quarry Site
- 4) Future Container Yard
- 5) Chassis Lot
- 6) PAG Parking Lot
- 7) Sea Plane Ramp
- 8) Metals Recycling Yard
- 9) Polaris/Matson Leased Lot
- 10) Polaris/Smithbridge Leased Lot
- 11) Polaris/Vacant Private Lot

Evaluation of the 11 potentials sites was conducted using the framework described in Actions 1 and 2. Out of the 11 potential Recycling Enterprise Zone sites, 6 sites passed the initial site screening (**Table 1**).



Figure 6. Potential Recycling Enterprise Zone Sites





Table 1. Initial Site Screening Evaluation Results

Heavily Vegetated PAG Property along Route 1	1. Heavily Vegetated Site along Route 1	2. Heavily Vegetated Site along Route 18	3. Old Hawaiian Rock Quarry Site	4. Future Container Yard	5. Chassis Lot	6. PAG Parking Lot	7. Sea Plane Ramp	8. Metals Recycling Yard	9. Polaris/ Matson Leased Lot	10. Polaris/Smithbridge Leased Lot	11. Polaris/ Vacant Private Lot
Location											
Within Port boundary or owned by the Port	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	х	х	х
Less than or equal to 2 miles from Port gate/main entrance	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Sensitive/Protected Habitats, Ecosystems, Cultural/Histo	orical Sig	nificance									
Site is not a greenfield or of high ecological value	х	х	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Site is not of high historical/cultural significance [a]	х	х	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Community Considerations											
Use of site will not create concerns about noise, traffic, light pollution, or similar	x	х	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Site Characteristics		_			_	_				_	
>1 acre in size	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	x	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
>10 acres in size	\checkmark	\checkmark	\checkmark	х	х	х	х	х	\checkmark	\checkmark	х
Reuse of previously developed/disturbed site	x	х	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Zoned for Commercial or Industrial Use	x	х	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Property is available for use in near term	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	x	x	\checkmark





Heavily Vegetated PAG Property along Route 1	1. Heavily Vegetated Site along Route 1	2. Heavily Vegetated Site along Route 18	3. Old Hawaiian Rock Quarry Site	4. Future Container Yard	5. Chassis Lot	6. PAG Parking Lot	7. Sea Plane Ramp	8. Metals Recycling Yard	9. Polaris/ Matson Leased Lot	10. Polaris/Smithbridge Leased Lot	11. Polaris/ Vacant Private Lot
Technical Feasibility											
Requires minimal financial investment for site development/use compared to other sites under consideration or will require lease/sublease for use	х	х	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	x ^[b]	x ^[b]	x ^[b]
NUMBER OF CRITERIA PASSED	5	5	11	10	10	9	10	10	8	8	8
NUMBER OF CRITERIA FAILED	6	6	0	1	1	2	1	1	3	3	3
CONTINUE TO NEXT SCREENING ROUND? (NUMBER OF CRITERIA FAILED <3)	NO	NO	YES	YES	YES	YES	YES	YES	NO	NO	NO
6 OUT OF 11 SITES CONTINUE TO NEXT SCREENING ROUND											

^[a] Historical/cultural significance was confirmed using geographic information system (GIS).

^[b] Polaris Sites are currently leased by Guam Economic Development Agency (GEDA) at an average monthly rate of \$1000/acre. If property becomes available for ownership or use by the Port at low cost, recommend these sites be reconsidered.





Four of the six evaluated sites passed the secondary site screening, as follows:

Recommended Recycling Enterprise Zone Sites

- Old Hawaiian Rock Site
- Future Container Yard
- PAG Parking Lot
- Metals Recycling Yard

Table 2 provides details on the secondary site screening. Four passing sites are considered suitable for use as a Recycling Enterprise Zone location. It is anticipated that the Port will initially operate one site and expand operations to additional (remaining) locations at a later date as capacity and operations in/at the Recycling Enterprise Zone expand.

Table 2. Secondary Site Screening Evaluation Results

Secondary Screening Criteria	Old Hawaiian Rock Quarry Site	Future Container Yard	Chassis Lot	PAG Parking Lot	Sea Plane Ramp	Metals Recycling Yard
Sensitive/Protected Habitats, Ecosystems, Cultural/Historical Signif	icance					
No wetlands or surface water bodies onsite (within 100 feet of operations)	\checkmark	\checkmark	\checkmark	\checkmark	x	\checkmark
Site Characteristics/Technical Feasibility for Intended Use						
Site will not require significant grading for use due to steep topography	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Site access is paved/suitable for intended use	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Site flooding potential is NOT high during typhoons	x	\checkmark	\checkmark	\checkmark	x	\checkmark
Major utilities (electrical, water, telecommunications) present at or nearby site	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Site is partially or fully paved or graveled paved	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Site is fenced or otherwise secured	\checkmark	х	\checkmark	х	x	\checkmark
Site is of sufficient size that allows for easy heavy truck access and turning	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
No other considerations/operational restrictions that would preclude use	\checkmark	\checkmark	x ^[b]	\checkmark	\checkmark	\checkmark
Alignment with 2023 Master Plan	\checkmark	√ ^[a]	x ^[b]	\checkmark	\checkmark	\checkmark
NUMBER OF CRITERIA PASSED	9	9	8	9	7	10
NUMBER OF CRITERIA FAILED	1	1	2	1	3	0
PASS SCREENING? (NUMBER OF CRITERIA FAILED <2)	YES [c]	YES	NO	YES	NO	YES
4 SITES SUITABLE FOR USE AS RE	Z LOCA	TION				



- ^[a] The Future Container Yard area is planned for future development (expansion of the cargo-handling area) but in the interim is suitable for use as Recycling Enterprise Zone.
- ^[b] The Chassis Lot is currently in use for PAG operations.
- ^[c] Old Hawaiian Rock Quarry Site will not be available for the next 5 years because it will be used as laydown for the Glass Breakwater project. After that, it can be used as a Recycling Enterprise Zone site. Note that this site has potential for 1- to 3-foot inundation on the eastern side from Category 4 and 5 storms.

RECOMMENDED SITE FOR INITIAL USE

The Metals Recycling Yard (Site 8 as shown in Figure 6) is currently operating as a recycling area and is recommended as an initial Recycling Enterprise Zone location. If increased capacity is needed for recycling and beneficial reuse operations later, additional sites with different functional

purposes can be added to the Recycling Enterprise Zone. Because the Future Container Yard, PAG Parking Lot, and Old Hawaiian Rock Site passed both the initial and secondary site screening phases, any or all of these sites could be added to the designated Recycling Enterprise Zone. Use of the Old Hawaiian Rock Site will be pushed back 5 years because it is slated for use as contractor laydown for the Glass Breakwater project. If more than 5 years elapse between adding any of these three sites to the Recycling Enterprise Zone, the sites should be reevaluated to ensure that conditions have not changed significantly and that each still meets the screening criteria detailed in Tables 1 and 2.

Note that existing lease agreements will need to be resolved before formally designating any site as part of the Recycling Enterprise Zone. Further, future property tenants must meet the substantive Qualifying Certificate requirements referenced in PL 28-92.

Action 3: Establish a Management and Operating Structure

Stakeholder	Responsibilities
PAG	Manage lease of Recycling Enterprise Zone
GovGuam Agencies	Issue applicable licenses and permits

A traditional property lease structure offers a streamlined initial management and operating structure that can be used for the Recycling Enterprise Zone. The PAG, as the landlord of the property on which the Recycling Enterprise Zone is located, has primary responsibility for managing the property. The lessee of the site (that is, the Operator) would then engage in operations at the site agreed to in the lease.

Collaboration with other GovGuam agencies through interagency agreements could be leveraged to use funding from the RRF (consistent with 10 Guam Code Annotated [GCA] 51 §51306) to prepare an Invitation for Bid (IFB) and manage the contract for collection, processing, and shipping of priority materials to recycling markets. Priority materials include, but are not limited to, junk vehicles, waste tires, and scrap metal associated with white goods. The IFB should provide an option for the successful bidder to lease space at the Recycling Enterprise Zone for staging of wastes awaiting transshipment in shipment containers. Minimum requirements for an Operator to use space at the Recycling Enterprise Zone would

include meeting the substantive requirements for a Qualifying Certificate for recycling (that is, minimum investment and material processing). The IFB, awarded contract, and subsequent lease would require bidders to meet environmental permitting and other regulatory agency requirements applicable for operations. A 5-year term is recommended as the minimum lease period for the Recycling Enterprise Zone.

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Over time, as Recycling Enterprise Zone operations expand and capacity is added, an evaluation of management and operational structures that could be beneficial to GovGuam, the PAG, and private entities should be undertaken. At a minimum, this



should include an evaluation of Public Private Partnerships and Project Management Organization contracts, as well as other viable management and operational structures compared to a traditional property lease structure.

Action 4: Prepare Recycling Enterprise Zone Site for Lease

Stakeholder	Responsibilities
PAG	Prepare Recycling Enterprise Zone site for operations (through clearing, grading, and similar)
GovGuam Agencies	Provide guidance regarding any specific GovGuam agency requirements for operating the site as a Recycling Enterprise Zone

Actions to be taken in this step include the following:

- Prepare the site for operations. Provide necessary clearing, grading, paved, or graveled roadways for trucks to load and unload shipping containers, fencing/gates, and access to utility hookups.
- Evaluate permitting requirements to be included in the lease agreement. See **Appendix G** for permit requirements, including the PAG Stormwater Pollution Prevention Plan.

Funding for preparing the site for Recycling Enterprise Zone operations may be collectively funded by the RRF along with other budgets identified.

Action 5: Prepare Lease Agreement

Stakeholder	Responsibilities
PAG	Update the PAG standard lease agreement, in consultation with legal counsel

Actions to be taken in this step include the following:

- Update the PAG standard lease agreement with additional terms resulting from management and permitting requirements discussed with GovGuam agencies. A list of recommended additions to the PAG standard lease agreement is described in **Appendix H.**
- Work with legal counsel to determine what, if any, of the updates recommended in **Appendix H** and/or additional terms are needed to the PAG's standard lease agreement.



3.3.2 Strategic Initiative 2: STOP Junk Vehicles



This strategic initiative (STOP Junk Vehicles) involves the staging and transshipment of junk vehicles. This initiative aligns with the existing priorities voiced in the April 2024 Visioning Kick-off session held at Adelup and is consistent with the intent of Guam PL 28-92.

The initial goal of the STOP Junk Vehicles strategic initiative is to do the following:

- Facilitate the island-wide consolidation and removal of abandoned junk vehicles.
- Prepare and containerize junk vehicles for staging and shipment. Draining of fluids, removal of nonrecyclable materials, and similar would occur at the Operator's offsite facility to minimize environmental impacts to the Recycling Enterprise Zone site.
- Stage containerized vehicles within a Recycling Enterprise Zone at the Port.
- Allow for easier transshipment access and off-island recycling.



After the initial stage of this initiative is operating smoothly, a follow-on goal is to expand the operation's capacity through the addition of vehicle recycling and crushing equipment. Adding operational capacity will require additional operations space and environmental controls.

3.3.2.1 Key Stakeholders

The stakeholders identified on Figure 7 are essential for the successful launch and effectiveness of the STOP Junk Vehicles initiative.





3.3.2.2 How the Program Works

Figure 8 presents the STOP Junk Vehicles Program process, while the following sections provide additional details on roles and responsibilities of each stakeholder under the STOP Junk Vehicles initiative.





3.3.2.3 Implementation Process

The implementation process presented graphically on Figure 9 and the actions that follow outline the responsibilities of stakeholders who will be essential to the successful launch and long-term success of this initiative. As previously described in Strategic Initiative 1, sites appropriate for use as a Recycling Enterprise Zone have been identified. As soon as the effort to secure one of these sites for use as a staging and transshipment operational site for junk vehicles is well underway, the following implementation actions should be launched.



Figure	9.	STOP	Junk	Vehicles	Imr	olementation	Process

Action 1	Action 2	Action 3	Action 4	Action 5	Action 6	Action 7
Develop IFB with contract and Recycling Enterprise Zone lease terms	Secure Recycling Company to Stage Junk Vehicles at Recycling Enterprise Zone	Prepare Recycling Enterprise Zone for lease	Startup and Operations at Recycling Enterprise Zone	Measure and Report	Optimize Existing Recycling Enterprise Zone Operations	Expand Operations

Action 1: Develop IFB with contract and Recycling Enterprise Zone lease terms

Stakeholders	Responsibilities
PAG	Lead efforts to develop an IFB for processing, staging and transshipment of abandoned/junk vehicles
GovGuam Agencies	Cooperate and facilitate agency actions, as requested/ needed to establish a Recycling Enterprise Zone at the Port of Guam
MCOG	Work with the PAG to collect junk vehicles from villages and transfer to a recycling company facility for processing (removal of fluids and containerizing) before staging at the Port Recycling Enterprise Zone

Actions to be taken in this step include the following:

 Develop an IFB for removing fluids, crushing, loading junk vehicles into shipping containers and coordinating transshipment for off-island recycling. The IFB should emphasizing that prior to staging at the Recycling Enterprise Zone, junk vehicles must be processed (for example, through draining of fluids and removal of non-recyclable materials) at the recycling company's offsite facility to minimize environmental impacts to the Recycling Enterprise Zone. See Appendix I for details on IFB options and partnership opportunities to consider.



- Secure program funding from the RRF or grants. At a minimum, the target funding should be equal to the amount needed to process, ship and recycle (off-island) all junk vehicles generated annually (approximately 2,000 vehicles annually).
- Make the Recycling Enterprise Zone available to the successful bidder for staging sealed shipping containers of processed, crushed junk vehicles.
- Determine measurement and payment for the processing and transshipment of vehicles to recycling markets.
- Include contract requirements for the PAG's junk vehicle recycling contractor to provide public outreach with stakeholders, including but not limited to haulers, adjacent landowners, and MCOG, regarding environmental controls and actions taken to mitigate nuisance impacts.





• Develop a comprehensive contract agreement that outlines terms, responsibilities (such as permitting and outreach), reporting, and payment details. Engage legal counsel to ensure a fair and legally binding contract.

Action 2: Secure Recycling Company to Process Junk Vehicles and Stage at Recycling Enterprise Zone

Stakeholders	Responsibilities
PAG and other GovGuam Agencies	The PAG leads effort with assistance, as needed from Guam EPA, GSWA, Guam Department of Public Works (DPW), GEDA, and other agencies, to obtain services from a recycling company/companies to collect, prepare, and locally transport junk vehicles for staging and transshipment at Recycling Enterprise Zone
Recycling Companies	Respond to request for services, engage in lease negotiations with the PAG

Actions to be taken in this step include the following:

 Engage in outreach. Notify recycling companies of opportunity to collect, process (prior to staging at Recycling Enterprise Zone), stage, and recycle junk vehicles off-island. Provide information on the availability of space at the Port and determine their interest in staging junk vehicles awaiting transshipment at the Recycling Enterprise Zone.



 Prequalify eligible businesses. In accordance with the terms of PL 28-92, leased space in the Recycling Enterprise Zone is available to companies meeting the substantive requirements of GEDA's

Qualifying Certificates for recycling under guidelines established by the Guam Economic Development and Commerce Authority. For additional information, see the Qualifying Certificate Program at <u>https://www.investguam.com/qualifying-certificate-qc-program</u>.

• Secure lease agreement(s) with qualified business(es).

Action 3: Prepare Recycling Enterprise Zone for Lease

Stakeholder	Responsibilities
PAG	Prepare Recycling Enterprise Zone site for operations (through clearing, grading, and similar)
	Consult GovGuam agencies for environmental controls and permitting required at the stage

Actions to be taken in this step include the following:

- Resolve any existing lease agreements in the Recycling Enterprise Zone. Review lease agreement for minimum notice period and notify tenants, as necessary.
- Depending on existing site conditions and security requirements, the site may require fencing, clearing, grading and paving for trucks to load and unload shipping containers.
- In addition to permitting and environmental requirements to be met by the recycling company, consult with GovGuam agencies on environmental and permitting requirements needed during preparation of the site (for example, for grading and drainage, stormwater, and similar).
- Site preparation for Recycling Enterprise Zone operations may be funded by the RRF along with other budgets identified.



Action 4: Start Up and Operations at the Recycling Enterprise Zone

Stakeholder	Responsibilities
PAG	Monitor compliance with contract terms (for example, measurement for payment, documentation, and similar)
	Provide infrastructure and services to facilitate the shipment of junk vehicles, as needed
Government Agencies	Monitor compliance with permit requirements
Recycling Companies	Start up and begin staging of processed junk vehicles at Recycling Enterprise Zone (processing will occur at offsite facility prior to staging); responsible for communication, documentation, compliance, and coordinating with shipper(s), tracking and monitoring
Shipping Companies	Coordinate with recyclers' agents to facilitate shipment of junk vehicles off-island as expeditiously as possible

Actions to be taken in this step include the following:

 Recycling companies startup and begin operations of containerized junk vehicles staging at Recycling Enterprise Zone. For initial operation of the Recycling Enterprise Zone, operations at the site will be limited to staging of containerized junk vehicles. Processing (for example, draining of fluids and removal of non-recyclable materials) will need to be conducted at the recycling company's offsite facility.



- Note that if materials are simply staged at the Recycling Enterprise Zone for shipment, no waste collection or processing permits are needed from Guam EPA. However, other permits from GovGuam agencies may be required for operations at the Recycling Enterprise Zone and may require monitoring for compliance (see **Appendix G** for permit requirements).
- The PAG will work with shipping companies to expedite shipment of junk vehicles off-island.

Stakeholder	Responsibilities
PAG	Enforce reporting requirements and targets Report results to Governor's Office, Guam EPA, and United States Environmental Protection Agency (USEPA), as needed
Recycling Companies	Measure and report results to the PAG
GovGuam (DPW or GSWA)	Conduct public outreach and education Track and report results to Governor's Office and Guam EPA

Action 5: Measure and Report

Actions to be taken in this step include the following:

- Recycling companies should measure the quantity/number of materials shipped off-island for recycling and report quarterly results to the PAG. A baseline will be established to track results and measure against benchmarks. Recommended measurement and reporting metrics include the following:
 - Number of vehicles collected and processed
 - Amount of vehicle fluids drained and collected for recycling (gallons) and documentation of management methods



- Amount of non-recyclable materials generated and disposed of/managed from processing of junk vehicles (tons); and documentation of management methods
- Weight of scrap metal containerized, transported and staged at the Recycling Enterprise Zone (tons)
- Weight of shipment off-island (tons)

A baseline should be established by recording the metrics above monthly for the first year.

- To optimize initiative efforts, the PAG should work with appropriate GovGuam agencies to conduct public outreach and education efforts and report activities completed annually, at a minimum. Reporting metrics may include the following:
 - Type of outreach/education effort (such as report successes, targeted gaps, public awareness, education at schools, and job upskilling outreach)
 - Type of and number of businesses contacted
 - Number of attendees at outreach events (categorized by schools, residential, or university, as appropriate)
 - The PAG will report results to the Guam EPA, USEPA, and Governor's Office, as needed.
- Data and results should be reported annually (at minimum) and submitted online via the Guam Citizen Centric Report as seen at <u>https://www.opaguam.org/audits-mandates/citizen-centric-reports-ccrs</u>.

Action 6: Optimize Existing Recycling Enterprise Zone Operations

Stakeholder	Responsibilities
PAG	Request feedback from recycling and shipping companies regarding staging and transshipment operations at Recycling Enterprise Zone
Recycling and Shipping Companies	Provide feedback

Actions to be taken in this step include the following:

 PAG representatives to meet with operational stakeholders (that is, recycling and shipping companies) to identify what is going well and what operational impediments (if any) require PAG assistance in solving.

Action 7: Expand Recycling Enterprise Zone Operations to include Additional Recycling and Reuse Opportunities

Stakeholder	Responsibilities
PAG	Evaluate additional recycling and reuse opportunities at the Recycling Enterprise Zone
Recycling and Shipping Companies	Provide feedback







Actions to be taken in this step include the following:

 Once the initial Recycling Enterprise Zone operational site is functioning smoothly, an evaluation should be undertaken to determine if further operational sites are needed. If the decision is reached to add capacity to the existing operation, property previously identified as Recommended Recycling Enterprise Zone sites can be added to provide supplemental storage and/or processing areas to add operational capacity.



 Evaluate the feasibility of developing an IFB for a recycling company to purchase and operate a car crusher with self-contained fluids collection.
 Factors to consider in the feasibility evaluation should include environmental protection requirements, the increased processing capacity needed and associated costs, identification of funding sources, availability of funds, funding limitations, and schedule opportunities and constraints.


3.3.3 Strategic Initiative 3: STOP Waste Tires



This strategic initiative (STOP Waste Tires) involves the shredding and transshipment of waste tires. The initial goal of this initiative is to facilitate the removal of long-abandoned piles of waste tires on the island by shredding, staging

the tire shreds in the Recycling Enterprise Zone for easier transshipment access, and off-island recycling. Existing legislation supporting this initiative includes PL 28-92 (2005).

A follow-on goal of this strategic initiative is to expand the operation by adding processing capabilities such as a small-scale crumb rubber operation. The crumb rubber could then feasibly be beneficially reused for one or more of the commercial opportunities identified in Guam EPA's 2022 Waste Tire Management Report.



3.3.3.1 Key Stakeholders

The stakeholders identified on Figure 10 are essential for the successful launch and effectiveness of the STOP Waste Tires initiative.





3.3.3.2 How the Program Works

Figure 11 presents the STOP Waste Tires Program process, while the following sections provide additional details on roles and responsibilities of each stakeholder under the STOP Waste Tires initiative.





3.3.3.3 Implementation Process

The PAG has identified areas within and near Port property appropriate for use as a Recycling Enterprise Zone. The Recycling Enterprise Zone will include several operational sites that are or will be developed for use over time. The implementation steps and activities identified on Figure 12 for the STOP Waste Tires initiative should be launched as soon as the effort to identify and secure a Recycling Enterprise Zone for use as a processing, staging, and transshipment operational site for waste tires is underway.





Figure 12. STOP Waste Tires Implementation Steps and Activities

Action 1: Develop IFB with contract and Recycling Enterprise Zone lease terms

Stakeholder	Responsibilities
PAG	Lead efforts to develop an IFB for processing, staging and transshipment of waste vehicles
	Manage grant applications and construction of building for equipment
Guam EPA, Guam DPW, MCOG	Provide input in developing IFB and program for recycling tires

Actions to be taken in this step include the following:

- PAG staff to lead the engagement of stakeholders to develop an IFB for collecting legacy tires, supplying shredding equipment (if necessary), removing steel bands, producing acceptable shreds for end market, and transshipment of waste tires. Note that there is a potential partnership opportunity with GSWA (to furnish and operate a waste shredder for legacy tire piles). See **Appendix I** for details on IFB options and partnership opportunities to consider.
- Secure program funding from the RRF or grants. Grant funding may be available for design and construction of a building and utilities to house a tire shredder.
- Determine measurement and payment for the shredding, staging, and transshipment of tires to responsible recycling markets.



 Make the Recycling Enterprise Zone available as an option to lease for the successful bidder for processing and/or staging of shredded tires. The Recycling Enterprise Zone site could also supply tires for on-island markets as they develop.



- Establish reporting requirements to be performed by the recycling company (as part of measurement for payment); include quarterly tracking of the tire type (commercial vs. passenger), weights, and number of tires collected, shredded, reused and shipped for recycling. Require documentation to demonstrate proof of acceptance at final recycling or disposal facility.
- Require that each Recycling Enterprise Zone Operator report to the PAG and any other appropriate GovGuam agencies a minimum of annually environmental controls and actions taken to mitigate nuisance impacts (that is, vectors including mosquitoes and fire hazards).
- Develop a comprehensive contract agreement that outlines terms, responsibilities (such as permitting and outreach), and payment details. Engage legal counsel to ensure a fair and legally binding contract.



Action 2: Secure Recycling Company to Stage Shredded Waste Tires at Recycling Enterprise Zone

Stakeholder	Responsibilities
PAG and other GovGuam Agencies	The PAG leads effort with assistance, as needed, from Guam EPA, GSWA, Guam DPW, GEDA, and other agencies, to obtain services from a recycling company/companies to collect, prepare, and locally transport waste tires for staging and transshipment at Recycling Enterprise Zone
Recycling Company	Respond to request for services, engage in lease negotiations with PAG

Actions to be taken in this step include the following:

- Engage in outreach. Notify recycling companies of opportunity to collect, process, stage, and recycle waste tires off-island. Provide information on the availability of space at the Port and determine their interest in staging shredded waste tires awaiting transshipment at the Recycling Enterprise Zone.
- Prequalify eligible businesses. In accordance with the terms of PL 28-92, lease space in the Recycling Enterprise Zone is available to companies meeting the substantive requirements of GEDA's Qualifying Certificates for recycling under guidelines established by the Guam Economic Development and Commerce Authority. For additional information, see the Qualifying Certificate https://www.investguam.com/gualifying-certificate-gc-program.

Program at

• Secure lease agreement(s) with qualified business(es).

Action 3: Prepare Recycling Enterprise Zone for Lease

Stakeholder	Responsibilities
PAG	Resolve existing lease agreements on the Recycling Enterprise Zone operational site, if any
	Prepare the Recycling Enterprise Zone site for leasing (through clearing, grading, and similar)
	Consult GovGuam agencies for environmental controls and permitting required at this stage

Actions to be taken in this step include the following:

• Review existing lease agreement(s) for occupants (if any) of Recycling Enterprise Zone site and resolve the lease for convenience if required to provide the required space.



- Depending on existing site conditions and security requirements, perform required actions; the site may require fencing, clearing, grading, and paving for trucks to load and unload shipping containers.
- In addition to permitting and environmental requirements to be met by Recycling Company, consult with GovGuam agencies on environmental and permitting requirements needed by the Port during preparation of the site (for example, grading, drainage, or stormwater).
- Funding for preparing the site for Recycling Enterprise Zone operations may be collectively funded by the RRF along with other grants/budgets identified.

Stakeholder	Responsibilities
Recycling Companies	Start up and begin operations for shredding legacy tires for reuse and transshipment Engage with shipping companies for transshipment
PAG	Monitor compliance with contract terms (such as measurement for payment and documentation) Provide infrastructure and services to facilitate the shipment of waste tires, as needed
Government Agencies	Monitor compliance with permit requirements Provide support in purchasing shredded tires for use in civil engineering applications; see The Waste Tire Management Report (Guam EPA 2022) for applications
Shipping Companies	Coordinate with recyclers' agents to facilitate shipment off-island as expeditiously as possible

Action 4: Startup and Operations at Recycling Enterprise Zone

Actions to be taken in this step include the following:

 Recycling companies to begin operation of mobile shredding equipment and containment at legacy waste tire stockpiles and other legacy waste tire illegaldisposal areas. Begin storage of shredded tires for reuse on-island or transshipment staging at the Recycling Enterprise Zone.



- Note that if materials are simply staged at the Recycling Enterprise Zone for shipment, no waste collection or processing permits are needed from Guam EPA.
 However, other permits from GovGuam agencies may be required for operations at the Recycling Enterprise Zone and may require monitoring for compliance (see Appendix G for permit requirements).
- Government agencies purchase shredded waste tires as tire-derived aggregate (TDA) for beneficial reuse in civil engineering applications. The Waste Tire Management Report (Guam EPA 2022) provides a range of civil engineering applications for TDA.

Stakeholder	Responsibilities
PAG, Guam EPA	Enforce reporting requirements and targets Report results to USEPA and Governor's Office
Recycling Companies	Measure quantities and tonnages recycled and reused, provide documentation, and report results to the PAG
GovGuam (DPW or GSWA)	Conduct public outreach and education Track and report results to Governor's Office and Guam EPA

Action 5: Measure and Report



Actions to be taken in this step include the following:

- Recycling companies should measure the quantity of materials reused on-island and shipped off-island for recycling and report quarterly results to the PAG. A baseline will be established to track progress and measure against goals. Measurements are to be verified for payment as described in contract terms. Recommended measurement and reporting metrics include the following:
 - Number and type of tires collected and processed
 - Amount of other recyclable and non-recyclable materials generated and disposed of /managed from processing of tires (tons) and documentation of management methods
 - Weight of shredded tires reused on-island (tons) and documentation of use
 - Weight of shredded tires containerized, transported, and staged at the Recycling Enterprise Zone (tons)
 - Weight of shipment off-island (tons)

A baseline should be established by recording the above metrics monthly for the first year.

- To optimize initiative efforts, the PAG should work with appropriate GovGuam agencies to conduct public outreach and education efforts and report activities completed annually, at a minimum. Reporting metrics may include the following:
 - Type of outreach/education effort (such as report successes, targeted gaps, public awareness, education at schools, and job upskilling outreach)
 - Number of persons contacted
 - Number of outreach events (categorized by schools, residential, or university, as appropriate)

The PAG will report results to the Guam EPA, USEPA, and Governor's Office, as needed. Data and results should be reported annually (at minimum) and submitted online via the Guam Citizen Centric Report as seen at https://www.opaguam.org/auditsmandates/citizen-centric-reports-ccrs.

Stakeholder	Responsibilities
PAG	Request feedback from recycling and shipping companies regarding staging and transshipment operations at Recycling Enterprise Zone
Recycling and Shipping Companies	Provide feedback

Action 6: Optimize Existing Recycling Enterprise Zone Operations

Actions to be taken in this step include the following:

PAG representatives to meet with operational stakeholders (that is, recycling and shipping companies) to identify what is going well and what operational impediments (if any) require government assistance in solving.







Action 7: Expand Recycling Enterprise Zone Operations to include Additional Recycling & Reuse Opportunities

Stakeholder	Responsibilities
PAG	Evaluate additional recycling and reuse opportunities at the Recycling Enterprise Zone
Recycling and Shipping Companies	Provide feedback

Actions to be taken in this step include the following:

- Once the initial Recycling Enterprise Zone operational site is functioning smoothly, additional operational sites should be secured for adding recycling capacity. Port property, or property in the immediate vicinity of the Port, can be added to this initiative to provide additional storage and/or processing capabilities focused on processing waste tires for recycling.
- Evaluate the feasibility of using one of the Recycling Enterprise Zone sites for a small-scale crumb rubber operation. Develop a plan to include operations at the Recycling Enterprise Zone within 5 years unless the process is established elsewhere on the island.



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3.3.4 Strategic Initiative 4: STOP White Goods Waste

3.3.4.1 Overview



This strategic initiative (STOP White Goods Waste) involves the staging and transshipment of illegally dumped or abandoned white goods (such as washing machines, dryers, refrigerators, and freezers) for recycling. A total of 1,151 abandoned white goods were estimated to have been removed from Guam village streets during Fiscal Year 2021 (The Guam Daily Post, 2021). Based on reports from the MCOG, the annual number of abandoned white goods is expected to be around 1,000 white goods per year. This initiative aligns with the existing priorities articulated in the April 2024 Visioning Kick-off session and is consistent with the intent of Guam

PL 28-92.

The initial goal of the STOP White Goods Waste strategic initiative is to do the following:

- Facilitate the island-wide consolidation and removal of abandoned white goods
- Stage containerized white goods within a Recycling Enterprise Zone at the Port
- Allow for easier transshipment access and off-island recycling

After the initial stage of this initiative is operating smoothly, a follow-on goal is to expand the operation's capacity and efficiency through the addition of white goods processing and management equipment. Develop a plan to include operations at the Recycling Enterprise Zone within 5 years.

SStaging andTTransshipmentOOperation ofPPriority Wastes

3.3.4.2 Key Stakeholders

STOP White Goods Waste initiative.
Figure 13. STOP White Goods Key Stakeholders

The stakeholders identified on Figure 13 are essential for the successful launch and effectiveness of the





3.3.4.3 How the Program Works

Figure 14 presents the STOP White Goods Program process, while the following sections provide additional details on roles and responsibilities of each stakeholder under the STOP White Goods Waste initiative.





3.3.4.4 Implementation Process

The following implementation process outlines the responsibilities of stakeholders who will be essential to the successful launch and long-term success of this initiative. As previously described in Section 3.3.1, Strategic Initiative 1, areas appropriate for use as a Recycling Enterprise Zone have been identified. As soon as the effort to secure one of these sites for use as a processing, staging and transshipment for white goods is well underway, the implementation steps and activities identified on Figure 15 should be launched.



Action 1	Action 2	Action 3	Action 4	Action 5	Action 6
Develop IFB with contract and lease terms	Secure Recycling Company to Stage White Goods at Recycling Enterprise Zone	Prepare Recycling Enterprise Zone for Lease	Startup and Operations	Measure and Report	Optimize Operations

Figure 15. STOP White Goods Implementation Steps and Activities

Action 1: Develop IFB with contract and Recycling Enterprise Zone lease terms

Stakeholders	Responsibilities
PAG	Lead efforts to develop an IFB for processing and transshipment of abandoned white goods with the option to stage the processed metal at the Recycling Enterprise Zone
MCOG	Contract with waste hauler to collect abandoned white goods from villages and transfer to recycling company facility for processing

Actions to be taken in this step include the following:

Develop an IFB for processing offsite (for example, removing fluids from compressors, refrigerants, and similar and loading white goods into shipping containers), with an option to stage recycled metal at the Recycling Enterprise Zone and coordinating the transshipment for off-island recycling. To protect the environment, proper removal of fluids and handling of refrigerants needs to be conducted at an offsite facility until appropriate enclosed facilities are constructed at the Recycling Enterprise Zone sites. See Appendix I for details on IFB options and partnership opportunities to consider.



- Secure program funding from the RRF or grants. The target funding should be equal to the amount needed to process and recycle all white goods generated annually (estimated 1,000 white goods annually).
- Make the Recycling Enterprise Zone available as an option to the successful bidder for staging sealed shipping containers of processed white goods.
- Determine measurement and payment for the processing and transshipment of white goods to recycling markets.
- Include contract requirements for the PAG's white goods recycling contractor to provide outreach to stakeholders, including but not limited to haulers, adjacent landowners, and MCOG, regarding environmental controls and actions taken to mitigate nuisance impacts.
- Develop a comprehensive contract agreement that outlines terms, responsibilities (such as permitting and outreach), reporting, and payment details. Engage legal counsel to ensure a fair and legally binding contract.





Action 2: Secure Recycling Company to Stage White Goods at Recycling Enterprise Zone

Stakeholders	Responsibilities
PAG and other GovGuam Agencies	The PAG leads effort with assistance, as needed from Guam EPA, GSWA, Guam DPW, GEDA, and other agencies, to obtain services from a recycling company/companies to collect, prepare, and locally transport waste tires for staging and transshipment at Recycling Enterprise Zone
Recycling Company	Respond to request for services and engage in lease negotiations with PAG

Actions to be taken in this step include the following:

• Engage in outreach. Notify recycling companies of opportunity to collect, process (prior to staging at Recycling Enterprise Zone), stage, and coordinate shipping of abandoned white goods for off-island recycling. Provide information about the option to stage containerized white goods awaiting transshipment at the Recycling Enterprise Zone.



• Prequalify eligible businesses. In accordance with the terms of PL 28-92, lease space in the Recycling Enterprise Zone is available to companies meeting the substantive requirements of GEDA's Qualifying Certificates for

recycling under guidelines established by the Guam Economic Development and Commerce Authority. For additional information, see the Qualifying Certificate Program at <u>https://www.investguam.com/qualifying-certificate-qc-program</u>.

• Secure lease agreement(s) with qualified business(es).

Action 3: Prepare Recycling Enterprise Zone for Lease

Stakeholder	Responsibilities
PAG	Prepare Recycling Enterprise Zone site for operations (through clearing, grading, and similar)

Actions to be taken in this step include the following:

- Resolve any existing lease agreements on the Recycling Enterprise Zone operational site. Review lease agreement for minimum notice period and notify tenants, as necessary.
- Depending on existing site conditions and security requirements, the site may require fencing, clearing, grading, and paving for trucks to load and unload shipping containers.
- In addition to permitting and environmental requirements to be met by recycling company, consult with GovGuam agencies on environmental and permitting requirements needed during preparation of the site for staging of containerized white goods.
- Funding for preparing the site for Recycling Enterprise Zone operations may be collectively funded by the RRF along with other budgets identified.



Action 4: Start Up and Operations at the Recycling Enterprise Zone

Stakeholder	Responsibilities
PAG	Enforce lease requirements Provide infrastructure and services to facilitate shipment of white goods, as needed
Guam EPA	Issue applicable licenses and permits
Recycling Companies	Start up and begin staging of processed white goods at Recycling Enterprise Zone
Shipping Companies	Coordinate with recyclers' agents to expedite the shipment of white goods off-island

Actions to be taken in this step include the following:

• Recycling companies start up and begin operations of containerized white goods staging at Recycling Enterprise Zone. Note: Before staging at the Recycling Enterprise Zone, white goods will need to be processed for staging and shipment (for example, removal of non-recyclable materials) at the recycling company's offsite facility.



- Note that if materials are simply staged at the Recycling Enterprise Zone for shipment, no waste collection or processing permits are needed from Guam EPA. However, other permits from GovGuam agencies may be required for operations at the Recycling Enterprise Zone and may require monitoring for compliance (see Appendix G for permit requirements).
- Recycling companies will work with shipping companies to expedite shipment of white goods off-island.

Stakeholder	Responsibilities	
PAG	Enforce reporting requirements and targets Report results to Governor's Office, Guam EPA, and USEPA, as needed	
Recycling Companies	Measure and report results to the PAG	
GovGuam (DPW or GSWA)	Conduct public outreach and education Track and report results to Governor's Office and Guam EPA	

Action 5: Measure and Report

Actions to be taken in this step include the following:

- Recycling companies should measure the quantity/number of materials shipped off-island for recycling and report quarterly results to the PAG. A baseline will be established to track progress and measure against goals. Suggested reporting metrics include the following:
 - Number of abandoned white goods collected and processed
 - Amount of materials collected for recycling/disposal (including refrigerants) and documentation of management methods
 - Amount of non-recyclable materials generated and disposed/managed from processing of white goods (tons); and documentation of management methods



- Weight of recyclables containerized, transported and staged at the Recycling Enterprise Zone (tons)
- Weight of shipment off-island (tons)

A baseline will be established by recording the metrics above on a monthly basis for the first year (tons/month for 1 year).

- To optimize initiative efforts, the PAG should work with appropriate GovGuam agencies to conduct public outreach and education efforts and report activities completed annually, at a minimum. Reporting metrics may include:
 - Type of outreach/education effort (such as report successes, targeted gaps, public awareness, education at schools, and job upskilling outreach)
 - Number of persons contacted/reached
 - Number of outreach events (categorized by schools, residential, or university, as appropriate)
- The PAG to report results quarterly to the Guam EPA, USEPA, and Governor's Office, as needed. Data and results should be reported annually (at minimum) and submitted online via the Guam Citizen Centric Report as seen at https://www.opaguam.org/audits-mandates/citizen-centric-reports-ccrs.



Action 6: Optimize Existing Recycling Enterprise Zone Operations

Stakeholder	Responsibilities
PAG	Request feedback from recycling and shipping companies regarding staging and transshipment operations at Recycling Enterprise Zone
Recycling and Shipping Companies	Provide feedback

Actions to be taken in this step include the following:

 PAG representatives to meet with operational stakeholders (that is, recycling and shipping companies) to identify what is going well and what operational impediments (if any) require government assistance in solving.

Action 7: Expand Recycling Enterprise Zone Operations to include Additional Recycling & Reuse Opportunities

Stakeholder	Responsibilities
PAG	Evaluate additional recycling and reuse opportunities at the Recycling Enterprise Zone
Recycling and Shipping Companies	Provide feedback





Actions to be taken in this step include the following:

 Once the initial Recycling Enterprise Zone operational site is functioning smoothly, an evaluation should be undertaken to determine if additional recycling capacity is needed to address abandoned white goods, and if so, if further operational sites are needed in the Recycling Enterprise Zone. Properties previously identified in Table 2, Secondary Site Screening Evaluation Results, can be added to provide supplemental storage and/or processing areas used to prepare abandoned white goods for off-island recycling.



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3.3.5 Strategic Initiative 5: Green Purchasing



Also consistent with recommendations in both the 2013 *Guam Zero Waste Plan* (GovGuam 2013) and *Zero Waste Guam*, Guam's updated 2023 Zero Waste Master Plan (Guam EPA 2023), this strategic initiative (Green Purchasing) involves establishing an Environmentally Preferable Purchasing (EPP) Policy for the Port. This initiative will be a first for an autonomous GovGuam agency and a significant step forward in Guam's journey towards zero waste. The initial goal of this initiative is to develop a Port policy focused on identifying, selecting, and purchasing products with fewer adverse environmental impacts than competing products. Note that the

Port is currently working with the Guam GSA for purchase of recycled-content paper. This strategic initiative aims to increase current efforts. Existing legislation supporting EPP policies includes Public Law 21-22 and Federal Executive Order 14057.

Guam Public Law 21-22 (1991)

• The General Services Administration, Department of Administration, The Superior Court of Guam, Autonomous Agencies, and the Legislature is hereby directed to amend existing procurement rules and regulations and develop such additional rules and regulations as are necessary to insure that in all purchases of goods by the government of Guam, when possible, emphasis shall be placed on the purchase of products that are biodegradable, reusable, recyclable, recycled, or any combination.

Federal Executive Order 14057 (2021)

• Sec. 208. (a) Agencies shall reduce emissions, promote environmental stewardship, support resilient supply chains, drive innovation, and incentivize markets for sustainable products and services by [...] purchasing products that contain recycled content, are biobased, or are energy and water efficient, in accordance with relevant statutory requirements; and, to the maximum extent practicable, purchasing sustainable products and services identified or recommended by the Environmental Protection Agency (EPA).

3.3.5.1 Key Stakeholders

The stakeholders identified on Figure 16 are essential for the successful launch and effectiveness of the Green Purchasing initiative.



Figure 16. Green Purchasing Key Stakeholders

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3.3.5.2 How the Program Works

Figure 17 presents the Green Purchasing Program process, while the following sections provide additional details on roles and responsibilities of each stakeholder under the Green Purchasing initiative.







3.3.5.3 Implementation Process

Implementation of an expanded Green Purchasing Program for the PAG consists of the steps presented on Figure 18. The following sections describe the steps required for implementation of an EPP Policy for the PAG.

Figure 18. Green Purchasing Implementation Process



Action 1: Identify and Evaluate Target Materials for EPP

Stakeholder	Responsibilities
PAG	Evaluate suitability and feasibility of target materials (completed)

Actions to be taken in this step included identifying and evaluating the suitability and feasibility of target materials for EPP. Port of Guam inventory was sorted by category and evaluated based on purchasing recommendations from the United States General Services Agency (GSA) Sustainable Facilities Tool (<u>https://sftool.gov/greenprocurement/green-products-workspaces/87/support-area</u>). The following target materials were identified:



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Purchase of these target materials would support the following sustainability metrics:



For more information on energy savings and related GHG emissions reduction, see Section 4.0, Zero Emissions Strategy. For future expansion of the EPP program, additional target materials for the Port to consider include used building materials for future construction and maintenance projects. This could include concrete aggregate, recycled asphalt pavement, and/or wood materials (NYCEDC 2023).

Action 2: Implement EPP for Target Materials

Stakeholder	Responsibilities
PAG	Implement EPP for target materials
Guam GSA	Provide recommendations on environmentally preferred products for purchase

How EPP is implemented depends on the target material selected and may require incremental implementation. For target materials that will replace current Port purchases, the first stage of implementation involves initial testing for an adequate alternative. For target materials that are past initial testing, the second stage involves evaluating whether purchase of these products is already required and backed by policy or revising or developing a policy if current requirements are insufficient.

Note that the Port is currently working with the Guam GSA for purchase of recycled-content paper. This strategic initiative aims to increase current efforts, adding a requirement to specify 30% postconsumer recovered fiber content paper.



Figure 19. EPP Program Phases



The following implementation stage and corresponding activities are identified for the target materials:

Copy Paper - (Stage 1 Completed) Stage 2 Implementation:

- •Develop and approve new PAG Purchasing Policy requiring a minimum **30% postconsumer** recovered fiber content for copy paper.
- If 30% postconsumer recovered fiber content copy paper is not available through https://gsa.doa.guam.gov/ from the supplier (COMIX), the new Policy would require issuing a solicitation for 30% postconsumer recovered fiber content content copy paper to other vendors.

Light Bulbs - Stage 1 Implementation:

- •Phase out any future purchases of 4-foot linear fluorescent bulbs.
- •Test and evaluate light-emitting diode (LED) fluorescent replacement tubes compatible with existing fixture technology to determine a suitable alternative.
- •Issue soliciation for LED fluorescent replacement tubes.
- •Look for budget opportunities to replace existing fluorescent fixtures with more efficient fixtures.

Note that the use of the identified EPP target materials will continue unless the following occurs:

- There are adverse impacts to Port Operations.
- A better alternative product is identified.

Action 3: Evaluate End-of-Life Alternatives and Implement Training

Stakeholder	Responsibilities
PAG	Evaluate end-of-life alternatives Implement training
iRecycle/Non-profit	Pickup and deliver shredded paper products to farmers for use as agricultural bedding



Actions to be taken in this step include evaluating end-of-life alternatives for target materials and implementing training, as well as updating the policies developed in Action 2 to address end-of-life disposal, as follows:

Copy Paper

- •Collect, shred, and bag paper products for pickup by Peggy Denney, Executive Director of iRecycle, for delivery to farmers for use as agricultural bedding.
- •Research methods and policy to store audit files electronically.

Light Bulbs

•Recycle fluorescent bulbs at the Harmon Residential Transfer Station. The facility uses a drum-top bulb crusher for fluorescent light bulbs to reduce the volume of the bulbs to be recycled/shipped off-island.

Action 4: Measure and Report Sustainability Metrics

Stakeholder	Responsibilities
PAG	Measure and report sustainability metrics

Actions to be taken in this step include Port tracking sustainability metrics (as developed in Action 1) based on procurement records such as copies of invoices, receipts, or other proof of purchase. An annual report is prepared summarizing the Port's environmentally responsible purchasing actions and their effectiveness in reducing the environmental impacts of Port procurement. Establishing an incentive program to recognize successful promoters of EPP should be considered. Applicable data should be reported annually (at minimum) and submitted online via the Guam Citizen Centric Report as seen at https://www.opaguam.org/audits-mandates/citizen-centric-reports-ccrs.



3.3.6 Strategic Initiative 6: Port Strong Recycles



Aligning directly with the 2023 Zero Waste Management Plan initiative to enact mandatory effort to solid waste reduction at or in all GovGuam facilities and public spaces, this strategic initiative (Port Strong Recycles) involves increased recycling efforts at Port-owned operations in accordance with Public Law 24-304, an act to mandate GovGuam on the reduction of solid waste. While the Port already has voluntary recycling in place, this initiative would move the Port forward by updating its existing policy to make recycling mandatory, would include a list of wastes to be recycled, and would recommend beneficial end-use markets, preferably on-island, for the targeted materials.

Guam Public Law 24-304 (1998)

- "All government of Guam departments, agencies and instrumentalities, including autonomous agencies, and any other Guam entities: (1) shall make every effort to solid waste reduction..."
- "Each director, manager, or agency head shall ensure regular collection periods and maintain a record of weight or volume, type of recyclable items..."

In August 2024, updates to the Board policy and expansion of the recycling program for PAG facilities were discussed and evaluated. Resulting actions from the meeting include the following:

- Received support from various departments to support expansion of the PAG's Recycling Program
- Reviewed the PAG policy and updated list of recyclable materials with cardboard and oil filters (see Appendix J for a full list of recyclable materials listed in the policy)
- Identified target materials for expansion of recycling program: shredded copy paper and aluminum cans
- Discussed availability of non-profit agency (iRecycle) to perform collection and reuse/recycling shredded copy paper and aluminum cans

3.3.6.1 Key Stakeholders

The stakeholders identified on Figure 20 are essential for the successful launch and effectiveness of the Port Strong Recycles initiative.



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3.3.6.2 How the Program Works

Figure 21 presents the Port Strong Recycles Program process, while the following sections provide additional details on roles and responsibilities of each stakeholder under the Port Strong Recycles initiative.





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3.3.6.3 Implementation Process

Figure 22 presents the steps for implementation of the expanded PAG recycling program.

Figure 22. Port Strong Recycles Implementation Process



Action 1: Engage with Non- Profit Organizations

Stakeholder	Responsibilities	
PAG	Engage in discussions with non-profit to solidify a plan and process for collection of recyclables from Port facilities (completed)	
Non-profit Organization	Work in partnership (completed)	

Action 1 for the Port Strong Recycles initiative has been completed as follows:

- PAG engaged with a non-profit organization to discuss the plan and process of collecting eligible recyclable materials from the Port facilities.
- As a starting point, iRecycle non-profit program has committed to collect shredded paper and aluminum cans. Shredded paper will be collected and distributed to the Department of Agriculture for use as bedding. Aluminum cans will be donated to local schools for the redemption of beverage container fees.



Action 2: Identify PAG Advocates to Champion Recycling Program

Stakeholder	Responsibilities	
PAG	Identify internal staff advocates for the expanded recycling program	
PAG Advocates	Champion PAG recycling initiatives	



Actions to be taken in this step will include advocates for each floor/area being identified to champion new recycling practices, including through the following:

- Inform staff of new recyclable materials to be collected and procedures.
- Gather feedback from staff to increase ownership and participation.

Action 3: Implement Expansion of Recycling Program

Stakeholder	Responsibilities	
PAG	Provide training to staff. Purchase containers and signage	
Non-profit	Collect and transport recyclables	

Actions to be taken in this step include the following:

- Provide training for staff of new recyclable materials to be collected and procedures for segregating and collection.
- Purchase and set up new containers for recyclables and signage. Consider consistent signage, imagebased signs, consistent color for certain materials, and similar.
 - Ensure signage for shredded paper to be donated includes restrictions on coated paper. Note that glossy paper, paper bags with coating on the inside, and paper plates have been found to contain poly-fluorinated alkyl substances (PFAS) and should not be included in shredded paper sent to agriculture.
- Non-profit organization to collect recyclable materials.

Action 4: Measure and Report

Stakeholder	Responsibilities		
PAG/PAG Advocates	Track and report volumes to PAG employees		
	Celebrate progress, beneficial reuse and donations made		
	Evaluate other materials/stakeholders to include in the recycling program		

 Actions to be taken in this final step include measuring the quantity/amount of recyclable materials collected for recycling. A baseline will be established to track progress and measure against goals. Recommended measurement practices and metrics include the following:



- Weight of cans and shredded paper collected by iRecycle per month.
- Document where and when materials are donated (dates and amount received, names of school and organizations).
- Conduct regular inspections of shredded paper to assess and address any contamination of coated or glossy paper before scheduled pickup; documenting dates of inspections, any contamination observed, and corrective measures.
- Conduct regular inspections of waste containers collected by hauler before scheduled pickup; documenting percent capacity (% full) to determine effectiveness of recycling program (reduction of waste to landfill) and optimize waste collection costs. If applicable, consider option to reduce container sizes or collection frequency to save on waste collection costs.



A baseline will be established by recording the metrics above on a monthly basis for the first year (pounds/month for 1 year).

- Report results internally to track progress, announce achievements and optimize the program. . Applicable data should be reported annually (at minimum) and submitted online via the Guam Citizen Centric Report as seen at https://www.opaguam.org/audits-mandates/citizen-centric-reports-ccrs.
- Evaluate progress and needs for improvement or expansion of program (for example, evaluate • feasibility of recycling fluorescent light bulbs or expanding program to PUG facilities).

Investing in the Future 3.4

Six strategic initiatives are recommended for implementation in the Zero Waste Strategy presented in Section 3.3. These strategic initiatives, shown in the outer ring of Figure 23, represent an investment in the future designed to facilitate Guam's transition to zero waste and a green circular economy. Implementation of the strategic initiatives will also create positive environmental, social, and economic impacts associated with the UN SDGs identified in the figure's inner ring.







In summary, the six strategic initiatives provide meaningful contributions to Guam's efforts to combat climate change and include the following:









- Selecting a site on or near Port property and providing recycling operators with a staging area for wastes awaiting transshipment off-island for recycling and/or disposal (Recycling Enterprise Zone). Operations in the Recycling Enterprise Zone could be expanded to include sustainable beneficial reuse processing capabilities at a later date. This strategic initiative would increase Guam's recycling capacity by freeing up existing storage space in recyclers' yards, promote investments in sustainable technologies focused on the beneficial reuse of recycled materials, and create green jobs for Guam's citizens.
- Providing space within the Recycling Enterprise Zone to stage priority wastes, including abandoned junk vehicles, waste tires, and white goods awaiting transshipment off-island for recycling and/or disposal (STOP Junk Vehicles, STOP Waste Tires, and STOP White Goods, respectively). These strategic initiatives would initially facilitate island-wide cleanup activities by providing staging/temporary storage space near transshipment departure points. Over time, additional processing capacity could be added to support more sustainable technologies focused on beneficial reuse, green business opportunities, and jobs. These strategic initiatives would reduce the environmental impacts of illegal dumping and expand existing recycling and reuse programs.
- Establishing a policy for the Port focused on identifying, selecting, and purchasing products with fewer adverse environmental impacts than competing products (Green Purchasing). This strategic initiative would eliminate or reduce waste at the source, build resiliency, and advance the island towards a circular economy.
- Enacting a mandatory recycling program for PAG-owned facilities and employees (Port Strong Recycles) The Port already has voluntary recycling, but this strategic initiative would move the Port forward by updating its existing policy to make recycling mandatory, include a list of recycled wastes, and recommend beneficial end-use markets, preferably on-island, for the targeted materials. The compulsory recycling program will contribute support for a non-profit organization benefiting local schools, forming a sustainable alliance that aims to benefit the well-being of students on-island.

Moving forward with the zero waste initiatives will require the PAG to actively seek and rely on partnerships. These relationships are crucial to our success of the Zero Waste Strategy (Figure 24). By collaborating with others, the PAG can leverage diverse strengths, share knowledge, and allow innovation, ensuring that Guam achieves its sustainability goals in the most effective way. Working together with our government agencies, businesses, non-profits, and communities will enable the PAG to make the greatest contribution to Guam's future.





3.5 Additional Considerations

The following sections present additional global considerations for the PAG to consider pursuing related to implementing the Zero Waste Strategy outlined in this Plan.

3.5.1 Advanced Disposal Fees

GovGuam, local village leaders, and the Guam legislature continue to acknowledge the need for recycling priority materials including junk vehicles, tires, waste oil, and white goods. One possible funding strategy is ADF, which involves collection of fees at the time of import or point of sale of a recyclable product to cover the costs of recycling the products.





In Guam, the ADF concept was introduced in 2005 for all imported goods coming through the commercial port or airport as a means of funding recycling of the goods. In this early legislation, it was proposed that variable fees be collected by the Customs and Quarantine Agency and paid to the Treasurer of Guam using various payment forms, registration forms, and exceptions and reporting requirements. Under this early legislation, each product was to be assigned a different recycling/disposal fee, such as \$200 per vehicle. With input from the Guam Automobile Dealers Association and other public input, this ADF legislation was transitioned to the simplified current model of an annual non-refundable assessment of \$25 on existing registration for each vehicle, paid into the RRF administered by Guam EPA.



The RRF continues to be used successfully to fund the recycling of priority wastes including junk vehicles and tires, but there is a need to increase this funding. The RRF is used to fund local contracts for hauling junk vehicles out of villages to centralized junk car lots. It is recommended that additional RRF funding be used to complete the recycling process of junk vehicles to include draining fluids, crushing, hauling, and shipping the junk vehicles to recycling markets. Contracts for completing this recycling process should incorporate the recycling industry economic stimulus program with sliding scale as documented in 10 GCA 51 § 51308. The Recycling Enterprise Zone at the Port can be used to facilitate these

additional steps as outlined in the STOP Junk Vehicles strategic initiative included in this Plan.

3.5.2 Environmental Management System

In addition to a formal sustainability plan, implementing an Environmental Management System (EMS) is a powerful strategy for both environmental stewardship and economic sustainability. An EMS consists of a set of policies, procedures, and practices designed to help organizations minimize their environmental footprint. It offers a systematic method to identify, assess and address environmental realities and risks. Critical aspects of an EMS (ISO 2024) include the following:



- Ensuring compliance with environmental regulations
- Promoting efficient resource use
- Reducing waste and pollution (including GHG emissions)
- Continuously improving environmental performance
- Centralized environmental management and reporting

The following organizations provide valuable resources and guidelines to implement an effective EMS for the PAG:

- The International Organization for Standardization (ISO) EMS Standard, commonly referred to as ISO 14001. The standard is used by organizations worldwide to systematically evaluate, manage, and address the realities and risks associated with their environmental operations (ISO 2015).
- IAPH's WPSP database of best management practices focuses on various sustainability aspects, including environmental management (IAPH 2024).
- The American Association of Port Authorities (AAPA) Environmental Management Handbook is designed to help ports effectively manage their environmental issues (AAPA 1998).
- The Inter-American Committee on Ports (CIP) Guide to Environmental Certification and Sustainability Reporting provides reference tools explicitly tailored to environmental protection in a port setting (CIP 2020).

Implementing an EMS not only saves organizations money but also enhances their public image. This is achieved through cost avoidance and savings, such as reducing incidents that lead to liability costs,



securing more affordable insurance, and conserving input materials and energy through systematic reduction efforts. The positive public image that comes with implementing sustainability initiatives and having an established EMS are key factors that will be viewed favorably by investors, if the PAG decides to explore green bonds as a financing mechanism for future sustainability initiatives.

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4.0 Zero Emissions Strategy

The Zero Emissions Strategy involves a comprehensive assessment of the Port's scope 1 and 2 GHG emissions (Figure 25), establishing a foundation for targeted carbon reduction initiatives. It also includes evaluating climate change impacts, with data to be used in future work for developing effective mitigation strategies. By identifying next steps, the strategy aims to guide the Port towards achieving its Net Zero Emissions goal.

The following sections provide a summary of the methodology and findings of the Zero Emissions Strategy. It is intended to provide additional supporting information to the Executive Summary (ES) Zero Emissions Strategy, which delivers the holistic perspective on these findings and how they will be used to achieve carbon reduction. Appendix K, the Implementation Roadmap, provides a deeper dive into the five next step solutions



identified, and Appendix L, the GHG Inventory, provides the calculations that informed the scope 1 and 2 GHG emissions inventory. The information used to quantify the GHG inventory and potential solutions was collected through a variety of sources, including desktop research, expert opinion, and financial and operational documents provided by the PAG.

4.1 Greenhouse Gas Inventory

The methodology used for the scope 1 and 2 GHG emissions inventory is defined in *A Corporate Accounting and Reporting Standard* (Greenhouse Gas Protocol 2015). The Zero Emissions Strategy uses an operational control boundary when quantifying leased assets; indicating that GHG emissions were only quantified as scope 1 or scope 2 if they were under the direct or operational control of the PAG. Emission factors used in the calculations were taken from the Intergovernmental Panel on Climate Change Fifth Assessment Report (IPCC 2014), The Climate Registry (2024), and USEPA emission factors (USEPA 2024).

Table 3 provides a summary of the scope 1 and scope 2 PAG emissions baseline. Consistent with the GHG Protocol, the GHG baseline was estimated as an average across 2021 and 2022 as this was the most representative baseline value; in this document, these values will be referred to as the GHG baseline. Tables 4 and 5 provide further breakdown for the emission sources within these two categories (scope 1 and 2).



Figure 25. The Port's Emission Scopes

SCOPE 1 Emissions | Direct Emissions

These are GHG emissions occurring from operations or processes directly controlled by the Port. These include tailpipe emissions from vehicles, yard equipment and generators.



SCOPE 2 Emissions | Indirect Emissions

These are GHG emissions occurring from the electricity consumption of the Port. These are influenced by the carbon intensity of the electrical grid on Guam.



SCOPE 3 Emissions | Indirect Emissions

These are any remaining emissions that were not counted for in Scope 1 & 2 and include the ports supply chain both upstream and downstream. Emissions from berthing ships and transportation of materials are included in this category.



Table 3. GHG Baseline as Average across Years 2021 and 2022

Total GHG emissions per year	Baseline	Unit
Scope 1	2,073	MT CO2e/yr
Scope 2	2,670	MT CO2e/yr
Total	4,743	MT CO2e/yr

Note: MT CO2e/yr = metric ton(s) carbon dioxide equivalent

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Table 4. Scope 1 Emissions (Direct Emissions)

Emission Source	Emissions (Baseline)	Units
Mobile : Yard Equipment	1,749	MT CO2 _e /yr
Mobile : Passenger Fleet	199	MT CO2 _e /yr
Stationary	52	MT CO2₀/yr
Fugitive	73	MT CO2₀/yr
Total	2,073	MT CO2₀/yr

Table 5. Scope 2 Emissions (Indirect Emissions)

Emission Source	2023 Usage in kWh per Year (Baseline)	Emission Factor in kgCO2₀ per kWh	Emissions (Baseline)	Units
Electricity Consumption	3,466,888	0.77	2,670	$MT CO2_e$ per year

Notes:

kgCO2e = kilogram(s) of carbon dioxide equivalent per year

kWh = kilowatt-hour(s)

Emission Factor applicable for power purchased from Guam Power Authority (GPA). Value is derived from the *Guam's Priority Climate Action Plan* (CCRC and UOG CIS&SG 2024).

Scope 2 emissions were calculated for the year 2023, as this was the most complete and accurate data set. Energy consumption was quantified across all five load centers, with the meter at Load Center 1 providing the overall values for Load Centers 2 and 3.

4.2 Decarbonization Solutions Roadmap

Once a baseline was established for the GHG inventory, the process of quantifying the reduction potential of solutions was undertaken. Carbon reductions for potential solutions were based on industry best practice, up-to-date technology information, and energy demand calculations.

Results from quantifying the carbon reduction potential were used to develop an Excel-based tool referred to as the PAG Wedge Diagram; Carbon Reduction Potential (Wedge Diagram). This tool superimposed solutions in order of projected implementation year to track the reduction of carbon emissions over time. The date on which carbon emissions reached zero was used as the target date for the PAG to achieve Net Zero (Figure 26).

Solutions were categorized in one of the following three ways:

- Direct actions, represented as the variations of blue wedges on Figure 26. Direct actions represent solutions that the PAG can implement without the need for collaboration or partnership with external entities.
- Collaborative actions, represented as the variations of gold wedges on Figure 26. These actions are similar to direct actions but require collaboration and partnership with external entities.
- Nature-based solutions, represented as the variations of pink wedges on Figure 26. These are solutions that take a nature-based approach and provide social, environmental, and economic benefits.



Once solutions had been identified, a Zero Emission Workshop was held with key personnel across the PAG and supporting stakeholders to discuss the potential solutions and agree upon a timeline for implementation. The Wedge Diagram was used as a tool to inform this workshop and agree upon the dates for each solution. The outcome of this workshop informed the graph depicted on Figure 26 and forms the foundation of the Zero Emission Strategy. With discussed implementation dates, it was agreed the target date for reaching Net Zero for scope 1 and 2 emissions is the year 2050.



Figure 26. The Wedge Diagram

Note: Green arrow indicates agreed target date for Net Zero as 2050.

4.3 Decarbonization Solutions

Implementation dates for proposed solutions supported the development of a timeline for action. The key solutions were identified as the critical next steps that need to be taken to support the reduction of GHG emissions from scope 1 and 2 sources.

Table 6 provides the summary of the five identified key solutions. It lists the emission sources (scope 1 or 2) that the solutions aim to reduce, the action category they fall under, and the corresponding solutions (that is, the activity suggested). Further information on what these solutions are and how they can be realized is provided in Appendix K, Implementation Roadmap.



Table 6. Five Key Solutions for Implementation

Solution	Emission Source	Action Category	Guam Priority Climate Action Plan Initiatives	
Electrification of Port Passenger Fleet (focusing on on-road vehicles such as pickup trucks and vans)	Scope 1; reducing emissions associated with on-road vehicles	Direct Action	Transportation Measures	
Completion of Internal and External Lighting Upgrades	Scope 2; reducing emissions associated with electricity consumption	Direct Action	Energy Measures	
Submetering	Scope 2; reducing emissions associated with electricity consumption	Direct Action		
Engagement with Guam Power Authority (GPA)	Scope 2; reducing emissions associated with electricity consumption	Collaborative Action		
Explore Mangrove & Environmental Restoration Opportunities		Nature-based Solutions	Forestry Measures	
	Scope 1 and 2; reducing residual emissions through offsetting			

Additional solutions were also quantified to inform the Net Zero target date, helping to understand the longterm action that needs to be undertaken by the PAG to achieve Net Zero. Table 7 provides the complete list of solutions identified to date. Understanding what will eventually need to be implemented will help the decision-making process for the PAG when looking at future improvements and projects.

Table 7. Full List of Potential PAG Solutions for Reducing Carbon Emissions from Scope 1 a	nd 2
Sources	

Emission Source	Action Category	Solution
Scope 1	Direct Action	Electrification of Passenger Fleet
Scope 1	Direct Action	Decarbonization of Yard Equipment
Scope 1	Direct Action	Electrification or Hybridization Retrofit of Ship-to-shore Gantry Cranes
Scope 1 and 2	Direct Action	Employee Training Programs
Scope 2	Direct Action	Energy Conservation Measures (including lighting upgrades)
Scope 2	Direct Action	Submetering
Scope 2	Direct Action	Installation of 100-kilowatt Solar Panels
Scope 2	Collaborative Action	Partner/Collaborate with GPA (includes potential onsite renewable energy generation and power purchase agreements)
Scope 1 and 2	Nature-based Solutions	Reforestation of Mangroves and Coastal Ecosystems
Scope 1 and 2	Nature-based Solutions	Support Community-based strategies in Surrounding Region of Piti



4.4 Implementation Roadmap

It is important to note that while many of these solutions are critical for reducing scope 1 and 2 emissions, their priority for implementation may change once a full scope 3 GHG inventory has been conducted. Furthermore, as time progresses, the availability of technology may influence the implementation plan for some of these solutions. These solutions should be understood as the first steps and key milestones, with the advance towards Net Zero maintaining a dynamic approach. Reducing emissions is critical, but the PAG must be pragmatic in approach and implementation.

Figure 27 provides a roadmap for implementing these identified solutions. Once the scope 3 inventory has been conducted, this roadmap will be updated to provide additional steps for reduction.

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Figure 27. Zero Emissions Implementation Roadmap: Short and Long-term Solutions






4.5 Summary and Next Steps

As part of the G3 initiative, the PAG continually strives to incorporate the UN SDGs into their ways of working. These goals are based on decades of work by countries across the globe to create a fairer, safer, and more prosperous world for everyone. At the heart of our Zero Emissions Strategy are seven UN SDGs. These goals underpin our approach to the Zero Emission Strategy, which is why our Zero Emission logo reflects these goals and why our solutions consider benefits beyond carbon reduction (Figure 28).

Figure 28. PAG's Zero Emissions Strategy



The Zero Emission Strategy establishes the first critical steps for the PAG's journey in reducing emissions and addressing climate change. To be successful in this journey, the PAG will need to continue to evolve and adapt their efforts in line with new technologies and best practices. Table 8 summarizes the goals, objectives, and next steps to move toward the goal of Net Zero by 2050, and ultimately Zero Emissions.

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Table 8. Net Zero Goals, Objectives, and Next Steps

Goal	Action Type	Objectives	Next Steps
Reduce Scope 1 GHG Emissions	Direct Action	Reduce emissions associated with PAGs passenger fleet.	Identify electric vehicle transition options to decarbonize for passenger fleet. Assess the need for charging infrastructure across Port property.
	Direct Action	Reduce emissions from yard equipment and stationary assets (including generators and ship-to-shore gantry cranes).	Explore opportunities for electric power or hydrogen fuel for yard equipment and stationary assets. Assess retrofit, operational or upgrade options for current assets to improve fuel efficiency.
Reduce Scope 2 GHG Emissions	Direct Action	Measure energy consumption of buildings and assets.	Install submetering at identified locations across Port property and compare results against current GHG baseline.
	Direct Action	Reduce energy consumption of buildings.	Implement the identified energy conservation measures, such as upgrading lighting and optimizing air- conditioning operations.
	Direct Action	Reduce energy consumption of lighting and assets.	Implement energy conservation measures, including lighting upgrades.
	Collaborative Action	Increase renewable energy availability for Port operations.	Engage with GPA to identify opportunities to increase renewable energy availability at the Port. Consider ways the Port can support GPA's goals for 50% renewable energy by 2030, and determine how 100% of the PAG's energy can be zero GHG by 2050.
Offset Residual GHG Emissions	Nature-based Solutions	Enhance and restore mangroves and forested land to encourage carbon sequestration.	Collaborate with local scientists and specialists to identify enhancement areas. Secure funding and research opportunities.
Reduce Scope 3 GHG Emissions	Direct Action	Finalize GHG inventory baseline for scope 1, 2, and 3 emissions.	Quantify scope 3 emissions and identify reduction opportunities. Integrate solutions with scope 1 and 2 reductions.
Improve Climate Resiliency of Ports Assets and Operations	Direct Action	Use findings from climate change quantification to inform strategy and planning for the Port.	Conduct a full vulnerability assessment of assets, infrastructure, and operations to understand mitigation solutions available to the Port based on exposure to current conditions and future projected climate change.



5.0 References

American Association of Port Authorities (AAPA). 1998. *Environmental Management Handbook, Second Edition*. Accessed September 1, 2024. <u>https://www.aapa-ports.org/empowering/content.aspx?</u> ItemNumber=989.

The Climate Registry. 2024. "Protocols." Registries and Resources. Accessed October 30, 2024. <u>https://theclimateregistry.org/registries-resources/protocols/</u>.

Climate Change Resilience Commission and the University of Guam Center for Island Sustainability and Sea Grant (CCRC and UOG CIS&SG). 2024. *Guam's Priority Climate Action Plan.* <u>https://www.epa.gov/system/files/documents/2024-04/guam-pcap.pdf</u>.

Eastman, Scott, and Nicole Kaeding. 2019. Opportunity Zones: What We Know and What We Don't. January 8. Accessed September 19, 2024. <u>https://taxfoundation.org/research/all/federal/opportunity-zones-what-we-know-and-what-we-dont</u>.

Federal Register. 2021. Executive Order on Catalyzing Clean energy Industries and Jobs Through Federal Sustainability. Executive Order 14057. Vol. 86, No. 236.

Guam Business Magazine. 2023. Port Authority, Shipping Companies Look to the Future. July 19. Accessed September 25, 2024. <u>https://www.guambusinessmagazine.com/port-authority-shipping-companies-look-to-the-future</u>.

Government of Guam. 2013. *Guam Zero Waste Plan.* June. Accessed September 1, 2024. <u>https://epa.guam.gov/wp-content/uploads/2023/09/Guam-Zero-Waste-Plan-Vol-1.pdf</u>.

Greenhouse Gas Protocol. 2015 A Corporate Accounting and Reporting Standard. Revised Edition. https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf.

Guam Environmental Protection Agency (EPA). 2022. Waste Tire Management Report. February.

Guam Environmental Protection Agency (EPA). 2023. *Zero Waste Guam*. Guam Zero Waste Master Plan. <u>https://epa.guam.gov/wp-content/uploads/2023/09/GUAM_ZWMP2023.pdf</u>.

Guam Environmental Protection Agency (EPA). 2024. Phone conversation between Sabrina Sablan, Special Projects Coordinator and Julie Carver, Congruent. September 10

Hayes, Adam. 2020. Enterprise Zone: Overview, Examples, Pros and Cons. Updated September 28, 2020. Accessed September 19, 2024. <u>https://www.investopedia.com/terms/e/enterprise-zone.asp</u>.

Inter-American Committee on Ports (CIP). 2020. *Guide to Environmental Certification and Sustainability Reporting for Ports of the Americas*. Accessed September 1, 2024. <u>https://portalcip.org/wp-content/uploads/2021/03/Green-Port-Guide-Translation-CIP01177E05-JD-PBM-MAR.pdf</u>.

Intergovernmental Panel on Climate Change (IPCC). 2014. Fifth Assessment Report. <u>https://www.ipcc.ch/assessment-report/ar5/</u>.

International Association of Ports and Harbors (IAPH). 2024. IAPH World Ports Sustainability Program. Accessed September 1, 2024. <u>https://www.iaphworldports.org/iaph-wpsp</u>.

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International Organization for Standardization (ISO). 2015. *Environmental Management Systems, Edition* 3. <u>https://www.iso.org/standard/60857.html</u>.

International Organization for Standardization (ISO). 2024. The benefits of implementing an environmental management system for your business. Accessed September 1, 2024. <u>https://www.iso.org/climate-change/environmental-management-system-ems</u>.

New York City Economic Development Corporation (NYCEDC). 2023. *Clean and Circular: Design and Construction Guidelines*. <u>https://edc.nyc/sites/default/files/2024-03/NYCEDC-Circular-Construction-Guidelines-03-07-2024.pdf</u>

Port Authority of Guam (PAG). 2023. 2023 Master Plan. Final Report. March 31. www.portofguam.com/sites/default/files/2023_pag_master_plan_report_final2023-03-31.pdf.

Port Authority of Guam (PAG). 2024. 2024 Look Ahead. https://www.portofguam.com/sites/default/files/layout - a look ahead.pdf.

The Guam Daily Post. 2021. Thousands of junk cars, white goods collected, but \$650K may go unspent. Accessed September 4, 2024. <u>https://www.postguam.com/news/local/thousands-of-junk-cars-white-goods-collected-but-650k-may-go-unspent/article_0add6a06-2b39-11ec-8494-0b2d1f1e778d.html</u>.

Twenty First Guam Legislature. 1991. Guam Public Law 21-22. May.

U.S. Environmental Protection Agency (USEPA). 2024. GHG Emission Factors Hub. Accessed October 30, 2024. <u>https://www.epa.gov/climateleadership/ghg-emission-factors-hub</u>.

United Nations (UN). 2023. Sustainable Development Goals: Guidelines for the Use of the SDG Logo Including the Colour Wheel, and 17 Icons. September. <u>https://www.un.org/sustainabledevelopment/wp-content/uploads/2023/09/E_SDG_Guidelines_Sep20238.pdf</u>.

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6.0 Appendices

- A. Port of Guam Resolution No. 2024-02 Adopting the "2024 Look Ahead" Plan
- B. Port of Guam Resolution No. 2022-15 Explore Membership in the International Association Of Ports And Harbors
- C. Guam Public Law 28-92 Recycling Enterprise Zone
- D. Site Screening Framework Development
- E. NOAA Storm Surge Maps
- F. Truck Turn Evaluations
- G. Permit Requirements
- H. Recommended Additions to the PAG Standard Lease Agreement
- I. IFB options and partnership opportunities
- J. Updates to the PAG Board Recycling Policy
- K. Implementation Roadmap
- L. Greenhouse Gas Inventory



Appendix A Port of Guam Resolution No. 2024-02 Adopting the "2024 Look Ahead" Plan

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BOARD OF DIRECTORS Dorothy P. Harris, Chairperson Conchita S.N. Taitano, Vice Chairperson Fe R. Valencia-Ovalles, Board Secretary

Resolution No. 2024-02

RELATIVE TO ADOPTING THE "2024 LOOK AHEAD" PLAN: A RESOLUTION FOR SUSTAINABILITY, SECURITY, AND STRATEGIC GROWTH AT THE PORT AUTHORITY OF GUAM.

BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE PORT AUTHORITY OF GUAM:

WHEREAS, the Port Authority of Guam is integral to the economic and national security interests of Guam and the broader Indo-Pacific region, necessitating a forward-looking and strategic approach to address current and future challenges; and

WHEREAS, the "2024 Look Ahead" document underscores the development of a Medical Complex, Integrated Healthcare System for Guam and the region, as part of Governor Lou Leon Guerrero and Lt. Governor Josh Tenorio's initiative to enhance healthcare infrastructure in line with the One Guam approach, emphasizing the importance of modernizing the public hospital's infrastructure, related medical services, and incorporating a veterans' facility as a priority concern; and

WHEREAS, the ongoing military buildup and the imperative for substantial federal investment highlight the need for a strategic framework that aligns with the One Guam approach, focusing on national security, skilled labor development, and robust civilian infrastructure as core priorities; and

WHEREAS, the comprehensive strategic framework prioritizes the enhancement of port infrastructure, operational efficiency, and the professional development of all Port employees; and

WHEREAS, environmental sustainability is a cornerstone of the "2024 Look Ahead" plan, emphasizing initiatives such as the Port Sustainability Plan to minimize the ecological footprint, manage waste effectively, and pursue funding opportunities for sustainable operations, in alignment with the overarching goals of reducing carbon emissions and enhancing energy efficiency; and

WHEREAS, key initiatives outlined in the Port Authority's 2023 Master Plan, including the replacement of Ship-to-Shore (STS) Cranes, Fuel Piers, and Wharf, alongside significant IT improvements, are critical for supporting the military buildup and ensuring the Port's operational excellence; and

WHEREAS, the empowerment and well-being of all Port employees are central to the Port's operational efficiency, advocating for professional development, safety, and fair labor practices in alignment with the Collective Bargaining Agreement; and

WHEREAS, financial stability, accountability, and transparency are underscored as vital principles guiding the Port's operations, ensuring integrity, trust, and responsible governance; and

WHEREAS, ongoing collaboration with Customs for cargo inspection and the monitoring of boat operators at Marinas is essential for maintaining high levels of safety and efficiency in cargo processing, thereby enhancing security and facilitating trade; and

WHEREAS, the focus on customer service digitization and community engagement through the Port Community Portal aims to strengthen relationships with port users and stakeholders, improving service delivery and promoting operational transparency; now therefore, be it

RESOLVED, that the Board of Directors of the Port Authority of Guam hereby adopts the "2024 Look Ahead" plan as the guiding framework for the Authority's strategic direction, operational priorities, and key initiatives for 2024 and beyond, reflecting a comprehensive commitment to national security, infrastructure enhancement, environmental sustainability, healthcare improvement, and the professional growth of its workforce; and be it further

RESOLVED, that this Board hereby memorializes its unwavering commitment to the principles of sustainability, resilience, and environmental stewardship, recognizing these as foundational pillars in the "2024 Look Ahead" plan. We commit to implementing sustainable practices, pursuing green initiatives, and engaging in actions that protect and enhance our environment for future generations. This commitment is reflective of our dedication to the well-being of our community, the preservation of our natural resources, and the promotion of a sustainable economic future for the Port of Guam and its surrounding region; and be it further

RESOLVED, that the Board directs the General Manager and all relevant departments and personnel to diligently implement the strategies, initiatives, and projects outlined in the "2024 Look Ahead" plan, ensuring that the Port Authority of Guam continues to be a pivotal contributor to our island's prosperity, security, and sustainability; and be it further

RESOLVED, that the Chairperson certify, and the Secretary attest to, the adoption hereof, and that copies of the same be transmitted to Governor Lou Leon Guerrero; Lt. Governor Joshua Tenorio; Speaker Therese Terlaje; Port's Legislative Oversight Chairperson Senator Amanda Shelton; and the 37th Guam Legislature.

PASSED AND ADOPTED UNANIMOUSLY BY THE BOARD OF DIRECTORS THIS 25th DAY OF APRIL, 2024. FE R. VALENCIA-OVALLES DOROTHY P. HARRIS **CHAIRPERSON, BOARD OF DIRECTOR** SECRETARY, BOARD OF DIRECTORS PORT AUTHORITY OF GUAM PORT AUTHORITY OF GUAM



A Look Ahead at 2024





The Port Authority of Guam's 2024 Look Ahead is our guiding roadmap. While we have kept pace with current demands, we continue to face significant challenges, particularly due to the ongoing military buildup that requires substantial federal investment. This document will be our essential tool in maintaining a focused approach to overcoming challenges.

THE STRATEGIC FRAMEWORK

with Aligning Governor Lourdes A. Leon Guerrero and Lt. Governor Joshua F. Tenorio's Strategic Framework presented in a One Guam approach to the military buildup that requires substantial federal investment, this framework prioritizes Guam's kev concerns with a focus on National Security.

KEY ELEMENTS



- The Department of Defense (DOD) commits to a strategic One Guam framework for a mutually beneficial outcome from the buildup.
- Advocate for increased defense spending outside the military fence to support civilian infrastructure, aligning with military objectives and benefiting both Guam and the Indo-Pacific region.
- Prioritize healthcare, infrastructure, and skilled labor, in line with national security interests and the military's Indo-Pacific Strategy and Pacific Deterrence Initiatives.
- Implement a One Guam approach to the Guam Buildup, including comprehensive healthcare, streamlined veteran's services, a skilled workforce (with H2B visa waiver program), robust infrastructure, defense access roads, and military spending outside the fence to enhance national security.

Port enhancements are among the Governor and Lt. Governor's following priority concerns (see Efficient Transportation of Goods and Services):

- Medical Complex, Integrated Healthcare System for Guam and Region: Ensuring healthcare facilities in Guam are equipped to provide excellent care, including modernizing the public hospital's infrastructure and related medical services and incorporating a veterans' facility.
- Efficient Transportation of Goods and Services: Advocating for federal support to enhance the efficiency and reliability of supply chain transportation and logistics networks in Guam, vital for a thriving economy.
- Road Infrastructure: Securing funding and technical expertise to improve road safety and connectivity, essential for residents' daily lives and strategic operations in Guam.
- Utilities, Telecommunications, and Cybersecurity: Focusing on reliable access to essential services and working to strengthen telecommunications and cybersecurity infrastructure, with an emphasis on facilitating necessary federal assistance.

Port's 2023 Master Plan Priority Initiatives

- **STS Crane Replacement**: The three operational Ship-to-Shore (STS) Gantry Cranes have reached the end of their 40-year lifespan (with a mid-life refit) and require immediate replacement. This is crucial to support the military buildup and ensure continued commercial and military usage.
- Fuel Pier Replacement: The Port currently operates two vital fuel piers, Golf Pier and F1 Pier, which serve as the primary fuel source for Guam residents, Guam Power Authority (GPA), and a secondary source for the military. Due to their critical condition, these facilities need urgent replacement to prevent costly and disruptive service interruptions.



Hotel Wharf and Access Roadway Rehabilitation and

Upgrade: This project involves the reconstruction and expansion of a wharf constructed in 1948, including a new sheet pile bulkhead retaining wall, along with upgrades to the existing access roadway leading to the wharf. The project also encompasses the demolition of surface facilities and the construction of additional structural components.



- Wharf Replacement: The Port's operations at Berths F2 through F6 handle containers, general cargo, and bulk cargo. These berths, dating back to the 1960s, have exceeded their useful life, making them susceptible to earthquake damage. Continuing to operate them necessitates costly service life extensions. To ensure future resiliency, it is imperative to harden these facilities by replacing deteriorated structural elements and upgrading the overall structures.
- Area A Fuel Storage Facility Rehabilitation/Upgrade: This initiative involves the replacement
 of above-ground fuel storage tanks and related infrastructure. It aims to create an ideal
 secondary/alternate fuel depot to support the anticipated fuel capacity requirements of
 DOD in the Indo-Pacific Theater.
- IT Improvements: This includes upgrading the Terminal Operating System (TOS), developing IT Infrastructure, and creating Cyber Security roadmaps to enhance the Port's efficiency and security. These improvements will facilitate better collaboration with DOD and port users.
- Port Buildings Demolition & Replacement: The plan involves demolishing buildings from the 1960s that have exceeded their useful life. Replacement structures will be developed to accommodate current and future functions.

Governor Lou Leon Guerrero and Lt. Governor Josh Tenorio have emphasized the importance of upgrading the Port for national security reasons. These upgrades align with

the goals in their strategic framework and are in step with the U.S. Indo-Pacific Strategy and Pacific Deterrence Initiatives. This plan highlights Guam's vital role in the Indo-Pacific region

and the need for updated infrastructure to support both our commercial and defense activities. These improvements, including the Port upgrades and projects like the proposed integrated medical complex in Guam, are all being planned with national security as a key consideration.



Given the Port's crucial role, it is imperative that federal spending aligns with and supports the key issues identified in the Governor and Lt. Governor's Strategic Framework presented in a One Guam approach to the military buildup.

2024 ROADMAP

Port Strong: Empowering ALL Port Employees with Succession Planning for Success, Resilience, and Operational Efficiency

Our top priority is the well-being, professional development,

and operational efficiency of every Port employee, whether they are working on the dockside or in administrative roles. We are committed to fostering equal opportunities for skill development and career growth, with a focus on promoting from within whenever possible. Ensuring the safety of our



team is paramount. To achieve this, we maintain a proactive stance, regularly updating our safety protocols, keeping staff certifications up to date, and continuously pursuing training and development opportunities, including in areas of emergency preparedness and response.



As part of our ongoing efforts to maintain operational efficiency, we remain committed to optimizing personnel scheduling in strict accordance with the Collective Bargaining Agreement, the Port's Personnel Rules and Regulations, and all applicable laws. This commitment includes ensuring equitable scheduling for our employees, balancing both regular time off and necessary overtime work. Our focus is on providing fair opportunities for everyone to have days off and to earn overtime, ensuring a just and balanced work environment for all. Additionally, we are focused on implementing effective succession planning at all levels within the organization, to ensure a resilient and sustainable future for the Port.



Sustained Financial Stability and Accountability

Our commitment to longterm success and resilience is realized through meticulous strategic decision-making, characterizedbycollaboration,

consensus-building, and a bottom-up approach whenever possible. We continuously seek ways to secure the financial stability of the Port. This commitment extends to maintaining a strong dedication to transparency and accountability in all operational and financial transactions.

By seamlessly integrating transparent practices and accountability into our strategic decision-



making and financial management, we uphold the highest standards of integrity and foster trust with stakeholders. This trust forms the foundation of our sustainable growth and the support we receive from the community. It also plays a key role in maintaining our low-risk auditee status, which we have proudly earned since 2019.

As we move forward, our unwavering commitment to strategic decision-making, financial stability, transparency, and accountability remains steadfast, ensuring a positive future for both the Port as well as the local and regional communities we serve.



Continued Partnership in Upholding Customs Cargo Inspection at the Port of Guam and Monitoring of Boat Operators at Marinas

We remain dedicated to our ongoing collaboration with Customs in supporting their essential mandate for cargo inspection at the Port Authority of Guam and monitoring of all boat operators at the Marinas. This partnership ensures the thorough and efficient inspection of cargo, fully compliant with all relevant

regulations and security protocols.

By working together seamlessly, we facilitate the smooth flow of goods while upholding the highest standards of safety and security. This collaborative effort not only benefits the Port by ensuring timely cargo processing but also plays a crucial role in preventing the entry of illegal drugs, invasive species, and other contraband into our borders. This commitment significantly contributes to the overall well-being and prosperity of Guam.

Our continued dedication to this partnership underscores our shared responsibility for the safety and security of our island communities and the efficient operation of trade in our region. Together, we wholeheartedly support Customs in their vital role in safeguarding our island and its interests.





Port Users Group, Customer Service, Digitization, and Community Engagement: Enhancing Relationships and Service through the Port Community Portal

Our commitment goes beyond infrastructure upgrades; we prioritize addressing the concerns of the Port Users Group whenever practicable, pride ourselves in excellence in customer service, and community engagement. We strive to foster strong relationships with shipping companies, its shipping



agents, the Port Users Group, and various stakeholders, recognizing their pivotal role in keeping what it takes to keeping the supply chain moving in and out of Guam and our region.

To further strengthen these relationships and enhance service delivery, we are embarking on a digitization journey that includes the development of a Port Community Portal. This digital platform will serve as a central hub for communication and collaboration, providing our partners with real-time access to information, data, and resources related to Port activities.



Our focus on improving customer service ensures that we efficiently and effectively meet the needs of our partners through digital channels and streamlined processes. This emphasis on building strong partnerships, coupled with the power of digitization, contributes to the sustainable growth of the Port, fostering a positive impact on the local and regional economy. Furthermore, our dedication to community engagement underscores our commitment as responsible corporate citizens. We work collaboratively with our neighbors and stakeholders through the Port Community Portal to address concerns, promote transparency, and ensure that our operations benefit both our local and regional communities.





Outlook on 2024 Federal Spending for Port Infrastructure and Container Yard Equipment

The Port's 2024 budget outlines several key federal grant projects and yard equipment purchases, totaling \$40.2 million in the Capital Improvement Program (CIP). These investments include:

- 1. F1 to Golf Pier Fuel Connectivity
- 2. DERA Tractor Replacement
- 3. MARAD AMHP Acquisition of Specialized Container Yard Equipment
- 4. PSGP Acquisition of Transportation Worker Identification Credentialing (TWIC) System
- 5. PSGP Acquisition of Vessel Tracking/Radar Intrusion System
- 6. PSGP Acquisition of Two Unmanned Aerial Vehicles
- 7. Wharves Service Life Extension from F1 to F6
- 8. Welding Shop Repairs and Upgrades

These strategic allocations aim to enhance port infrastructure and yard capabilities while ensuring compliance with the latest security and operational standards.











Embracing Sustainability: Pursuing USEPA Inflation Reduction ACT Funding and Other Grant Funding Opportunities to Transform Port Operations

The Port Sustainability Plan, slated to begin in the first quarter of 2024, places a strong emphasis on environmental sustainability and responsibility as its core objectives. It clearly solidifies the Leon Guerrero/Tenorio's, in conjunction with the First Gentlemen's Zero Waste Task Force, unwavering commitment

to minimizing its ecological footprint, mitigating environmental impacts, and championing responsible practices throughout its operations. This comprehensive plan encompasses a wide array of strategies designed to enhance energy efficiency, reduce emissions, manage waste effectively, and preserve natural resources.

Through the implementation of these environmentally sustainable initiatives, the Port not only ensures the protection of the environment, but also actively contributes to the well-being of the community while working towards a more sustainable future for all stakeholders.



To further these goals, the Port has successfully secured a grant from OLCC, enabling the commissioning of a Port Sustainability and Resiliency Study. This collaborative effort, spearheaded by the Port's owner agent WSP, together with its subconsultant, Jacobs Engineering Group Inc., encompasses various critical analyses. These analyses are aimed at crafting a comprehensive plan for the Port Authority of Guam (PAG) that seamlessly aligns with Guam's broader sustainability initiatives.

The study encompasses several pivotal tasks, including:

 Zero Emissions: This task entails a thorough review of Guam's Zero Emissions Strategy, the identification of the Port's current emission reduction initiatives, and



the quantification of future climate change requirements that may impact Port improvements. Additionally, it establishes a baseline estimate of the Port's greenhouse gas emissions.

- Zero Waste: This aspect centers on a comprehensive review of Guam's Zero Waste Master Plan. It identifies Port-related initiatives, such as Recycling Enterprise Zones, and explores potential waste streams that could be effectively managed at the Port. The task also involves research into best practices for waste management and collaborative brainstorming with PAG experts to devise zero waste initiatives.
- Property Identification: The identification of properties owned by PAG that are suitable for hosting Zero Waste Facilities, along with the identification of additional property requirements for future waste management initiatives.
- Strategy Development: This task focuses on formulating a strategy for implementing Zero Waste improvements under the leadership of PAG. It includes the development of a conceptual framework for a Recycling Enterprise Zone, drawing from the success of similar initiatives elsewhere. The strategy encompasses various elements, such as securing and developing properties for a Recycling Enterprise Zone, creating a commercial lease agreement, piloting zero-waste initiatives, and exploring the feasibility of collecting advanced disposal fees for targeted priority products.

Upon the completion of both the Zero Emissions and Zero Waste plans, these studies will be seamlessly integrated into a single, comprehensive Port Sustainability and Resiliency Plan Report. This significant undertaking underscores the Port's steadfast commitment to reducing carbon emissions, embracing sustainable practices, and actively participating in the preservation of Guam's environment and marine ecosystem.

Moreover, by undertaking these studies and engaging in sustainability initiatives, the Port not only showcases its dedication to environmental stewardship, but also enhances its qualifications for funding from the USEPA Inflation Reduction Act (IRA) and other grant programs. These activities are crucial in accessing funds that will modernize Port operations and align them with the goals of the USEPA IRA grant program.



OUR COMMITMENT

As we look towards 2024, the Port Authority of Guam stands at a pivotal juncture, poised to embrace the challenges and opportunities that lie ahead. Our comprehensive strategic plan, in alignment with the vision of Governor Lou Leon Guerrero and Lt. Governor Josh Tenorio, is designed to enhance our capabilities and address key concerns in national security, infrastructure, healthcare, and environmental sustainability.

We acknowledge the substantial efforts and dedication of every team member, whose resilience and commitment have been instrumental in overcoming past challenges and setting the stage for future success. Moving forward, we remain focused on maintaining operational efficiency, fostering professional development, and ensuring the safety and wellbeing of all employees.



RORY J. RESPICIO General Manager

Our unwavering commitment to collaboration, financial stability, accountability, and transparency will continue to guide our actions. This dedication is crucial in ensuring that the Port Authority of Guam continues to fulfill and exceed the expectations of our local and regional communities, employees, port users, and all stakeholders.

Si Yu'os Ma'åse for your unwavering support and dedication to our shared goals and vision. Together, we are Port Strong ready to navigate the future with confidence and determination.



LOCAL



ERIKKA LLORENTE/PDN

Acting Gov. Joshua Tenorio, third from left, joins senators and other dignitaries in recognizing Port Authority of Guam retirees, including Frankie R.J. Cruz, fourth from left, who was a port transportation supervisor for 35 years, during the celebration of the 48th anniversary of the Jose D. Leon Guerrero Commercial Port of Guam on Oct. 16. 2023.

Port celebrates 48 years







ies and guests during the "Stand Ye Guamanians" anthem at the celebration of the

48th anniversary of the Jose D. Leon Guerrero Commercial Port of Guam on Oct. 16, 2023.

ERIKKA LLORENTE/PDN A parade of trucks helps kick off the celebration of the 48th anniversary of the Port of Guam on Oct. 16, 2023.

Pacific Daily News

A crowd gathered to join the management and staff of the Jose D. Leon Guerrero Commercial Port of Guam in marking the institution's 48th anniversary on Oct. 16 at the port.

A parade of trucks and a Port Week opening ceremony kicked off the celebration organized by the Port Authority of Guam.

The port also put on display some of its new equipment.

The port was established on Oct. 31, 1975 as a public corporation and autonomous instrumentality, naming it the Port Authority of Guam. On its 48th year, it has a total of 382 employees.



ERIKKA LLORENTE/PDN The Jose D. Leon Guerrero Commercial Port of Guam front gate on Oct. 16, 2023.



A parade of trucks helps kick off the celebration of the 48th anniversary of the Port of Guam on Oct. 16, 2023.





GET IN TOUCH WITH US!



671-477-5931

1026 Cabras Highway, Suite 201 Piti, Guam 96915



news@portofguam.com



www.portofguam.com



Appendix B Port of Guam Resolution No. 2022-15 Explore Membership in the International Association Of Ports And Harbors

PORT AUTHORITY OF GUAM | Sustainability and Resiliency Plan

BOARD OF DIRECTORS Francisco G. Santos, Chairman Dorothy P. Harris, Vice Chairperson Dr. Judith P. Guthertz, Board Secretary Conchita S.N. Taitano, Member



Resolution No. 2022-15

RELATIVE TO AUTHORIZING THE GENERAL MANAGER TO EXPLORE AND PURSUE THE BENEFITS OF BECOMING A MEMBER OF THE INTERNATIONAL ASSOCIATION OF PORTS AND HARBORS (IPAH) AND REPORT FINDINGS TO THE BOARD OF DIRECTORS

BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE PORT AUTHORITY OF GUAM:

WHEREAS, from an economic, social, and environmental point of view, sustainable port development is a critical issue for Ports worldwide and has a direct impact on international and domestic freight transportation, as well as local and national economic and social development and environmental protection; and

WHEREAS, since Ports emit not only carbon dioxide but also various air pollutants through cargo handling equipment, related facilities, and berthing vessels, there is a need to introduce and diffuse environmental friendly policies for the Port; and

WHEREAS, such policies should focus on fostering progress towards developing quality, reliable, sustainable, and resilient infrastructure, upgrading infrastructure and retrofitting industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmental sound technology and industrial processes; and

WHEREAS, through the direction of the Board of Directors, Port management has been working closely with the Port's Owner Agent Engineer consultants and has identified sustainable port projects to be pursued, such as,

- **Digitalization:** implement digital technologies on data collaboration with our stakeholders, improve process and documentation flow and enhance port call optimization;
- Infrastructure: address major infrastructural and service challenges in Port and optimize the use of the existing port capacity;
- Health Safety & Security: promote the health and safety culture of employees and Port visitors as a response to the COVID pandemic; innovation in security controls, inspections of cargoes and passengers, working in automated environments and implementation of cybersecurity measures; and
- Environmental Care: addressing air pollution, dust, noise, and water pollution, re-use and recycling initiatives; protecting freshwater resources; targeted marine litter initiatives; addressing soil and sediment contamination and protecting habitats and enhancing biodiversity; and

WHEREAS, as part of the Port's sustainable projects, Port management is developing a study on the benefits of installing solar panels on Port buildings, as well as reducing the Port's reliance on the island's power grids by utilizing its generators to assist Guam Power Authority in avoiding rolling power black-outs; and

WHEREAS, the International Association of Ports and Harbors (IAPH), with the membership of over 160 ports and 120 port-related businesses in 87 countries, in May 2017 developed a World Ports Sustainability Program (WPSP) whose primary objective is to enhance and coordinate future sustainability efforts of ports worldwide and foster international cooperation with partners in the supply chain; and

RESOLVED, the Board of Directors authorizes the General Manager to explore and pursue the benefits of becoming a member of IAPH and provide such findings to the Board of Directors; and be it further

RESOLVED, the Chairman certify to, and the Secretary attest to, the adoption hereof and that a copy of this resolution be transmitted to the Guam Legislature.

PASSED AND ADOPTED UNANIMOUSLY BY THE BOARD OF DIRECTORS THIS <u>14th</u> DAY OF <u>JULY</u>, 2022.

FRANCISCO G. SANTOS CHAIRMAN, BOARD OF DIRECTORS PORT AUTHORITY OF GUAM DR. JUDITH P. GUTHERTZ SECRETARY, BOARD OF DIRECTORS PORT AUTHORITY OF GUAM



Appendix C Guam Public Law 28-92 Recycling Enterprise Zone

PORT AUTHORITY OF GUAM | Sustainability and Resiliency Plan



Office of the Governor of Guam

P.O. Box 2950 Hagåtña, Guam 96932 TEL: (671) 472-8931 • FAX: (671) 477-4826 • EMAIL: governor@mail.gov.gu

Felix Perez Camacho Governor

Kaleo Scott Moylan Lieutenant Governor

13 DEC 2005

The Honorable Mark Forbes Speaker Mina' Bente Ocho Na Liheslaturan Guåhan 155 Hessler Street Hagåtña, Guam 96910

Dear Mr. Speaker:

Transmitted herewith is Bill No. 139 (EC), "AN ACT TO CREATE A RECYCLING ENTERPRISE ZONE AT THE JOSE D. LEON GUERRERO COMMERCIAL PORT" which I signed into law on December 12, 2005, as **Public Law 28-92**.

Sinseru yan Magåhet,

FELIX P. CAMACHO I Maga'låhen Guåhan Governor of Guam

Attachment: copy attached of signed bill

cc: The Honorable Eddie Baza Calvo Senator and Legislative Secretary

	Senator Ea SECRETARY O ACKNOWLE	<i>Iward J.B. Calvo</i> F THE LEGISLATURE
	Rev'd by: Mile	nt Name & Initial
489	Time: 11.50	Date: 12-5-05

Office o	f the Speaker
MAI	RK FORBES
Date: <u>/</u>	2/14/05
Time:	10:20.am
Rec'd by:	gania
Print Name	: <u>//</u>
28	-05-0487



CERTIFICATION OF PASSAGE OF AN ACT TO I MAGA'LAHEN GUÅHAN

This is to certify that Bill No. 139 (EC), "AN ACT TO CREATE A RECYCLING ENTERPRISE ZONE AT THE JOSE D. LEON GUERRERO COMMERCIAL PORT" was on the 30th day of November, 2005, duly and regularly passed.

Mark Forbes /Speaker

ssistant Staff Officer Maga'lahi's Office

Attested:

Edward J.B. Calvo Senator and Secretary of the Legislature

This Act was received by I Maga'lahen Guåhan this _____ day of 2005, at _______ o'clock __.M.

APPRQVED:

FELIX P. CAMACHO I Maga'lahen Guåhan

12 DEC 2105 Date:

Public Law No. 28-92



· · · ·

Bill No. 139 (EC) As amended.

. to amended.

Introduced by:

R. J. Respicio B. J.F. Cruz <u>F. B. Aguon, Jr.</u> J. M.S. Brown Edward J.B. Calvo Mike Cruz Mark Forbes L. F. Kasperbauer R. Klitzkie L. A. Leon Guerrero J. A. Lujan A. B. Palacios Ray Tenorio A. R. Unpingco J. T. Won Pat

AN ACT TO CREATE A RECYCLING ENTERPRISE ZONE AT THE JOSE D. LEON GUERRERO COMMERCIAL PORT.

1

BE IT ENACTED BY THE PEOPLE OF GUAM:

Section 1. Legislative Findings and Intent. I Mina'Bente Ocho Na 2 Liheslaturan Guåhan finds that it is the established policy of the government of 3 Guam to promote and support recycling as an essential means to protect the 4 environment and to effectively manage the solid waste generated by the community. 5 This policy is clearly reflected in the Integrated Solid Waste Management Plan as 6 adopted in Public Law No. 25-175. Numerous other public laws also support 7 recycling through policy initiatives and incentives, including Public Law No. 25-127, 8 which provided for tax incentives for recycling operations inclusive of the 9

1 transshipment of recyclable materials.

I Liheslatura finds that, with respect to Section 7.10.4 of the Integrated Solid
Waste Management Plan, the setting aside of land at the Jose D. Leon Guerrero
Commercial Port for a center to recycle automobiles, one of the major environmental
concerns for our community, is a key component.

6 *I Liheslatura* finds that the absence of effective recycling and disposal 7 operations has resulted in a proliferation of junk automobiles throughout the island, in 8 particular, in areas over the Northern Aquifer, thus creating a serious threat to the 9 aquifer that is the island's major source for drinking water.

10 It is therefore the intent of *I Liheslatura* to implement Section 7.10.4 of the 11 Integrated Solid Waste Management Plan and establish a Recycling Enterprise Zone 12 at the Jose D. Leon Guerrero Commercial Port in order to foster, in concert with 13 existing incentives established by statute, the establishment of private sector operated 14 recycling enterprises for automobiles, trucks and tires.

15 Section 2. Definitions. For purposes of this Act, and except as otherwise 16 provided, the following words and phrases, together with all of the common 17 derivatives thereof, shall have the meaning ascribed to them as follows:

18

(a) 'JLGCP' shall mean the Jose D. Leon Guerrero Commercial Port.

(b) 'Recycle' or 'Recycling' means the method by which recovered
resources are converted for use as raw material or feedstock to make new
products, as defined in §51102 (35) of Chapter 51, Title 10 of the Guam Code
Annotated.

(c) 'Recycling company' means any business licensed by the
 Department of Revenue and Taxation, and has been issued a permit as required
 in §51104 of Chapter 51, Title 10 of the Guam Code Annotated by the Guam

2

Environmental Protection Agency ('GEPA') to conduct business on Guam and 1 2 that specifically commits eighty percent (80%) of its operations to recycling. 3 (d) 'Transshipment' shall mean to transfer for further transportation from one (1) ship or conveyance to another. 4 5 . 'Recyclable materials' means materials that still have useful (e) physical or chemical properties after serving a specific purpose for the same or 6 other purpose. Recyclable materials are as follows: 7 8 batteries (i.e., lead-acid, portable computer batteries, nickel-(1)9 cadmium, sealed types for power backup); 10 automobiles, buses, and trucks or any form of motorized (2)11 vehicle; 12 (3)tires (passenger/commercial); 13 enameled white goods; (4) 14 home appliances (other small appliances that are not (5)15 considered enameled white goods); 16 (6) glass and plastic bottles: 17 foam padding; (7)18 (8) lead: 19 (9) metals (ferrous/non-ferrous); 20 organic material (i.e., tree trimmings, palm fronds, grass, (10)21 food waste, soiled cardboard); 22 (11)paper products; 23 (12)wood pallets and scrap wood: 24 (13)construction and demolition debris ('C&D'); 25(14) x-ray film;

 (15) automobile oil and fluids;
 (16) freon and other refrigerant gases;
 (17) electronic waste (i.e., computers, circuit boards, televisions, and portable phones);
 (18) heavy equipment; and
 (19) other recyclable materials deemed recyclable by GEPA

pursuant to the Rules and Regulations.

7

8 Establishment of Recycling Enterprise Zone. Section 3. There is 9 established a "Recycling Enterprise Zone" at the Jose D. Leon Guerrero Commercial 10 Port for use by recycling companies for the processing of automobiles, trucks, and 11 tires for recycling purposes and the transshipment of recyclable materials. The size of 12 the zone and its site on the JLGCP property shall be designated by the Board of Directors of the Port Authority of Guam and guided by the provisions of Section 13 14 7.10.4 of the Integrated Solid Waste Management Plan. Such designation shall be made within sixty (60) days of the enactment hereof and the site shall be made 15 available for lease to recycling companies eligible under Section 4 of this Act. The 16 Board of Directors of the Port Authority of Guam shall determine and charge a 17 18 reasonable rate for the lease of said property.

Section 4. Eligibility of Recycling Companies for use of the Recycling Enterprise Zone. Lease space in the Recycling Enterprise Zone shall only be available to companies that qualify for Qualifying Certificates as recycling companies under guidelines established by the Guam Economic Development and Commerce Authority.

4

I MINA' BENTE OCHO NA LIHESLATURAN GUAHAN

2005 (FIRST) Regular Session

VOTING SHEET

Date: 11/30

Q

Bill No. _139 (EC)

Resolution No.

Question: _____

<u>NAME</u>	YEAS	<u>NAYS</u>	NOT VOTING <u>/</u> <u>ABSTAINED</u>	OUT DURING ROLL CALL	ABSENT
AGUON, Frank B., Jr.					V
BROWN, Joanne M.S.	V				
CALVO, Edward J.B.	V				
CRUZ, Benjamin J.F,					
CRUZ, Michael (Dr.)					
FORBES, Mark					
KASPERBAUER, Lawrence F.					
KLITZKIE, Robert	V				
LEON GUERRERO, Lourdes A.					i
LUJAN, Jesse A.	//				
PALACIOS, Adolpho B.	V/				·
RESPICIO, Rory J.	V				······
TENORIO, Ray	V				
UNPINGCO, Antonio R.	V				
WON PAT, Judith T.					

TOTAL

14 0 0

[]

CERTIFIED TRUE AND CORRECT:

Clerk of the Legislature

* 3 Passes = No vote EA = Excused Absence

P.L. 28-92



I Mina' Bente Ocho Na Liheslaturan Guahan The 28th Guam Legislature

155 Hesler Place Hagatna, Guam 96910 Office (671) 472-3409 • Fax (671) 472-3510

Speaker Mark Forbes

November 7, 2005

Speaker Mark Forbes I Mina' Bente Ocho Na Liheslaturan Guahan 155 Hesler Place Hagatna, Guam 96910

The Committee on General & Omnibus Matters to which Bill No. 139 was referred, wishes to report its findings and recommendations TO DO PASS BILL No. 139 (EC): "An Act To Create A Recycling Enterprise Zone At The Jose D. Leon Guerrero Commercial Port".

Transmitted herewith for your consideration and action is our committee report on the above subject matter.

The voting record is as follows:





TO REPORT OUT ONLY



ABSTAIN

INACTIVE FILE

Copies of the Committee Report and other pertinent documents are attached. Thank you and si Yu'os ma'ase for your attention to this matter.

MARK FORBES

Attachments

MEMORANDUM

TO:Committee MembersFROM:Chairman

SUBJECT: Committee Report- BILL No. 139 (EC): "An Act To Create A Recycling Enterprise Zone At The Jose D. Leon Guerrero Commercial Port".

Transmitted herewith for your information and action is the report on BILL No. 139 (EC) from the Committee on General and Omnibus Matters.

This memorandum is accompanied by the following:

- 1. Committee Voting Sheet
- 2. Committee Report
- 3. BILL No. 139 (EC)
- 4. Public Hearing Sign-In Sheet
- 5. Fiscal Note/ Fiscal Note Waiver
- 6. Notice of Public Hearing

Please take the appropriate action on the voting sheet. Your attention and cooperation in this matter is greatly appreciated.

Should you have questions regarding the report or accompanying documents, please do not hesitate to contact me.

Thank you and si Yu'os ma'ase.

MARK FORBES

Attachments

COMMITTEE ON GENERAL AND OMNIBUS MATTERS

I MINA'BENTE OCHO NA LIHESLATURAN GUÂHAN 155 HESLER PLACE, HAGÅTNA, GUAM 96910

An Act To Create A Recycling Enterprise Zone At The Jose D. Leon Guerrero Commercial Port.

VOTING SHEET

	SIGNATURE	TO PASS	NOT TO PASS	TO REPORT OUT OF COMMITTEE	ABSTAIN	INACTIVE FILE
Mark Forbes, Chairman	A					
Edward J.B. Calvo		ν				
Lawrence F. Kasperbauer, Ph.D.	2910			*		
Jesse A. Lujan						
Ray Tenorio						
Michael Cruz, M.D.	ull	V				
Lou A. Leon Guerrero	2,192-	\checkmark				
Judith T. Won Pat	ØV					
Benjamin J.F. Cruz						

II/22/05 POF

11/20/

I MINA'BENTE OCHO NA LIHESLATURAN GUAHAN 1 8 2005 2005 (FIRST) Regular Session



Introduced by:

R.J. Respicio / B.J. Cruz

Introduced

Renard

AN ACT TO CREATE A RECYCLING ENTERPRISE ZONE AT THE JOSE D. LEON GUERRERO COMMERCIAL PORT.

BE IT ENACTED BY THE PEOPLE OF GUAM:

Section 1. Legislative Findings and Intent. I Mina'bente Ocho Na 1 Liheslaturan Guåhan finds that it is the established policy of the government of 2 Guam to promote and support recycling as an essential means to protect the 3 environment and to effectively manage the solid waste generated by the 4 community. This policy is clearly stipulated in the Integrated Solid Waste 5 Management Plan as adopted in Public Law No. 25-175. Numerous other 6 public laws also support recycling through policy initiatives and incentives, 7 including Public Law No. 25-127 which provided for tax incentives for 8 9 recycling operations inclusive of the transshipment of recyclable materials.

recycling operations inclusive of the Integrated
I Liheslatura finds that, with respect Section 7.10.4 of the Integrated
Solid Waste Management Plan, the setting aside of land at the Jose D. Leon
Guerrero Commercial Port for a center to recycle automobiles, one of the
major environmental concerns for our community is a key component.

14 major environmental concerns for our function of the formation of th

these junk automobiles, and the hazardous materials which these automobiles carry, are a serious threat to the aquifer that is the island's major source for drinking water.

It is therefore the intent of *I Liheslatura* to implement, in the public interest, Section 7.10.4 of the Integrated Solid Waste Management Plan and establish a Recycling Enterprise Zone at the Jose D. Leon Guerrero Commercial Port so that, in concert with existing incentives established by statute, public policy shall foster the establishment of private sector operated recycling enterprises for automobiles, trucks, and tires.

10 Section 2. Definitions. For purposes of this Act, and except as 11 otherwise provided, the following words and phrases, together with all of 12 the common derivatives thereof, shall have the meaning ascribed to them as 13 follows:

14 (i) 'JLGCP' shall mean the Jose D. Leon Guerrero Commercial 15 Port.

(ii) 'Recycling' means the process by which recovered resources
 are transformed into new products in such a manner that products lose
 their identity, as defined in §51102.(18) of Chapter 51, Title 10 of the
 Guam Code Annotated.

(iii) 'Recycling company' means any business licensed by the
Department of Revenue and Taxation, and has been issued a permit, as
required in §51104 of Chapter 51, Title 10 of the Guam Code
Annotated, from the Guam Environmental Protection Agency ('GEPA')
to conduct business on Guam in which eighty percent (80%) of its
operations is specifically committed to recycling.

26

(iv) 'Transshipment' shall mean to transfer for further

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transportation from one (1) ship or conveyance to another.

(v) 'Recyclable materials' means materials that still have useful physical or chemical properties after serving a specific purpose for the same or other purpose. Recyclable materials are as follows:

- batteries (i.e., lead-acid, portable computer batteries, nickelcadmium, sealed types for power backup);
- (2) automobiles, buses, and trucks or any form of motorized vehicle;
- (3) tires (passenger/commercial);
- (4) enameled white goods;
- 11 (5) home appliances (other small appliances that are not 12 considered enameled white goods);
- 13 (6) glass and plastic bottles;
- 14 (7) foam padding;
- 15 (8) lead;

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- (9) metals (ferrous/non-ferrous);
- 17 (10) organic material (i.e., tree trimmings, palm fronds, grass,
 18 food waste, soiled cardboard);
- 19 (11) paper products;
- 20 (12) wood pallets and scrap wood;
- 21 (13) construction and demolition debris ('C&D');
- 22 (14) x-ray film;
- 23 (15) automobile oil and fluids;
- 24 (16) freon and other refrigerant gases;
- 25 (17) electronic waste (i.e., computers, circuit boards, televisions,
 and portable phones);

(18) heavy equipment; and

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(19) other recyclable materials deemed recyclable by GEPA pursuant to the Rules and Regulations.

Section 3. Establishment of Recycling Enterprise Zone. There is 4 established a "Recycling Enterprise Zone" at the Jose D. Leon Guerrero 5 Commercial Port for use by recycling companies for the processing of 6 automobiles, trucks, and tires for recycling purposes and the transshipment 7 of recyclable materials. The size of the zone and site on the JLGCP property 8 shall be designated by the Board of Directors of the Port Authority of Guam 9 and guided by the provisions of Section 7.10.4 of the Integrated Solid Waste 10 Management Plan. Such determination shall be made within sixty (60) days of 11 the enactment of this Section and shall be made available for leasing to 12 recycling companies eligible under Section 4 of this Act. The Board of 13 Directors of the Port Authority of Guam shall determine a reasonable rate for 14 the lease of such property. 15

Section 4. Eligibility of Recycling Companies for use of the Recycling Enterprise Zone. Lease space in the Recycling Enterprise Zone shall only be made available to companies that satisfy the requirements to qualify for Qualifying Certificates as recycling companies under the guidelines established by the Guam Economic Development and Commerce Authority.
I MINA' BENTE OCHO NA LIHESLATURAN GUÅHAN COMMITTEE ON GENERAL & OMNIBUS MATTERS SPEAKER MARK FORBES, CHAIRMAN

COMMITTEE REPORT ON BILL NO. 139 (EC)

An Act To Create A Recycling Enterprise Zone At The Jose D. Leon Guerrero Commercial Port.

I. OVERVIEW

The Committee on General and Omnibus Matters held a public hearing at 9:00 a.m.. on September 01, 2005 in the Public Hearing Room, I Liheslaturan Guåhan. Public notice was given to all media (see facsimile confirmation page) on August 25 and August 29, 2005 and posted in the Government Meetings Section in the August 31, 2005 edition of the PDN.

Senators present at the public hearing were:

Speaker Mark Forbes, Chairman Senator Lawrence F. Kasperbauer, Ph.D., Member Senator Jesse A. Lujan, Member Senator Ray Tenorio, Member Senator Judith T. Won Pat, Member Senator Benjamin J. F. Cruz, Member Vice Speaker Joanne M.S. Brown Senator Robert Klitzkie Senator Adolpho B. Palacios, Sr. Senator Rory J. Respicio

II. SUMMARY OF TESTIMONY

Individuals that appeared before the Committee to present oral and written testimony on the bill were as follows:

There are no oral testimonies on this bill.

Remarks:

The author of the bill, Senator Respecio, briefly made remark of Bill No. 139. He said that Bill 139 was an idea brought up in the last legislature and was vetoed by Governor Camacho. He said the bill was unable to get an override and that he hopes this legislature would consider its passage.

Written testimonies submitted:

Randel L. Sablan, Acting Administrator, GEPA, In Support of Bill No. 139 (see attachment).

III. FINDINGS AND RECOMMENDATION

The Committee on General and Omnibus Matters finds that the intent of Bill No. 139 will establish private operated recycling centers at the commercial port to foster recycling efforts of junk automobiles, trucks, tires and other recyclable materials specified in GEPA Rules and Regulations. This measure will allow for additional revenues to be generated into the local economy and provide for a new direction in the disposal of Guam's waste products and materials.

Accordingly, the Committee on General and Omnibus Matters to which BILL No. 139 (EC) was referred does hereby submit its findings and recommendations to I Mina' Bente Ocho Na Liheslaturan Guåhan TO DO

PASS BILL No. 139 (EC), "An Act To Create A Recycling Enterprise Zone At The Jose D. Leon Guerrerc Commercial Port."

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PUBLIC HEARING AGENDA IV.

AGENDA

COMMITTEE ON GENERAL & OMNIBUS MATTERS, and EXECUTIVE COMMITTEE

Public Hearing Thursday, September 01, 2005, 9:00 a.m.

The following appointments will be heard:

Antonio M. Palomo: Member, Guam Historic Preservation Review Board Rebecca Ann Duenas: Member, Guam Historic Preservation Review Board Mark Zhao: Member, Guam Real Estate Commission

The following Bills will be heard by the Committee on General & Omnibus Matters;

Bill No. 66 (EC) - by F. B. Aguon Jr.

An Act Relative To Requiring The Proper Restoration Of Roadways And Highways That Are Partially Damaged Due To Construction Work To Their Pre-Construction Condition By The Contractor Prior To The Full Disbursement Of Public Construction Funds For Such Projects, And Empowering Guam's Village Mayors To Certify The Completion And Proper Re-Surfacing Of The Roadway Or Highway To Its Previous Condition.

Bill No. 75 (EC) - by Ray Tenorio

An Act To Amend Section 1903 Of Chapter 19 Of Title 1 Of The Guam Code Annotated Relative To The Term Of Office Of The Public Auditor.

Bill No. 96 (EC) - by J. T. Won Pat

An Act To Repeal And Reenact Sections 15409, 15410 And 15411 Of Article 4, Chapter 15, Of Title 4, Guam Code Annotated, To Add New Sections 15412 And 15413 Of Article 4, Chapter 15 Of Title 4, Guam Code Annotated And To Repeal Sections 43116 And 43117 Of Article 1, Chapter 43, Division 4 Of Title 5, Guam Code Annotated, Relative To Establishing An Ethics In Government Program For Elected Officials And Any Person Who Is Appointed To A Position As Board Or Commission Member, Director, Deputy Director, Or By Whatever Title Denotes The Head And First Assistant Of A Government Of Guam Agency, Department, Public Corporation, Authority, Or Any Other Entity Of The Executive Branch.

Bill No. 104 (LS) - by J. A. Lujan

An Act To Establish Strict Accountability For Adverse Effects On Personal Health And Environmental Quality As A Result Of New Landfill Facility Construction, Operation, Closing And Monitoring.

Bill No. 105 (LS) - by J. A. Lujan

An Act To Affirm Public Responsibility For Real Property Valuation Lost As A Result Of Landfill Construction And Operation.

Bill No. 125 (EC) - by E. J. B. Calvo

An Act Authorizing I Maga'lahen Guåhan To Exchange A Portion Of Government Land Within Lot Number 10120-R16, Municipality Of Dededo, With Lot Number 5400-R6, Municipality Of Mangilao, On A Value For Value Basis To Address The Protective Buffer Zone Requirements For The Department Of Corrections Pursuant To Public Law 17-54.

Bill No. 132 (EC) - by A. B. Palacios

An Act To Add Article 2 To Chapter 30 Of Title 5 Of The Guam Code Annotated, Relative To Creating The "Independent Counsel Act Of 2005."

Bill No. 139 (EC) - by R. J. Respicio

An Act To Create A Recycling Enterprise Zone At The Jose D. Leon Guerrero Commercial Port. ,

Bill No. 152 (LS) - By F. B. Aguon, Jr.

An Act Relative To Providing Additional Representation And Support To The People In The Villages Of Yigo And Mangilao At The Municipal Level Through The Establishment Of A Vice-Mayor Position For Each Of These Villages, In Recognition Of The Growing Resident Population In These Areas As The Second And Fourth Most Heavily Populated Villages In Guam And To Address The Corresponding Increasing Needs Of Its Residents; Thus Amending §§40101, Chapter 40, Division 4, Title 5, Guam Code Annotated.

Bill No. 170 (EC) - by Committee on Calendar, request of I Maga'lahen Guåhan the Governor of Guam in accordance with the Organic Act of Guam

An Act To Authorize The Lease For An Education Facility On Lot Marbo Base Command "B"-4, Approve The Request For Proposal And Reservation Of Funds For The Same.

Committee on General & Omnibus Matters, and Executive Committee Public Hearing September 01, 2005 9:00 a.m.. I Liheslaturan Guahan, Hagâtña

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Bill No. 139 (EC) - by R. J. Respicio

An Ast To Create A Recycling Enterprise Zone At The Jose P. Leon Guerrero Commercial Port.

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I Mina' Bente Ocho Na Liheslaturan Guahan The 28th Guam Legislature

155 Hesler Place Hagatna, Guam 96910 Office (671) 472-3409 • Fax (671) 472-3510

Speaker Mark Forbes

WAIVER OF FISCAL NOTE

In accordance with §9105 Title 2 GCA, I hereby certify that prompt committee action on Bill 139 is necessary to the proper conduct of legislative business. Therefore, I am waiving requirement of a fiscal note on Bill 139.

MARK PORBES Speaker and Chairman, Committee on General and Omnibus Matters



SUBJECT: Notice of Public Hearing- Thursday, September 01, 2005

Please be informed that I have scheduled a public hearing on Thursday, September 01, 2005, 9:00 a.m., at the Public Hearing Room, Temporary Legislative Building, on the following appointments and bills:

The following appointments and bills will be heard;

Antonio M. Palomo: Member, Guam Historic Preservation Review Board Rebecca Ann Duenas: Member, Guam Historic Preservation Review Board Mark Zhao: Member, Guam Real Estate Commission

Bill No. 66 (EC) - by F. B. Aguon Jr.

An Act Relative To Requiring The Proper Restoration Of Roadways And Highways That Are Partially Damaged Due To Construction Work To Their Pre-Construction Condition By The Contractor Prior To The Full Disbursement Of Public Construction Funds For Such Projects, And Empowering Guam's Village Mayors To Certify The Completion And Proper Re-Surfacing Of The Roadway Or Highway To Its Previous Condition.

Bill No. 75 (EC) - by Ray Tenorio

An Act To Amend Section 1903 Of Chapter 19 Of Title 1 of The Guam Code Annotated Relative To The Term Of Office Of The Public Auditor.

Bill No. 96 (EC) - by J. T. Won Pat

An Act To Repeal And Reenact Sections 15409, 15410 And 15411 Of Article 4, Chapter 15, Of Title 4, Guam Code Annotated, To Add New Sections 15412 And 15413 Of Article 4, Chapter 15 Of Title 4, Guam Code Annotated And To Repeal Sections 43116 And 43117 Of Article 1, Chapter 43, Division 4 Of Title 5,



I Mina' Bente Ocho Na Liheslaturan Guahan The 28th Guam Legislature

155 Hesler Place Hagatna, Guam 96910 Office (671) 472-3409 ● Fax (671) 472-3510

Speaker Mark Forbes

August 29, 2005

MEMORANDUM

TO: All Media: Pacific Daily News; 637-9870 477-3079 KUAM: Marianas Variety; 648-2007 K-57/Power 98; 477-3982 Hit Radio 100; 472-7663 K-Stereo: 477-6411 Glimpses-Gu. Business 649-8883 Adventist World Radio 565-2983 Harvest Family Radio 477-7136 KPRG 734-2958 KISH 477-6411 **Rlene** Live

FROM: Speaker Chairman, Committee on General & Omnibus Matters, and Executive Committee

SUBJECT: Notice of Public Hearing- Thursday, September 01, 2005

Please be informed that I have scheduled a public hearing on Thursday, September 01, 2005, 9:00 a.m., at the Public Hearing Room, Temporary Legislative Building, on the following appointments and bills:

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I Mina' Bente Ocho Na Liheslaturan Guahan The 25th Guam Legislature

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> > Speaker Mark Forbes

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The 28th Guam Legislature

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Speaker Mark Forbes

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Date:	August 29, 2005	Time:
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"Committee on General and Omnibus Matters & Executive Committee: Public Hearing, Thursday, September 01, 2005, 9:00 A.M., Public Hearing Room, Temporary Legislative Building, Hagatña, Guam.

The following appointments and bills will be heard:

Antonio M. Palomo: Member, Guam Historic Preservation Review Board Rebecca Ann Duenas: Member, Guam Historic Preservation Review Board Mark Zhao: Member, Guam Real Estate Commission

Bill No. 66 (EC) - by F. B. Aguon Jr.

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Pacific Collection closed on Fridays

The University of Guam's Richard F. Taitano Micronesian Area Research Center's Pacific Collection will be closed on Fridays. according to a UOG statement. Call 735-2150 for more information.

Pacific Daily News

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ON THE NET ▲ For the TUM complete, searchable database of upcomina government meetings, visit www.guampdn.com

branch;

▲ Bill 104, establishing strict accountability for adverse effects on personal health and environmental quality as a result of new landfill facility construction, operation, closing and monitoring;

▲ Bill 105, affirming public responsibility for real property valuation lost as a result of landfill construction and operation;

▲ Bill 125, authorizing the governor to exchange a portion of government land within Lot 10120-R16, Dededo, with Lot 5400-R6, Mangilao, on a value-for-value basis to address the protective buffer zone requirements for the Department of Corrections;

▲ Bill 132, relative to creating. the Independent Counsel Act of 2005:

▲ Bill 139, to create a recycling enterprise zone at the Jose D. Leon Guerrero Commercial Port;

▲ Bill 152, to provide additional representation and support to residents of Yigo and Mangilao at the municipal level through the establishment of a vice mayor position for these villages;

▲ Bill 170, authorizing the lease for an education facility at Marbo base command B-4, and approve request for proposal and reservation of funds for same, requested by the governor. Call 472-3409.

Workers Compensation Commission, Department of Labor, meeting: 6:30 p.m. Sept. 1, third floor, GCIC Building, Hagatna. Agenda copies available at commission's office. For special accommodations, call 475-7033.

Testimony of Randel L. Sablan 'B Acting Administrator, Guam Environmental Protection Agency Before The Committee On General & Omnibus Matters, and Executive Committee

Hearing On Bill 139(EC): An Act To Create A Recycling Enterprise Zone At The Jose D. Leon Guerrero Commercial Port

September 1, 2005

The Guam Environmental Protection Agency (GEPA) appreciates the opportunity to comment and provide information on the intent and scope of Bill 139.

GEPA supports the intent of Bill 139 and recognizes that there is limited suitable land area at the present time to properly locate a number of solid waste recycling operations in close proximity to the Jose D. Leon Guerrero Commercial Port. Operations which permit the processing of recyclable material and temporary staging or storage in preparation for transshipment should be strategically located. GEPA understands that the Port Authority of Guam (PAG) may have concerns regarding environmentally safe operations and long-term pollution liability. The Agency will work with the PAG to develop permit provisions that would minimize the risk of environmental liability exposure.

Thank you.

I MINA'BENTE OCHO NA LIHESLATURAN GUÅHAN 2005 (FIRST) Regular Session

Bill No. (EC

Introduced by:

R.J. Respicio Mr B.J. Cruz

AN ACT TO CREATE A RECYCLING ENTERPRISE ZONE AT THE JOSE D. LEON GUERRERO COMMERCIAL PORT.

1 BE IT ENACTED BY THE PEOPLE OF GUAM:

Section 1. Legislative Findings and Intent. I Mina'bente Ocho Na 2 3 Liheslaturan Guåhan finds that it is the established policy of the government of 4 Guam to promote and support recycling as an essential means to protect the 5 environment and to effectively manage the solid waste generated by the 6 community. This policy is clearly stipulated in the Integrated Solid Waste Management Plan as adopted in Public Law No. 25-175. Numerous other 7 public laws also support recycling through policy initiatives and incentives, 8 including Public Law No. 25-127 which provided for tax incentives for 9 recycling operations inclusive of the transshipment of recyclable materials. 10

I Liheslatura finds that, with respect Section 7.10.4 of the Integrated Solid Waste Management Plan, the setting aside of land at the Jose D. Leon Guerrero Commercial Port for a center to recycle automobiles, one of the major environmental concerns for our community is a key component.

I Liheslatura finds that the absence of effective recycling and disposal operations has resulted in a proliferation of junk automobiles throughout the island, in particular, in areas over the Northern Aquifer. The presence of these junk automobiles, and the hazardous materials which these automobiles
 carry, are a serious threat to the aquifer that is the island's major source for
 drinking water.

It is therefore the intent of *I Liheslatura* to implement, in the public interest, Section 7.10.4 of the Integrated Solid Waste Management Plan and establish a Recycling Enterprise Zone at the Jose D. Leon Guerrero Commercial Port so that, in concert with existing incentives established by statute, public policy shall foster the establishment of private sector operated recycling enterprises for automobiles, trucks, and tires.

10 Section 2. Definitions. For purposes of this Act, and except as 11 otherwise provided, the following words and phrases, together with all of 12 the common derivatives thereof, shall have the meaning ascribed to them as 13 follows:

14(i) 'JLGCP' shall mean the Jose D. Leon Guerrero Commercial15Port.

(ii) 'Recycling' means the process by which recovered resources
are transformed into new products in such a manner that products lose
their identity, as defined in §51102.(18) of Chapter 51, Title 10 of the
Guam Code Annotated.

(iii) 'Recycling company' means any business licensed by the
Department of Revenue and Taxation, and has been issued a permit, as
required in §51104 of Chapter 51, Title 10 of the Guam Code
Annotated, from the Guam Environmental Protection Agency ('GEPA')
to conduct business on Guam in which eighty percent (80%) of its
operations is specifically committed to recycling.

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(iv) 'Transshipment' shall mean to transfer for further

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1	transporta	tion from one (1) ship or conveyance to another.
2	(v)	'Recyclable materials' means materials that still have useful
3	physical o	r chemical properties after serving a specific purpose for the
4	same or of	ther purpose. Recyclable materials are as follows:
5	(1)	batteries (i.e., lead-acid, portable computer batteries, nickel-
6		cadmium, sealed types for power backup);
7	(2)	automobiles, buses, and trucks or any form of motorized
8		vehicle;
9	(3)	tires (passenger/commercial);
10	(4)	enameled white goods;
11	(5)	home appliances (other small appliances that are not
12		considered enameled white goods);
13	(6)	glass and plastic bottles;
14	(7)	foam padding;
15	(8)	lead;
16	(9)	metals (ferrous/non-ferrous);
17	(10)	organic material (i.e., tree trimmings, palm fronds, grass,
18		food waste, soiled cardboard);
19	(11)	paper products;
20	(12)	wood pallets and scrap wood;
21	(13)	construction and demolition debris ('C&D');
22	(14)	x-ray film;
23	(15)	automobile oil and fluids;
24	(16)	freon and other refrigerant gases;
25	(17)	electronic waste (i.e., computers, circuit boards, televisions,
26		and portable phones);

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- (18) heavy equipment; and
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(19) other recyclable materials deemed recyclable by GEPA pursuant to the Rules and Regulations.

4 Section 3. Establishment of Recycling Enterprise Zone. There is established a "Recycling Enterprise Zone" at the Jose D. Leon Guerrero 5 Commercial Port for use by recycling companies for the processing of 6 automobiles, trucks, and tires for recycling purposes and the transshipment 7 of recyclable materials. The size of the zone and site on the JLGCP property 8 9 shall be designated by the Board of Directors of the Port Authority of Guam 10 and guided by the provisions of Section 7.10.4 of the Integrated Solid Waste 11 Management Plan. Such determination shall be made within sixty (60) days of the enactment of this Section and shall be made available for leasing to 12 recycling companies eligible under Section 4 of this Act. The Board of 13 Directors of the Port Authority of Guam shall determine a reasonable rate for 14 the lease of such property. 15

Section 4. Eligibility of Recycling Companies for use of the Recycling Enterprise Zone. Lease space in the Recycling Enterprise Zone shall only be made available to companies that satisfy the requirements to qualify for Qualifying Certificates as recycling companies under the guidelines established by the Guam Economic Development and Commerce Authority.



Appendix D Site Screening Framework Development

PORT AUTHORITY OF GUAM | Sustainability and Resiliency Plan

Site Screening Framework Development

Background

The Recycling Enterprise Zone (REZ) will initially be used as a laydown and temporary storage area for shipping containers that will eventually be shipped to recycling facilities off-island. The project team has evaluated numerous potential sites to be used for the REZ: Eight sites are located on the Port of Guam (Port) property while the last three options are located off Port property, as shown on Figure 1. Nine of the eleven sites are previously developed or disturbed, while the two heavily vegetated Port Authority of Guam (PAG) property sites along Route 1 and Route 18 are previously undeveloped. Photos 1 and 2 show samples of developed areas at the Old Hawaiian Rock Site and Future Container Yard.

The following potential REZ sites are inside the Port property:

- Heavily Vegetated PAG Property along Route 1 •
- Heavily vegetated PAG Property along Route 18
- Old Hawaiian Rock site •
- Future Container Yard •
- Chassis Lot •
- Seaplane Ramp •
- Metals Recycling Yard
- PAG Parking Lot .

The following potential REZ sites are outside the Port property:

- Polaris/Matson Leased Lot
- Polaris/Smithbridge Leased Lot
- Polaris/Vacant Lot

Photo 1. Developed Area of Old Hawaiian Rock Photo 2. Developed Area of Future Container Site (Site 3)

Yard (Site 4)





Figure 1. Potential Recycling Enterprise Zone Locations

Basis of Site Screening Framework

To ensure the United Nations's Sustainable Development Goals (UN SDGs) were considered in the site selection process for the REZ and that the project will align with the developing Guåhan 2050 Sustainability Plan and Guam's Priority Climate Action Plan, numerous sustainability and resilience certification programs were reviewed for applicability and suitability for this project. Three were ultimately identified as most appropriate to provide guidance for planning, designing, and constructing an infrastructure project, particularly one that is adjacent to a water body. The certifications are as follows:

- Envision: Applicable to all infrastructure project types,
- Waterfront Edge Design Guidelines (WEDG): Tailored toward publicly accessible waterfront projects, and
- Green Marine: Certifications for the marine industry including one focused specifically on projects located in Ports.

Using these systems' guidance, a site evaluation matrix was created to aid with the site selection process. The criteria for these certifications were reviewed in detail; project-applicable considerations specifically for the REZ were consolidated into the tailored matrix, organized by project aspects. A focused version of the matrix is shown in Table 1; the summary identifies those sustainability and resilience topics deemed most impactful for the project. The full matrix can be found in Attachment D.1.

The focused matrix highlights the most relevant guidance from each certification mentioned above. The sustainability matrix is divided into five categories: Thoughtful Design (pink), Site (green), Energy (orange), Construction Activities (yellow), and Operations (teal). Thoughtful Design focuses on early planning stages of a project, taking into account all overarching environmental, social, and governance considerations. Site focuses on environmental factors on the project site such as nearby habitats and ecosystems. Energy is focused on the energy consumption of the project. Construction Activities and Operations focus on reducing impacts related to waste, pollution, and resource consumption at each respective project phase.

Each individual topic was ranked with an Impact Level of Low, Medium, or High, illustrating the influence on the overall sustainability of the project. The primary considerations reflected in high impact credits are siting the project on developed vs. undeveloped land, the potential impact on natural habitats including both aquatic ecosystems and land-based ecosystems, and lastly, the potential ocean pollution from stormwater runoff.

Table 1. Focused Sustainability Ranking Matrix

5			Rating Syste	m	Impact
Topics	Details	Envision	WEDG	Green Marine	High
Material Reuse	Reuse of existing buildings and materials; planning for end-of-life	•	•	•	•
Greenfield Protection	No building on greenfield, prime farmland, floodplain, within 50' of wetlands or 100' of water bodies, or protected habitat	٠			•
Habitat Preservation	Maintain reference habitat, adaptive plan, maintenance plan, Native/adapted plants only, biodiversity, pollinator habitats creation, integrated pest management	•	•	•	•
Restore Degraded Sites	Reduce contamination in the environment from past industrial uses, and restore impacted project areas.	٠	•		•
Practice Sustainable Soil Management	Reduce environmental impacts associated with soil use and management.	•	•		•
Responsible Stormwater Management	Low-impact development, minimization of impervious hardscape, retention/detention, on-site/natural infiltration, aquifer recharge, quality	٠	٠	۲	٠
Provide Effective Shoreline Buffer	Ensure the sustainability of the shoreline using a waterfront edge that has the greatest possible positive impact on the environment and community, given the intended use and context.	•	•		•
Ground & Surface Water Protection	Protect from runoff/pollution, monitor quality, pursue improvements	٠	•	•	•
Site Energy Use Reduction	Efficient and minimal site lighting, automated controls & sensors	٠	•		•
Activity Containment	Reduce dust, noise, vibration, light pollution, runoff, dirt tracking, construction vehicle congestion, no idling	•	•		•
Construction Waste Management	CWM plan, targeted waste streams for diversion, detailed tracking, on-site reuse	٠	•		•
Reduce Noise	Reduce operational noise impacting nearby communities and ecosystems	٠	٠	٠	٠

If the project wishes to pursue a certification program in the future, Envision is the recommended framework for use based on applicability and flexibility. Envision provides a broad approach that can be used for a wide variety of infrastructure projects and provides criteria that would be effective in evaluating a small-scale project like the REZ. Envision is also beneficial in the event that REZ develops into a full building recycling facility at a future time; the criteria include practices that can also extend to building design and construction.

Both WEDG and Green Marine are more limited in both the breadth, and number of sustainability aspects that could be taken into consideration for the project, but could still be used as a resource for industry best practices for projects more closely associated with waterfront work.

Initial Site Screening Framework

The initial screening matrix for REZ site selection (Table 2) was developed based on the previously described sustainability criteria, the UN SDGs, and Guam Green Growth (G3) goals. A focus on the protection of sensitive habitats, ecosystems, and areas of cultural or historical significance, community considerations, reuse of previously developed or disturbed land, the proximity to the Port, and zoning (commercial or industrial use) were used as criteria for evaluating all 11 sites.

Table 2. Initial Site Screening Evaluation Results

Heavily Vegetated PAG Property along Route 1	 Heavily Vegetated Site along Route 1 	2. Heavily Vegetated Site along Route 18	3. Old Hawaiian Rock Quarry Site	4. Future Container Yard	5. Chassis Lot	6. PAG Parking Lot	7. Sea Plane Ramp	8. Metals Recycling Yard	9. Polaris/Matson Leased Lot	10. Polaris/Smithbridge Leased Lot	11. Polaris/ Vacant Private Lot
Location											
Within Port boundary or owned by the Port	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	х	x	х
Less than or equal to 2 miles from Port gate/main entrance	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Sensitive/Protected Habitats, Ecosystems, Cultural/Histo	orical Sig	nificance									
Site is not a greenfield or of high ecological value	х	х	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Site is not of high historical/cultural significance [a]	х	х	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Community Considerations											
Use of site will not create concerns about noise, traffic, light pollution, or similar	x	x	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Site Characteristics											
>1 acre in size	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	x	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
>10 acres in size	\checkmark	\checkmark	\checkmark	х	х	х	х	x	\checkmark	\checkmark	х
Reuse of previously developed/disturbed site	x	x	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Zoned for Commercial or Industrial Use	х	x	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Property is available for use in near term	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	х	x	\checkmark

Heavily Vegetated PAG Property along Route 1	1. Heavily Vegetated Site along Route 1	2. Heavily Vegetated Site along Route 18	3. Old Hawaiian Rock Quarry Site	4. Future Container Yard	5. Chassis Lot	6. PAG Parking Lot	7. Sea Plane Ramp	8. Metals Recycling Yard	9. Polaris/ Matson Leased Lot	10. Polaris/Smithbridge Leased Lot	11. Polaris/ Vacant Private Lot
Technical Feasibility											
Requires minimal financial investment for site development/use compared to other sites under consideration or will require lease/sublease for use	x	x	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	x ^[b]	x ^[b]	x ^[b]
NUMBER OF CRITERIA PASSED	5	5	11	10	10	9	10	10	8	8	8
NUMBER OF CRITERIA FAILED	6	6	0	1	1	2	1	1	3	3	3
CONTINUE TO NEXT SCREENING ROUND? (NUMBER OF CRITERIA FAILED <3)	NO	NO	YES	YES	YES	YES	YES	YES	NO	NO	NO
6 OUT OF 11 SITES CONTINUE TO NEXT SCREENING ROUND											

^[a] Historical/cultural significance was confirmed using geographic information system (GIS).

^[b] Polaris Sites are currently leased by Guam Economic Development Agency (GEDA) at an average monthly rate of \$1000/acre. If property becomes available for ownership or use by the Port at low cost, recommend these sites be reconsidered.

Secondary Site Screening Framework

After the results of the initial site screening are determined, a refined secondary screening was conducted (Table 3). This screening provided more detailed requirements considering a focused emphasis on operational objectives for the REZ including technical and economic feasibility (e.g., whether the site has preexisting security measures, or sufficient workspace for freight trucks).

Table 3. Secondary Site Screening Evaluation Results

Secondary Screening Criteria	Old Hawaiian Rock Quarry Site	Future Container Yard	Chassis Lot	PAG Parking Lot	Sea Plane Ramp	Metals Recycling Yard
Sensitive/Protected Habitats, Ecosystems, Cultural/Historical Signif	icance					
No wetlands or surface water bodies onsite (within 100 feet of operations)	\checkmark	\checkmark	\checkmark	\checkmark	x	\checkmark
Site Characteristics/Technical Feasibility for Intended Use						
Site will not require significant grading for use due to steep topography	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Site access is paved/suitable for intended use	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Site flooding potential is NOT high during typhoons	x	\checkmark	\checkmark	\checkmark	x	\checkmark
Major utilities (electrical, water, telecommunications) present at or nearby site	\checkmark	\checkmark	\checkmark	~	\checkmark	\checkmark
Site is partially or fully paved or graveled paved	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Site is fenced or otherwise secured	\checkmark	x	\checkmark	x	x	\checkmark
Site is of sufficient size that allows for easy heavy truck access and turning	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	~
No other considerations/operational restrictions that would preclude use	\checkmark	\checkmark	x ^[b]	\checkmark	\checkmark	\checkmark
Alignment with 2023 Master Plan	\checkmark	√ ^[a]	x ^[b]	\checkmark	\checkmark	\checkmark
NUMBER OF CRITERIA PASSED	9	9	8	9	7	10
NUMBER OF CRITERIA FAILED	1	1	2	1	3	0
PASS SCREENING? (NUMBER OF CRITERIA FAILED <2)	YES [c]	YES	NO	YES	NO	YES
4 SITES SUITABLE FOR USE AS RE	Z LOCA	TION				

^[a] The Future Container Yard area is planned for future development (expansion of the cargo handling area) but in the interim is suitable for use as Recycling Enterprise Zone.

^[b] The Chassis Lot is currently in use for PAG operations.

^[c] Old Hawaiian Rock Quarry Site will not be available for the next 5 years because it will be used as laydown for the Glass Breakwater project. After that, it will be used as a Recycling Enterprise Zone site. Note that this site has potential for 1- to 3-foot inundation on the eastern side from Category 4 and 5 storms.

Site Screening Results

Four of the six sites considered in this round of screening passed, leaving the Old Hawaiian Rock Quarry, Future Container Yard, PAG Parking lot and Metals Recycling Yard sites for consideration as the most suitable REZ sites utilizing the abovementioned evaluation frameworks.

Attachment D.1 Site Evaluation Matrix Х Main Impact

				Project Pl	nase Impact		I	Rating System		Impact Level		
	Topics	Details	Pre-Design	Design	Construction	Operations	Envision v3	WEDG	Green Marine	Low	Medium	High
	Proximity to Transit Services	Bicycle Hubs, Bus Stops, Subway Stations, Commuter Lines	x				•			•		
	Proximity to Community Services	Restaurants, Groceries, Gov't Services, Spiritual, Childcare/Schools, etc.	x				•			•		
	Culture Preservation	Reflect culture of immediate area and residents	х	X			•			•		
S	Respite Provision	Escape from overstimulation (indoor and outdoor)	Х	X			•			•		
/E DESIGN PROCES GENERAL	Educational	Provide programming, events, literature, training		x	x	x	•			•		
	Matches Area Density	Appropriate scale for neighborhood	x	X			•			•		
	Universal Design	Allow equitable access to project, accessible to all with disabilities (above ADA/ABA), provides alternative communications, inclusive design	x	x		Х	•			•		
RATIV	**Stakeholder Collaboration**	Heavily engage community and users during the design process	х	X	Х	X	•			•		
INTEG	**Living Economy Support**	Support local businesses and residents through relationships with project; provides project-related training	х	x	x	x	•			•		
-	**Social Equity in the Project**	Address equity issues in the project community, supply chain, and within the design and construction teams.	x	x	x	x	•			•		
	Smoke-free Environment	No smoking (tobacco or other) or e-cigarettes on property or inside building(s)		X	Х	X	•			•		
	Heat Island Reduction	Site and building reflectivity/absorption	Х	X			•			•		

X Main Impact

		Topics	Details		Project Ph	nase Impact		F	Rating System	Impact Level			
				Pre-Design	Design	Construction	Operations	Envision v3	WEDG	Green Marine	Low	Medium	High
INTEGRATIVE DESIGN PROCESS		**Low-impact Materials**	Low embodied carbon, recycled materials, recyclable, low- or no-VOC content/emissions	x	X	Х		•			•		
		Material Reuse	Reuse of existing buildings and materials; planning for end-of-life	x	X	x		•			•		
		Local Materials	Integration of locally-produced materials/products in the design	x	X	x		•			•		
	SIGN	Industry Accountability	Support of manufacturer and product transparency and accountability	Х	X	x		•			•		
	:UL DE	Passive Design	Design first with passive design strategies to reduce dependence and demand for artificial systems	x	x			•			•		
	OUGHTF	Flexible Design	Movable/demountable interior components, plug- and-play lighting/electrical systems, plan for expansion		x		Х	•			•		
	TH	Diversity of Space	Provide a variety of work, collaboration, and casual spaces. Include gathering places to connect with the community.	Х	x			•			•		
		Biophilic Design	Connection to/inclusion of nature, public art, connection to place	Х	X			•			•		
		Active Design	Stair visibility and inviting design, open access between floors, site and building activity amenities	x	X		Х	•			•		

				Project Pl	hase Impact		Rating System			Impact Level		
	Topics	Details	Pre-Design	Design	Construction	Operations	Envision v3	WEDG	Green Marine	Low	Medium	High
	Greenfield Protection	No building on greenfield, prime farmland, floodplain, within 50' of wetlands or 100' of water bodies, or protected habitat	x	Х			•			•		
SS	Habitat Preservation	Maintain reference habitat, adaptive plan, maintenance plan, Native/adapted plants only, biodiversity, pollinator habitats creation, integrated pest management	x	x			•			•		
I PROCE	**Responsible Stormwater Management**	Low-impact development, minimization of impervious hardscape, retention/detention, on- site/natural infiltration, aquifer recharge, quality	х	x	х		•			•		
ESIGN	**Ground & Surface Water Protection**	Protect from runoff/pollution, monitor quality, pursue improvements	x	X			•			•		
IVE D	**Light Trespass**	Reduce backlight, uplight, and glare from site and building lighting sources	Х	X			•			•		
GRAT	Pedestrian-Oriented Design	Prioritize pedestrian safety, access, and experience over vehicular-oriented design		x		Х	•			•		
INTE	Minimization of Private Vehicle Parking	Provide minimum or no on-site parking for privately-owned vehicles	x	X			•			•		
	Supports Alternative Transportation Means	Priority parking for alternative fuel vehicles, alternative fueling stations, bicycle access, storage, and tools. Supports employee commuting strategies.	x	x			•			•		
	Supports Garden Space	Dedicate % of project area to agriculture for occupants	Х	x			•			•		

					Project Ph	ase Impact		Rating System			Impact Level			
		Topics	Details	Pre-Design	Design	Construction	Operations	Envision v3	WEDG	Green Marine	Low	Medium	High	
INTEGRATIVE DESIGN PROCESS		Eliminate Site Potable Water Use	No potable water use within the project site area	x	X		Х	•			•			
		Reduced Building Potable Water Use	Utilize water-efficient fixtures inside building	x	X		Х	•			•			
		Collect/Treat Rainwater for Reuse	Rainwater and/or stormwater collection, treatment, and reuse within project site	x	X		X	•			•			
		Collect/Treat Grey/Black Water	Greywater and/or blackwater collection and treatment, and managed within project site	x	X	х	X	•			•			
	NATER	**Indoor Water Quality**	Address quality of water intended for human consumption (lavatories, showers, sinks, drinking)		x		Х	•			•			
		Water Metering	Metering and submetering of water-using systems within project boundary (site and building)		x		Х	•			•			
		Process Water Use Reduction	No refrigeration equipment using once-through cooling with potable water, no garbage disposals, water-efficient appliances, water reuse where possible		X			•			•			
		Water Systems Commissioning	Review of design project documents, water systems tests, balancing, review reports, site observations, O&M training		x	x		•			•			

		Details		Project Ph	ase Impact		I	Rating System		Impact Level		
	Topics		Pre-Design	Design	Construction	Operations	Envision v3	WEDG	Green Marine	Low	Medium	High
	Site Energy Use Reduction	Efficient and minimal site lighting, automated controls & sensors	x	X			•			٠		
	Building Energy Use Reduction	Passive design strategies, load reduction, envelope optimization, improved mechanical system efficiencies, smart operational strategies, automated controls, minimal lighting, efficient appliances and water heating systems	Х	X			•			•		
	On-site Renewable Energy Generation	Solar photovoltaics, wind, hydroelectric, geothermal	x	X		Х	•			•		
CESS	**Refrigerant Management**	HVAC&R equipment: No CFC-based refrigerants, no- or low-impact refrigerants, do not exceed appropriate refrigerant charge	Х	X	Х		•			•		
GN PRO	**No On-site Combustion**	No systems or equipment on site that relies on combustion to conform, no natural gas, heating fuel oil, biomass burning	Х	x			•			•		
DESI NERG	Energy Storage	Integrate on-site energy storage capabilities to reduce grid demand and increase resilience	Х	X		Х	•			•		
GRATIVE	Grid Interactivity	Participate in demand response technologies and programs with local utilities providers or make building ready for when programs are available	x	х		Х	•			•		
	Energy Metering	Metering and submetering of major energy-using and energy-generating systems within project boundary (site and building)		x			•			•		
	Green Power and Carbon Offsets	Purchasing of renewable energy certificates (RECs) and/or carbon offsets to create market demand for renewable energy generation and decrease carbon emissions		Х		x	•			•		
	Building Envelope Commissioning	Review of design project documents, test and verify the building's thermal envelope		Х	X	Х	•			•		
	Energy Systems Commissioning	Review of design project documents, energy systems tests, balancing, review reports, site observations, O&M training			x	Х	•			•		

				Project Ph	ase Impact		Rating System			Impact Level		
	Topics	Details	Pre-Design	Design	Construction	Operations	Envision v3	WEDG	Green Marine	Low	Medium	High
INTEGRATIVE DESIGN PROCESS OUALITY INDOOR ENVIRONMENT	**Air Quality**	Filtration, sensors, ventilation, increased air supply, air treatment, smoking policies.		X		Х	•			٠		
	Contaminant Containment	Exhausting chemical-use areas, source separation (self-closing doors and hard-lid ceilings), entryway systems / walk-off mats, vestibules, and ongoing maintenance		x		x	•			•		
	Thermal Controls	Thermostats for localized controls, operable windows, desk fans, optimized HVAC setpoints		X		Х	•			•		
	Lighting Quality	Indirect / uplight ceiling fixtures, high CRI fixtures, light flicker management strategies, circadian rhythm lighting design		x			•			•		
	Lighting Controls	Switches for localized controls, multi-mode lighting schemes, desk task lamps, dimming and adjustable color temperature		x			•			•		
	Acoustics	Limitation of HVAC background noise and reverberation times, wall design to meet Sound Transmission (STC) ratings, Sound masking or reinforcement strategies		х		Х	•			•		
	Daylighting and Glare	Space layout to maximize workstations near windows and minimize artificial lighting, light shelves or tall windows, high VLT (visible light transmittance) windows. Focused or indirect (low glare) artificial lighting, Window solar shades for glare control.	Х	x		Х	•			•		
	Quality Views	Space layout to optimze workstations near windows, limitation of visual obstructions, window placement to provide diversity of views	x	х			•			•		
	Moisture Management	Germicidal ultraviolet treatment in air handlers, quarterly maintenance and cleaning of cooiling coils. Strategies for protecting the building from moisture intrusion and preventing occupants' exposure to mold spores.		x		x	•			•		
	Ergonomic Furnishings	Ergonomics policy for computer users, ergonomic assessments for occupants, sit-stand desks, ergonomic chairs, adjustable position monitors		X		X						

					Project Ph	ase Impact		Rating System			Impact Level		
		Topics	Details	Pre-Design	Design	Construction	Operations	Envision v3	WEDG	Green Marine	Low	Medium	High
		Contractor Qualifications	Contractor must have relevant experience, designated sustainability coordinator		Х	x		•			•		
INTEGRATIVE DESIGN PROCESS		**Activity Containment**	Reduce dust, noise, vibration, light pollution, runoff, dirt tracking, construction vehicle congestion, no idling		Х	x		•			•		
		Energy Use Reduction	Plan to minimize emissions, energy demand, control use, automated controls, tracking		Х	x		•			•		
	VITIES	Water Use Reduction	Plan to minimize water demand, control use, tracking, leak detection, grey or rainwater reuse, embodied water use reduction		Х	x		•			•		
	I ACTI	**Construction Waste Management**	CWM plan, targeted waste streams for diversion, detailed tracking, on-site reuse		Х	x		•			•		
	TRUCTION	Careful Storage of Materials	On-site storage that protects materials from moisture, extreme temperatures. Schedule construction procedures to minimize exposure of absorbent materials to VOC emissions.		Х	x		•			•		
	CONS	Indoor Air Quality	IAQ Plan and tracking (HVAC protection, source control, pathway interruption, housekeeping, flushouts), air testing prior to occupancy, air testing after occupancy. No smoking on site during construction.		Х	x		•			•		
		Community Feedback Loop	Communication plan for surrounding community during construction, open feedback process, corrective action plan		Х	x		•			•		
		Material Tracking	Detailed purchasing plan and tracking mechanisms; contractor's sustainability coordinator prepares submittal content		Х	X		•			•		
X Main Impact

X Smaller Impact

		Details	Project Phase Impact				Rating System			Impact Level		
	Topics		Pre-Design	Design	Construction	Operations	Envision v3	WEDG	Green Marine	Low	Medium	High
INTEGRATIVE DESIGN PROCESS OPERATIONS	**Building Systems Monitoring**	Energy & water systems: Monitoring-based Cx, measurement & verification, corrective action plans for variances		Х	x	x	•			•		
	Emissions Tracking	Track all energy and fuel consumption associated with the site, building, and associated transportation				x	•			•		
	Water and Air Quality Monitoring	Installed monitoring systems and/or regularly scheduled on-site testing		Х	x	x	•			•		
	Occupant Feedback Loops	Regular surveys, corrective action plans				x	•			•		
	Transparency	Ongoing sharing of information around energy and water use, maintenance, monitoring results, policies, etc.				х	•			•		
	Green Cleaning	Firm policies, equipment used, chemicals used, process			х	X	•			•		
	Green Procurement	Ongoing consumables: Procurement policies, purchasing specs			Х	X	•			•		
	Equitable Procurement	Prioritizes local procurement of consumables				X	•			•		
	Green Maintenance	Site and building policies for maintenance and modifications	Х	Х	Х	x	•			•		
	Operational Waste Management	Operational recycling, e-waste, mercury- containing lamps, batteries, other hazardous wastes, compostables		x		X	•			•		
	Emergency Preparedness	On-site supplies and equipment, personnel training, staff scheduling				Х						



Appendix E NOAA Storm Surge Maps

PORT AUTHORITY OF GUAM | Sustainability and Resiliency Plan






































































05 to 06 feet above ground























Appendix F Truck Turn Evaluations

PORT AUTHORITY OF GUAM | Sustainability and Resiliency Plan















Appendix G Permit Requirements

PORT AUTHORITY OF GUAM | Sustainability and Resiliency Plan

STORMWATER POLLUTION PREVENTION PLAN

FOR

PORT AUTHORITY OF GUAM FACILITIES

1026 CABRAS HIGHWAY, SUITE 201 PITI, GUAM 96915

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SWPPP PREPARATION DATE:

April 2023

ACCEPTED AND APPROVED:

no lissich

Rory Respicio General Manager, Port Authority of Guam

1

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information contained therein. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information contained is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

mulespicio

Rory Respicio General Manager

STORMWATER POLLUTION PREVENTION PLAN (SWPPP) REVISIONS

Revision	Date	Details/Comments
Revision 00	February 2011	Newly developed SWPPP
Revision 01	July 2015	Compliance with new General Permit and facility layout and operational changes
Revision 02	May 2022	Compliance with facility layout, operational changes, and expansion yard
Revision 03	February 2023	Compliance with new Multi-Sector General Permit (MSGP)

Note: Updates are required whenever there is a change in design, construction, operation or maintenance which creates a potential for the discharge of pollutants to the waters of the State or if the stormwater pollution prevention plan proves to be ineffective in achieving the general objectives of controlling pollutants in stormwater discharges associated with industrial activity (see Section 1.4).

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- F. HISTORIC PROPERTIES DOCUMENTATION

LIST OF ACRONYMS AND ABBREVIATIONS

AS	Activity-Specific
AST	Aboveground Storage Tank
BMP	Best Management Practice
CFR	Code of Federal Regulations
CWA	Clean Water Act
DMR	Discharge Monitoring Report
EPA	U.S. Environmental Protection Agency
EQMR	Equipment Maintenance and Repair
Guam EPA	Guam Environmental Protection Agency
IP&E	IP&E Holdings, LLC
mg/L	milligrams per liter
MSGP	Multi-Sector General Permit
NPDES	National Pollutant Discharge Elimination System
OWS	Oil/Water Separator
P2	Pollution Prevention
PAG	Port Authority of Guam
PCBs	polychlorinated biphenyls
SPCC	Spill Prevention, Control, and Countermeasure
SWPPP	Stormwater Pollution Prevention Plan
USCG	U.S. Coast Guard

1.0 FACILITY INFORMATION

1.1 BACKGROUND

This Stormwater Pollution Prevention Plan (SWPPP) has been developed for the Port Authority of Guam (PAG) facility at the commercial port located at 1026 Cabras Highway Piti, Guam 96915 in order to comply with the 1990 amendments to the Clean Water Act (CWA) that established the National Pollutant Discharge Elimination System (NPDES) permitting system. The purpose of the SWPPP is to identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater discharges from the site. It also serves as a framework for pollution prevention activities and as a guidance document for implementing best management practices (BMPs) to minimize stormwater pollution. Facility maps have been drafted and BMP Fact Sheets are provided in Appendix B. Additional SWPPP documentation is maintained in Appendix C.

In accordance with Title 40 Code of Federal Regulations (CFR) 122.26(b)(14)(viii), this SWPPP addresses the areas of the facility that are associated with industrial activities. These operations include an equipment wash rack, outdoor fueling/storage areas, and a Crane Shop in the equipment maintenance and repair (EQMR) area of the facility, gantry crane operation and maintenance area, and the container and cargo storage yard.

This SWPPP has been prepared following U.S. Environmental Protection Agency (EPA) guidelines, *Developing Your Stormwater Pollution Prevention Plan: A Guide for Industrial Operators* (EPA 833-B-09-002, February 2009) and in accordance with the EPA *Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity (MSGP)*, issued on September 29, 2021.

1.2 THE NPDES PERMIT AND UPDATED REQUIREMENTS

PAG operates under MSGP GUR050000, NPDES Identification Number GUR053001. A copy of the permit is included in Appendix D. This SWPPP must address potential pollution sources of stormwater and the BMPs to prevent pollution of Apra Harbor and the Philippine Sea. This SWPPP addresses the requirements set forth in the NPDES permit for each of the drainage areas at the site, including industry sector-specific requirements outlined in Part 8, Subpart Q of the MSGP.

1.3 APPLICABILITY AND DISTRIBUTION

The EPA has authority under the CWA to regulate discharges to waters of the United States and its territories, including priority stormwater sources. Federal regulations require these discharges be managed via the NPDES. The EPA remains the permit authority for Guam.

The SWPPP will be distributed to each member of the Stormwater Pollution Prevention (P2) Team, described in Section 2.0. Updates to the SWPPP, as necessary, will be distributed by the P2 Team leader.

1.4 REQUIREMENT TO POST SIGNAGE OF PERMIT COVERAGE

A sign or other notice of the facility's permit coverage will be posted at a safe, publicly accessible location in close proximity to the facility. A font large enough to be readily viewed from a public right-of-way will be used and periodic maintenance of the sign will be performed to

ensure that it remains legible, visible, and factually correct. Requirements for the sign's contents are located in Section 1.3.5 of the MSGP.

1.5 REVISIONS TO THE SWPPP

This SWPPP will be amended whenever there is a significant change in design, construction, maintenance, or operation at the port facility that creates or modifies potential pollutant discharges, or if this SWPPP proves to be ineffective in achieving the general objectives of controlling pollutants in stormwater discharges associated with industrial activity at the port. Conditions that indicate a need for revision of this SWPPP are discussed in Section 8 and will be identified during periodic site inspections, as described in Section 6.

2.0 STORMWATER POLLUTION PREVENTION TEAM

The PAG has designated a Stormwater P2 Team that provides a forum for identifying and addressing stormwater pollution concerns at the commercial port, and to ensure that the SWPPP is appropriately implemented. The PAG P2 Team consists of PAG managers and supervisors who are responsible for activities that have the potential to directly impact stormwater quality at the PAG. The P2 Team is responsible for the following:

- Identifying any changes in operations to determine whether revisions must be made to this SWPPP
- Supporting implementation of NPDES permit and SWPPP requirements, control measures, and BMPs
- Conducting or coordinating SWPPP training
- Conducting or coordinating stormwater sampling and monitoring efforts
- Ensuring timely submittal of Discharge Monitoring Reports (DMRs) and annual stormwater reports to the EPA
- Taking corrective actions when deficiencies or issues are identified
- Maintaining clear lines of communication with tenants and PAG management to ensure a cooperative partnership.

The P2 Team will meet at a minimum of once annually to discuss stormwater-related problems, or concerns. The Team Leader may call additional meetings to address specific events or issues as they arise. Additional attendees, such as consultants, vendors, or stakeholders may be included in the meetings when appropriate. The P2 Team will also ensure that the training described in Section 4.1.8 occurs annually, or more frequently, as deemed necessary by the P2 Team.

PAG P2 Team members and their responsibilities are identified in Table 2-1.

Table 2-1.1 off Autionity of Suain Foliation Frevention Feature		
Title	Telephone Number	Roles and Responsibilities
General Manager	671-477-5931 ext. 302/303	Review and approve SWPPP, enforce planning and implementation.
Environmental Specialist	671-477-5931 ext. 430	Pollution Prevention Coordinator, review/revise SWPPP as necessary, administer implementation.
Maintenance Manager	671-477-5931 ext. 401	Support implementation of SWPPP, team leader for corrective actions.
Operations Manager	671-477-5931 ext. 310	Support implementation of SWPPP, identify areas for improvement.
Health & Safety Manager	671-477-5931 ext. 258	Support implementation of SWPPP; assist with corrective actions.

Table 2-1. Port	Authority of	Guam I	Pollution	Provention ⁻	Горт

3.0 Site Description

3.1 GENERAL

Facility Information

Name of Facility:	Port Authority of Guam
Address:	1026 Cabras Highway, Suite 201
	Piti, Guam 96915

Geographic Location (in decimal degrees, using WGS84 datum): Latitude: 13.462656°N Longitude: 144.667326°E

The PAG Cargo Terminal is located at 1026 Cabras Highway on Apra Harbor in Piti, Guam. The Cargo Terminal compound occupies a total of 61.75 acres and includes an administrative building, EQMR building, Crane Shop and warehouse, cargo warehouse, gantry crane operation and maintenance area, and a large container and cargo storage yard (Figure 1).

As part of the port expansion and modernization program, the PAG has implemented a number of improvements to support stormwater management and minimize potential pollutant discharges. These improvements have included installation of coalescing media oil/water separators (OWSs) on outfalls, use of vegetated swales and infiltration ponds to reduce runoff, and installation of a dedicated equipment wash rack at the EQMR facility.

Industrial activities conducted on the PAG site include EQMR operations, an equipment wash rack, outdoor fueling/storage areas, a Crane Shop, gantry crane operation and maintenance area, and the container and cargo storage yard.

To the west of the PAG facility, is a site operated by IP&E Holdings, LLC (IP&E) that includes a small tank farm behind a concrete wall. A portion of the IP&E site that encompasses the tank farm is included in a drainage area that discharges through an OWS on the PAG site.

3.2 DRAINAGE SYSTEM DESCRIPTIONS

Drainage at the PAG site is split into ten drainage areas: Drainage Areas 1 (DA-1) through 10. Stormwater in each drainage area except DA-4 is collected through a number of storm drain inlets and is conveyed to outfalls (Outfalls 001 through 010) that discharge directly into Apra Harbor.

Drainage at the EQMR facility consists of two drainage areas, DA-1 and DA-2. Stormwater in these drainage areas is collected through a number of storm drain inlets and is conveyed to Outfalls 001 and 002 that discharge directly into Apra Harbor.

The gantry crane operation and maintenance area is comprised of two drainage areas: Drainage Area 3 and Drainage Area 4. Drainage Area 3 includes a staging area for bulk cargo. Stormwater in Drainage Area 3 is collected through a number of storm drain inlets and is conveyed to Outfall 003 that discharges directly into Apra Harbor. Drainage Area 4 runs the length of the gantry crane tracks. Stormwater in Drainage Area 4 generally sheet flows to the south and discharges directly into Apra Harbor.

The remaining six drainage areas, DA-5 through DA-10, consist of the container and cargo

storage yard. Stormwater in these drainage areas is collected through a number of storm drain inlets and is conveyed to Outfalls 005 through 010 that discharge directly into Apra Harbor.

A detailed description of each drainage area is provided below.

3.2.1 Drainage Area 1

Primary Features:EQMR Building, Crane Shop, IP&E SiteDrainage Area:6.13 acres (4.00 acres within PAG boundary and 2.13 acres of IP&E site)Imperviousness:High

Drainage Area 1 (Figure 2) consists of a portion of the IP&E facility to the west of PAG that includes a small aboveground storage tank (AST) farm and a storage yard, the EQMR building, the western portion of Warehouse 1 that contains the Crane Shop, the western portion of the administration building, and a parking area. A total of ten storm drain inlets are located within Drainage Area 1. Stormwater enters the inlets and is conveyed to an OWS that drains to Outfall 001, located in the western portion of the drainage area, which discharges into Apra Harbor. Paved surfaces in the drainage area are graded to direct stormwater to the inlets. Rooftop areas are not equipped with downspouts but are sloped to direct water to flow off the sides of the roofs and onto the pavement below.

A small diesel fuel tank farm, operated by IP&E, is located within Drainage Area 1. Stormwater that accumulates in the secondary containment of this tank farm is occasionally pumped through a pipe and is discharged to a storm drain inlet within the drainage area. IP&E conducts a visual inspection of the stormwater for any indication of contamination prior to discharge. If there is any evidence of contamination, the stormwater is not discharged, and an alternative means of offsite disposal is used. Inspection and management of the stormwater is conducted in accordance with IP&E's Spill Prevention, Control, and Countermeasure (SPCC) Plan (IP&E, 2018).

3.2.2 Drainage Area 2

Primary Features:Equipment Washing, Fueling Area, Used Oil Storage Area, Outdoor
Storage AreaDrainage Area:5.33 acresImperviousness:High

Drainage Area 2 (Figure 3) includes the equipment wash rack, a fueling area, a used oil storage area, an outdoor material storage area, the eastern portion of Warehouse 1, the eastern portion of the administration building, and a parking area.

Throughout Drainage Area 2, eleven storm drain inlets capture and convey stormwater to an OWS that drains to Outfall 002, located in the southern corner of the drainage area, which discharges into Apra Harbor. All paved surfaces in the drainage area are graded to direct stormwater to the inlets. Rooftop areas are not equipped with downspouts but are sloped to direct water to flow off the sides of the roof and onto the pavement below.

3.2.3 Drainage Area 3

Primary Features:	Portion of Cargo Building, Bulk Cargo Staging Area
Drainage Area:	4.34 acres
Imperviousness:	High

Drainage Area 3 (Figure 3) includes the western portion of the cargo building and a bulk cargo staging area. Bulk cargo, including rebar, is occasionally staged in this area before it is transported offsite. Throughout Drainage Area 3, eight storm drain inlets capture and convey stormwater to an OWS that drains to Outfall 003, located along the wharf, which discharges into Apra Harbor.

3.2.4 Drainage Area 4

Primary Features:	Gantry Crane Operation and Maintenance Area
Drainage Area:	11.47 acres (11.28 acres within PAG boundary and 0.19 acres of IP&E
-	site)
Imperviousness:	High

Drainage Area 4 (Figure 4) is located along the wharf. The gantry cranes in this area operate along a track system that fronts the wharf. Due to their size and configuration, the gantry cranes cannot be moved to the EQMR facility for repair. Therefore, periodic equipment maintenance and repair is performed in this area. There are no storm drain inlets in the immediate vicinity and stormwater in this area generally sheet flows towards the south where it discharges into Apra Harbor. Because the area does not have a single point source there is no designated outfall.

3.2.5 Drainage Area 5

Primary Features:	Portions of Cargo Building and Storage Yard
Drainage Area:	4.70 acres
Imperviousness:	High

Drainage Area 5 (Figure 5) includes the eastern portion of the cargo building and a portion of the cargo storage yard. Throughout Drainage Area 5, six storm drain inlets capture and convey stormwater to an OWS that drains to Outfall 005, located along the wharf, which discharges into Apra Harbor.

3.2.6 Drainage Area 6

Primary Features:	Portion of Cargo Storage Yard
Drainage Area:	2.81 acres
Imperviousness:	High

Drainage Area 6 (Figure 6) includes a portion of the cargo storage yard. Throughout Drainage Area 6, four storm drain inlets capture and convey stormwater to an OWS that drains to Outfall 006, located along the wharf, which discharges into Apra Harbor.

3.2.7 Drainage Area 7

Primary Features:	Portion of Cargo Storage Yard
Drainage Area:	12.51 acres
Imperviousness:	High

Drainage Area 7 (Figure 6) includes a portion of the cargo storage yard. Throughout Drainage Area 7, trench drains capture and convey stormwater to two OWSs that drain to Outfall 007, located along the wharf, which discharges into Apra Harbor.

3.2.8 Drainage Area 8

Primary Features:Portion of Cargo Storage YardDrainage Area:5.98 acresImperviousness:High

Drainage Area 8 (Figure 7) includes a portion of the cargo storage yard. Throughout Drainage Area 8, one storm drain inlet and trench drains capture and convey stormwater to an OWS that drains to Outfall 008, located along the wharf, which discharges into Apra Harbor.

3.2.9 Drainage Area 9

Primary Features:Portion of Cargo Storage YardDrainage Area:4.80 acresImperviousness:High

Drainage Area 9 (Figure 7) includes a portion of the cargo storage yard. Throughout Drainage Area 9, trench drains capture and convey stormwater to an OWS that drains to Outfall 009, located in the storage yard, which discharges into Apra Harbor.

3.2.10 Drainage Area 10

Primary Features:Portion of Cargo Storage YardDrainage Area:8.28 acresImperviousness:High

Drainage Area 10 (Figure 8) includes a portion of the cargo storage yard. Throughout Drainage Area 10, trench drains capture and convey stormwater to an OWS that drains to Outfall 010, located in the marshy area south of the storage yard, which discharges into Apra Harbor.

3.3 FACILITY ACTIVITIES

Primary activities conducted within the PAG facility include container and cargo storage and preventative care, maintenance, and repair of PAG-owned vehicles and equipment, which includes gantry cranes, forklifts, top lifters, grounds equipment, and official government vehicles. Equipment maintenance includes inspection, painting operations, battery servicing and storage, change-out of equipment fluids (engine oil and hydraulic fluids), fueling, basic welding and fabrication, and equipment washing.

Vehicle and Equipment Maintenance Area (Drainage Area 1)

Vehicle and equipment maintenance and repair activities are performed within the EQMR building and under covered service areas located under the eaves on the south side of the structure. Vehicle and equipment maintenance and repair activities are also performed outside in uncovered areas, to the south of the EQMR building, and to the northeast of Warehouse 1 (Drainage Area 1). Additional metal fabrication occurs in the Welding Shop (Drainage Area 2). Chemicals used in this area include lubricants, solvents, paints, diesel fuel, gasoline, hydraulic fluid, and engine oil. These chemicals are stored inside the EQMR building and are kept within appropriate storage containers such as flammable material storage lockers and containment pallets.

Crane Shop (Drainage Area 1)

Maintenance and repair of PAG gantry crane spreaders is performed within the Crane Shop, which is located in the western portion of Warehouse 1. All maintenance and repair activities associated with the Crane Shop are conducted indoors and are not exposed to precipitation or

stormwater run-on/runoff. Chemicals and products used in this area include lubricants, solvents, paints, diesel fuel, gasoline, hydraulic fluid, and engine oil. These materials are stored inside Warehouse 1 and are kept within appropriate storage containers such as flammable material storage lockers and containment pallets.

Vehicle and Equipment Wash Rack (Drainage Area 2)

Vehicle and equipment washing occurs in the designated wash rack that is located to the east of the Welding Shop. Wash water is contained by the washing pad and directed to a self - contained wash water recycling system that is periodically maintained by a service contractor in accordance with manufacturer specifications.

Diesel Fuel Storage Area (Drainage Area 2)

A secondary containment pad is located approximately 100 feet to the southeast of the EQMR building. The containment pad is used to house one 8,000-gallon diesel fuel AST. Equipment fueling operations take place immediately adjacent to the containment pad.

Used Oil Storage Area (Drainage Area 2)

An outdoor secondary containment area, identified as the Used Oil Storage Area, is located immediately to the south of the Diesel Fuel Storage Area. The Used Oil Storage Area houses two 950-gallon used oil ASTs and is also used to store drums of used oil and spent oily absorbents.

Material Storage Area (Drainage Area 2)

Outdoor storage areas are located to the west and southwest of the Welding Shop that house miscellaneous materials including concrete barriers, metal pipes and beams, crane fittings, and other materials used for welding and fabrication. The storage area to the southwest of the Welding Shop is contained within concrete curbing.

Gantry Crane Operation and Maintenance Area (Drainage Area 4)

Due to their size and configuration, gantry cranes that operate in this area cannot be moved to the EQMR for maintenance and repair. Therefore, periodic maintenance of this equipment is performed in place. Chemicals used in these operations include lubricants, solvents, paints, diesel fuel, gasoline, hydraulic fluid, and engine oil. Chemicals are not stored in this area during normal operations and are only brought to this area to support maintenance activities. These chemicals are stored at the EQMR facility as described above.

Bulk Cargo Staging Area (Drainage Area 3)

Bulk cargo, including rebar, is occasionally staged outside in this area before it is transported offsite. Chemicals are not stored in this area.

Cargo Storage Area (Drainage Areas 3, 5, 6, 7, 8, 9, and 10)

Cargo is stored inside the Cargo Building located in drainage areas 3 and 5 as well as in the container storage yard located in drainage areas 5 through 10. Chemicals are not stored in these areas.

3.4 POTENTIAL POLLUTANT SOURCES

Although the most significant equipment maintenance and repair is performed inside the EQMR building, other operations and materials have the potential to be exposed to stormwater. Table 3-1 provides a summary of industrial activities and the corresponding potential pollutants that may be exposed to stormwater.

Industrial Activity	Potential Pollutants
Vehicle and equipment maintenance	Diesel fuel, gasoline, grease, oil, hydraulic fluid, solvents, lubricants, metals, battery acid, paint
Vehicle and equipment fueling	Diesel fuel
Vehicle and equipment washing	Diesel fuel, gasoline, grease, oil, hydraulic fluid, lubricants, metals, paint
Material storage	Metals, paint, used oil
Welding and fabrication	Metals, cutting compounds, lubricants

 Table 3-1: Potential Pollutants Associated with Industrial Activities

3.5 SPILLS AND LEAKS

1

Due to the nature of equipment fueling and industrial activities conducted at the site, the potential exists for fuel or chemicals to be spilled or for storage containers to leak. EPA has defined "significant spills" to include releases within a 24-hour period of hazardous substances in excess of reportable quantities under Section 311 of the CWA and Section 102 of the Comprehensive Environmental Response, Compensation, and Liability Act.

The following is a summary of where potential spills and leaks could occur at the facility and which outfalls would be likely to be affected:

Vehicle and Equipment Maintenance Area (Drainage Area 1)

Potential spills and leaks may occur during vehicle and equipment maintenance activities either due to unanticipated equipment failure or accidental spillage of materials by maintenance personnel. Materials spilled indoors at the EQMR building would be readily contained and cleaned up without impacting stormwater; however, spills that occur in the outdoor maintenance area on the south side of the EQMR building could potentially flow into storm drain inlets and impact stormwater discharging from Outfall 001.

Crane Shop (Drainage Area 1)

Potential spills and leaks may occur during crane maintenance activities either due to unanticipated equipment failure or accidental spillage of materials. Materials spilled indoors at the Crane Shop would be readily contained and cleaned up without impacting stormwater at the port. Although all operations at the Crane Shop occur indoors, there is a small potential for spills to occur outdoors during transfer of equipment or materials into the shop area. Spills occurring outside of the Crane Shop could potentially flow into a storm drain inlet and impact stormwater discharging from Outfall 001.

Vehicle and Equipment Wash Rack (Drainage Area 2)

Potential spills and leaks from the equipment wash rack could include wash water from vehicle and equipment washing activities as well as any associated soaps and/or detergents. A small potential also exits for equipment leaks during washing activities, which could include oil, grease, fuel, and/or hydraulic oil. Although the wash rack is designed to contain all liquids generated from its use, any spilled material that was not successfully contained could enter storm drain inlets and impact stormwater discharging from Outfall 002.

Diesel Fuel Storage Area (Drainage Area 2)

Potential spills and leaks from the diesel fuel storage area could include diesel fuel from the 8,000-gallon AST or equipment fueling operations that occur in the surrounding area. The

secondary containment pad is meant to prevent leaks from migrating out of the containment area, however, any material spilled outside of the containment area could enter storm drain inlets and impact stormwater discharging from Outfall 002.

Used Oil Storage Area (Drainage Area 2)

Potential spills and leaks within the used oil storage area could occur during transfer to/from the used oil ASTs, or from container failure. Container failure could also cause leaks from new liquid material containers, or from hazardous and non-hazardous waste containers staged in this area. Although the used oil storage area is designed to prevent leaks from migrating out of the containment area, any spilled material that was not successfully contained could enter storm drain inlets and impact stormwater discharging from Outfall 002.

Gantry Crane Operation and Maintenance Area (Drainage Area 4)

Potential spills and leaks may occur in this area as a result of unanticipated equipment failure or from accidental spillage of materials during gantry crane maintenance operations. If left uncontained, spills occurring in this area could impact stormwater discharging from Drainage Area 4

Bulk Cargo Staging Area (Drainage Area 3)

Potential spills and leaks may occur in this area as a result of uncovered material storage and leaks from unused equipment stored in the area. If left uncontained, spills occurring in this area could impact stormwater discharging from Outfall 003.

Cargo Storage Area (Drainage Areas 3, 5, 6, 7, 8, 9, and 10)

Potential spills and leaks may occur in these areas as a result of leakage from cargo containers. If left uncontained, spills occurring in these areas could impact stormwater discharging from Outfalls 003, 005, 006, 007, 008, 009, and 010.

3.5.1 Historic Spills

No significant spills were reported to have occurred onsite during the period of record. An Emergency Spill Log is contained in Appendix C.

3.6 NON-STORMWATER DISCHARGE IDENTIFICATION

3.6.1 Methodology

A comprehensive site inspection was conducted in October 2019. The purpose of this inspection was to identify the presence and potential causes of any unauthorized non-stormwater discharges occurring at the site. All of the drainage areas were inspected, including secondary containment pads, the equipment wash rack, outdoor storage areas, gantry crane operation area, as well as all storm drain inlets and stormwater outfall locations.

3.6.2 Findings

At the time of the inspection there were no sources of non-stormwater discharge identified. All structural BMPs were found to be in good condition with no evidence of structural deterioration or other operational conditions that could lead to an unauthorized non-stormwater discharge. All storm drain inlets were found to be in good condition with no evidence of contaminants or other unauthorized materials entering the system. All of the outfalls were also found to be in good condition with no indication of non-stormwater discharges.

3.7 EXISTING MONITORING

A visual inspection program of the ASTs and related equipment is in place at the PAG facility. Monthly inspections are performed by maintenance staff and documentation of the inspections is kept onsite in the SPCC plan for a minimum of 3 years. Inspection checklists are available in Appendix D.1 of the SPCC plan. A copy of the SPCC plan is maintained onsite in the same location as this SWPPP.

3.8 HISTORICAL STORMWATER MONITORING DATA

The following section provides a summary of quarterly benchmark sampling results obtained under a previous permit. Under the 2015 MSGP, benchmark criteria for total aluminum, total iron, total lead, and total zinc were not hardness dependent values. Grab samples were intermittently collected from Outfall 001 and Outfall 002 between December 2015 to April 2022.
Monitoring Period 1: October – December :	2015	
Sample Collection Date: December 28, 20 ⁻	15	
Monitoring Location: Outfall 001		
Parameter	Result	2015 Benchmark Criteria
Total Aluminum	0.087 J mg/L	0.75 mg/L
Total Iron	0.051 J mg/L	1.0 mg/L
Total Lead	< 0.005 mg/L	0.21 mg/L
Total Zinc	0.270 mg/L	0.09 mg/L
Monitoring Location: Outfall 002		
Parameter	Result	2015 Benchmark Criteria
Total Aluminum	0.250 mg/L	0.75 mg/L
Total Iron	1.600 mg/L	1.0 mg/L
Total Lead	0.0019 J mg/L	0.21 mg/L
Total Zinc	0.280 mg/L	0.09 mg/L
Monitoring Period 2: July – September 201	6	
Sample Collection Date: September 22, 20	16	
Monitoring Location: Outfall 001		
Parameter	Result	2015 Benchmark Criteria
Total Aluminum	0.240 mg/L	0.75 mg/L
Total Iron	0.230 mg/L	1.0 mg/L
Total Lead	0.0011 J mg/L	0.21 mg/L
Total Zinc	0.088 mg/L	0.09 mg/L
Monitoring Location: Outfall 002		
Parameter	Result	2015 Benchmark Criteria
Total Aluminum	0.140 mg/L	0.75 mg/L
Total Iron	0.260 mg/L	1.0 mg/L
Total Lead	0.0017 J mg/L	0.21 mg/L
Total Zinc	0.150 mg/L	0.09 mg/L

Monitoring Period 3: July – September 2017		
Sample Collection Date: September 20, 2017		
Monitoring Location: Outfall 001		
Parameter	Result	2015 Benchmark Criteria
Total Aluminum	0.088 J mg/L	0.75 mg/L
Total Iron	0.100 mg/L	1.0 mg/L
Total Lead	0.0018 J mg/L	0.21 mg/L
Total Zinc	0.043 mg/L	0.09 mg/L
Monitoring Location: Outfall 002		
Parameter	Result	2015 Benchmark Criteria
Total Aluminum	0.085 J mg/L	0.75 mg/L
Total Iron	0.080 J mg/L	1.0 mg/L
Total Lead	<0.005 mg/L	0.21 mg/L
Total Zinc	0.033 mg/L	0.09 mg/L
Monitoring Period 4: October – December 20	17	
Sample Collection Date: December 28, 2017		
Monitoring Location: Outfall 001		
Parameter	Result	2015 Benchmark Criteria
Total Aluminum	0.097 mg/L	0.75 mg/L
Total Iron	1.100 mg/L	1.0 mg/L
Total Lead	<0.005 mg/L	0.21 mg/L
Total Zinc	0.180 mg/L	0.09 mg/L
Monitoring Location: Outfall 002		
Parameter	Result	2015 Benchmark Criteria
Total Aluminum	0.320 mg/L	0.75 mg/L
Total Iron	0.760 mg/L	1.0 mg/L
Total Lead	<0.005 mg/L	0.21 mg/L
Total Zinc	0.620 mg/L	0.09 mg/L

Monitoring Period 5: April – June 2018		
Sample Collection Date: April 27, 2018		
Monitoring Location: Outfall 001		
Parameter	Result	2015 Benchmark Criteria
Total Aluminum	0.240 mg/L	0.75 mg/L
Total Iron	0.780 mg/L	1.0 mg/L
Total Lead	0.0069 mg/L	0.21 mg/L
Total Zinc	0.150 mg/L	0.09 mg/L
Monitoring Location: Outfall 002		
Parameter	Result	2015 Benchmark Criteria
Total Aluminum	<0.100 mg/L	0.75 mg/L
Total Iron	<0.100 mg/L	1.0 mg/L
Total Lead	<0.005 mg/L	0.21 mg/L
Total Zinc	<0.020 mg/L	0.09 mg/L
Monitoring Period 6: July – September	2018	
Sample Collection Date: August 18, 20	18	
Monitoring Location: Outfall 001		
Parameter	Result	2015 Benchmark Criteria
Total Aluminum	0.140 mg/L	0.75 mg/L
Total Iron	0.200 mg/L	1.0 mg/L
Total Lead	0.0024 J mg/L	0.21 mg/L
Total Zinc	0.046 mg/L	0.09 mg/L
Monitoring Location: Outfall 002		
Parameter	Result	2015 Benchmark Criteria
Total Aluminum	0.084 J mg/L	0.75 mg/L
Total Iron	0.160 mg/L	1.0 mg/L
Total Lead	0.0024 J mg/L	0.21 mg/L
Total Zinc	0.093 ma/L	0.09 ma/L

Monitoring Period 7: April – June 2019		
Sample Collection Date: June 21, 2019		
Monitoring Location: Outfall 001		
Parameter	Result	2015 Benchmark Criteria
Total Aluminum	0.190 mg/L	0.75 mg/L
Total Iron	0.510 mg/L	1.0 mg/L
Total Lead	0.0032 J mg/L	0.21 mg/L
Total Zinc	0.110 mg/L	0.09 mg/L
Monitoring Location: Outfall 002		
Parameter	Result	2015 Benchmark Criteria
Total Aluminum	0.100 mg/L	0.75 mg/L
Total Iron	0.042 J mg/L	1.0 mg/L
Total Lead	<0.005 mg/L	0.21 mg/L
Total Zinc	0.110 mg/L	0.09 mg/L
Monitoring Period 8: April – June 2022		
Sample Collection Date: April 12, 2022		
Monitoring Location: Outfall 001		
Parameter	Result	2015 Benchmark Criteria
Total Aluminum	0.0691 J mg/L	0.75 mg/L
Total Iron	0.0542 J mg/L	1.0 mg/L
Total Lead	0.000443 J mg/L	0.21 mg/L
Total Zinc	0.0593 mg/L	0.09 mg/L
Monitoring Location: Outfall 002		
Parameter	Result	2015 Benchmark Criteria
Total Aluminum	0.112 mg/L	0.75 mg/L
Total Iron	0.0514 J mg/L	1.0 mg/L
Total Lead	0.000232 J mg/L	0.21 mg/L
Total Zinc	0.0655 mg/L	0.09 mg/L

Monitorina	Period 9:	Julv –	September	2022
wormoning	1 01100 0.	oury	Coptornibol	2022

Sample Collection Date: July 26, 2022

Monitoring Location: Outfall 001

Parameter	Result	2015 Benchmark Criteria
Total Aluminum	0.0618 mg/L	0.75 mg/L
Total Iron	0.0564 mg/L	1.0 mg/L
Total Lead	0.000578 mg/L	0.21 mg/L
Total Zinc	0.0308 mg/L	0.09 mg/L
Monitoring Location: Outfall 002		
Parameter	Result	2015 Benchmark Criteria
Total Aluminum	0.0631 mg/L	0.75 mg/L
Total Iron	0.0419 mg/L	1.0 mg/L
Total Lead	0.000532 mg/L	0.21 mg/L
Total Zinc	0.0584 mg/L	0.09 mg/L

Average Parameter Concentrations 2014/2015				
Monitoring Location: Outfall 001				
Parameter	Result	2015 Benchmark Criteria		
Total Aluminum	0.135 mg/L	0.75 mg/L		
Total Iron	0.342 mg/L	1.0 mg/L		
Total Lead	0.0029 mg/L	0.21 mg/L		
Total Zinc	0.108 mg/L	0.09 mg/L		
Monitoring Location: Outfall 002				
Parameter	Result	2015 Benchmark Criteria		
Total Aluminum	0.139 mg/L	0.75 mg/L		
Total Iron	0.343 mg/L	1.0 mg/L		
Total Lead	0.003 mg/L	0.21 mg/L		
Total Zinc	0.149 mg/L	0.09 mg/L		

Average quarterly benchmark sampling results were below 2015 criteria for all parameters except for concentrations of total zinc detected at Outfall 001 and Outfall 002. The exceedances for total zinc at Outfall 001 and Outfall 002 have potentially been caused by exposed galvanized metal surfaces and tire dust.

In an effort to reduce concentrations of zinc in stormwater runoff, the port has made an effort to move galvanized materials under cover and has increased the frequency of housekeeping and sweeping operations. The port has also implemented a scheduled vehicle and equipment washing program at the equipment wash rack, which helps reduce potential pollutant load on fleet vehicles and equipment. The port is aware that the marine waters benchmark value for zinc under the 2015 MSGP (0.09 mg/L) is significantly lower than the hardness dependent value derived under the previous permit. The port will continue to evaluate additional control options if quarterly benchmark sampling results under the new permit exceed benchmark criteria.

4.0 STORMWATER CONTROL MEASURES

This section of the SWPPP discusses stormwater control measures utilized at the PAG facility. BMPs can minimize potential pollutant sources and effective stormwater management can further reduce pollutants in stormwater discharges. BMPs can be characterized into three groups based on generic activities, specific activities, and site/structural-specific activities. These BMP groups are defined as follows:

- "Baseline" BMPs are practices that are relatively simple, applicable to a wide variety of industries and activities, and are inexpensive. EPA identifies eight baseline BMPs as discussed in Section 4.1 of this SWPPP.
- "Activity-Specific" (AS) BMPs are practices that are applicable to a specific type of activity that occurs at the facility. The activity may occur at more than one location. Examples include equipment washing and maintenance. Activities specific to the facility that potentially contribute to stormwater pollution and their respective BMPs are discussed in Section 4.2.
- "Site-Specific" BMPs are practices that are applicable to specific locations, structures, or items of equipment at the facility. Site-specific BMPs are discussed in Section 4.3.

Fact sheets for the BMPs relevant to the PAG facility are provided in Appendix B.

4.1 BASELINE BEST MANAGEMENT PRACTICES

The maintenance facility NPDES permit requires the SWPPP to provide an implementation schedule for stormwater control measures and BMPs, including the following baseline BMPs:

- Minimize Exposure
- Good Housekeeping
- Preventive Maintenance
- Visual Inspections
- Spill Prevention and Response
- Sediment and Erosion Prevention and Control
- Management of Stormwater Runoff
- Pollution Prevention Training
- Recordkeeping and Internal Reporting Procedures
- Major Storm Events

These eight BMPs are also identified in the EPA Guidance for SWPPPs and are applicable to all types of industrial facilities. Specific measures for implementing these BMPs are described in subsequent sections of this SWPPP. In addition, three of the fact sheets included in Appendix B specifically address the concepts of baseline BMPs. Those fact sheets are:

- BMP Sheet BL1 Elimination of Non-Stormwater Discharges to Storm Drains
- BMP Sheet BL2 Emergency Spill Cleanup Plans
- BMP Sheet BL3 Stormwater Pollution Prevention Education

4.1.1 Minimize Exposure

The following control measures have been implemented to minimize the exposure of potential

pollutants to rain and runoff.

- All maintenance and repair activities are performed indoors at the EQMR building and Crane Shop whenever practicable.
- Use of containment measures (i.e. hanging plastic barriers, tarpaulins, and roofing cover) is in effect for all painting and outdoor maintenance operations.
- Vehicle and equipment washing is performed at the designated wash rack.
- Diesel fuel AST, used oil ASTs, and drums and containers are all maintained on secondary containment pads with impervious ground surfaces and walls.
- Outdoor material storage occurs within a curbed area to prevent run-on and minimize potential pollutant runoff.

4.1.2 Good Housekeeping

Good housekeeping requires the maintenance of a clean, orderly facility. Good housekeeping measures are implemented as part of daily operations and include weekly visual inspections and regular cleaning of work areas to remove garbage, debris, and other potential pollutants, as well as weekly sweeping of all surfaces at PAG with a road sweeper.

Fact sheets for AS BMPs addressing good housekeeping measures as they apply to specific operations or general site/building maintenance activities have been created and are discussed in Section 4.2 and included in Appendix B.

4.1.3 Preventive Maintenance

A preventive maintenance program involves timely inspection and maintenance of stormwater management devices, as well as inspecting and testing facility equipment and systems to uncover conditions that could cause breakdowns or failures. These breakdowns or failures can result in discharges of pollutants to surface waters. Routine facility inspections are conducted quarterly, at minimum, and aid in identifying potential areas requiring maintenance. Specific attention is paid to the EQMR area, vehicle and equipment wash rack, equipment fueling area, used oil storage area, gantry crane operation area, and the outside material storage areas.

4.1.4 Spill Prevention and Response Procedures

The Port Police document spills and leaks of oil or hazardous materials at PAG facilities both on land and in the water. Spills in the water are handled by the Guam EPA and the U.S. Coast Guard (USCG). The USCG responds to spills in the waterways to conduct an evaluation of the spill and predict the movement and effects of the spill.

In the event of a spill, the following agencies must be contacted immediately:

Telephone Number
Direct Line: (671) 472-2703
Main Gate: (671) 477-2864
Piti Station: (671) 472-8139
Tamuning/Tumon Station: (671) 646-8801/8802
(800) 424-8802
Sector Guam: (671) 355-4824
On-Base Emergency: (671) 333-4357
(671) 300-4751

The relevant AS BMPs that provide suggestions for handling spills and leaks as they may potentially occur while conducting a specific activity are described in Section 4.2 and fact sheets are located in Appendix B. PAG personnel should also refer to and comply with spill prevention and response procedures outlined in the facility's SPCC plan, which is maintained onsite in the same location as this document.

4.1.5 Erosion and Sediment Control

Erosion concerns can be divided into two broad categories:

(1) Erosion due to active construction projects, and

(2) Chronic or nuisance eroding areas due to inadequate conveyance, steep slopes, erodible fills, etc.

The first category of erosion potential is associated with various development projects being actively constructed or planned on facility property. For each project, an approved sediment and erosion control plan will be developed and approved by the local or state regulatory agencies. These plans will identify the specific control measures that will be in place during construction to minimize erosion and sedimentation. At present there are no sites of construction-related erosion at PAG facility areas covered by this SWPPP.

The second category of erosion or sedimentation problems involves areas that may experience nuisance erosion due to inadequate conveyance, steep slopes, or erodible fills. No significant visible erosion was identified during site inspections.

The MSGP requires that at a minimum, facilities must implement flow velocity dissipation devices at outfall locations to minimize the potential for erosion. However, the stormwater outfalls at the PAG facility discharge directly into Apra Harbor from storm drainage pipes embedded in the retaining seawall or directed underground into the harbor. In addition, sheet flow from pavement directly discharges to the surface waters of Apra Harbor from the sea wall. Stormwater discharging from the outfalls does not come into contact with any natural or manmade feature with potential to erode prior to entering the harbor. Furthermore, water depths at the point of discharge from the sea wall are upwards of 30 feet, thereby posing no risk for erosion of the harbor floor.

Due to the unique configuration of the stormwater outfalls at the site, flow velocity dissipation devices do not serve a practical function. Therefore, flow velocity dissipation devices have not been installed.

In an effort to minimize discharge of sediment mobilized by stormwater runoff at the site, the port has incorporated grit traps into the design of the coalescing media OWSs located on the stormwater drainage lines in each drainage area other that DA-4 which is sheet flow. The stormwater in each of these drainage areas passes through the OWSs, effectively capturing sediment in the grit traps prior to stormwater discharge. The port will continue to evaluate sedimentation through the periodic inspection program and will identify and implement additional BMPs, if necessary. Further information regarding the OWSs is presented in Section 4.1.6.

4.1.6 Management of Stormwater Runoff

A typical system of devices and facilities to manage stormwater runoff includes catch basins, underground chambers, detention basins, wet ponds, OWSs, and oil/grit chambers. The various facilities and devices provide different types of stormwater quality and quantity management.

For example, a typical stormwater basin may be designed to provide quantity management for attenuating peak discharges and targeting pollutants like sediment and phosphorus from paved areas, whereas an OWS is utilized to remove petroleum from lower flows through the drainage systems in maintenance areas.

Structural BMPs in place at the PAG facility include an equipment wash rack, stormwater diversion measures, ¼" mesh wire installed on the administrative parking lot storm drains, and OWSs.

As part of the port modernization program, an equipment wash rack was installed in the northeast corner of the EQMR facility to support vehicle and equipment washing while minimizing the potential for pollutants from these activities to impact stormwater discharge (Figure 2). The wash rack is designed to contain all associated wash water and prevent stormwater run-on/runoff. The system uses a self-contained wash water recycling system that is periodically inspected and maintained by a service contractor.

Stormwater diversion measures are currently used to reduce exposure of stormwater to potential pollutants. Diversion measures at the site include impervious walls, curbing, and grading around secondary containment and material storage areas. The facility also uses storm drain inlets and an underground conveyance system to direct stormwater flow.

Coalescing OWSs have been integrated into the stormwater drainage lines in all drainage areas except DA-4 which is sheet flow to remove potential petroleum contamination prior to stormwater discharge from the outfalls. The OWSs are periodically inspected and maintained by a service contractor in accordance with the manufacturer's specifications.

4.1.7 MSGP Sector-Specific Non-Numeric Effluent Limits

Sector-specific technology-based effluent limits are defined for the PAG facility industrial sector (Subsector Q1). The additional Subsector Q1 requirements that apply to the site have been incorporated into facility operations, and although generally discussed throughout this document, these specifically include the following:

Good Housekeeping Measures

- *Painting Area.* Containment measures (plastic barriers/tarpaulins) have been implemented to minimize overspray and potential runoff from painting operations. At least once per month stormwater conveyances and inlets are cleaned of deposits of debris and paint chips.
- *Material Storage Areas.* All containerized materials (e.g., fuels, paints, solvents, waste oil, antifreeze, batteries) are labeled and stored in protected, secure locations away from drains. Outdoor storage areas are managed appropriately to minimize the potential for contamination of precipitation or surface runoff from storage areas. Inventory control measures are used to limit the quantity of potentially hazardous materials kept onsite.
- Equipment Maintenance and Repair Areas. To minimize the contamination of precipitation or surface runoff from equipment maintenance and repair to the extent practical, all maintenance activities are indoors. Stormwater runoff from all areas but DA-4 is treated through the use of oil water separators.

4.1.8 Major Storm Events

The following enhanced control measures will be implemented to minimize the exposure of

potential pollutants to rain and runoff from storm surges and flood events (when possible).

- Reinforce materials storage structures to withstand flooding and additional exertion of force;
- Prevent floating of semi-stationary structures by elevating to the Base Flood Elevation (BFE) level or securing with a non-corrosive device;
- When a delivery of exposed materials is expected, and a storm is anticipated within 48 hours, delay delivery (if possible) until after the storm or store materials as appropriate;
- Temporarily store materials and waste above the BFE level;
- Temporarily reduce or eliminate outdoor storage;
- Temporarily relocate any mobile vehicles and equipment to higher ground;
- Develop scenario-based emergency procedures for major storms that are complementary to regular stormwater pollution prevention planning and identify emergency contacts for staff and contractors; and
- Conduct staff training for implementing your emergency procedures at regular intervals.

Material Handling Area. To minimize contamination of precipitation or surface runoff from material handling operations and areas, spill and overflow protection is implemented whenever possible during fueling activities. Paint and solvent mixing is performed in designated areas and under cover whenever possible.

Employee Training. The following additional sector-specific employee training topics are included in the Pollution Prevention Training discussed in Section 4.1.8: used oil management, spent solvent management, spill prevention and control, fueling procedures, general good housekeeping practices, painting procedures, and used battery management.

Preventative Maintenance. The preventive maintenance program includes testing facility equipment and systems to uncover conditions that could cause breakdowns or failures resulting in discharges of pollutants to surface waters, and also includes timely inspection and maintenance of stormwater management devices (secondary containment areas, storm drain inlets, oil/water separators, and the equipment wash rack).

4.1.8 Pollution Prevention Training

Training is necessary to ensure that PAG employees are aware of their impact to stormwater, their responsibilities to prevent pollution, and methods to control such pollution release. Training sessions are held annually for PAG maintenance staff. Topics covered during training include, but are not limited to:

- Purpose of SWPPP, requirements, and contents
- Spill prevention and response procedures
- Good housekeeping practices
- Preventative maintenance
- Material management practices
- Equipment washing procedures
- Recordkeeping and reporting
- Additional training topics identified in Section 4.1.7

All training is organized and coordinated through the P2 Team annually. Staff is alerted by the

P2 Team in advance of the training session to ensure full participation. A copy of the attendance sheet and topics covered is maintained onsite.

Other training sessions are held as needed for members of the P2 Team or others to address specific topics of interest. Topics for such training sessions may include basic concepts of pollution prevention and baseline BMPs (for new P2 Team members); site- specific BMPs; and proper use and maintenance of stormwater management systems and structures. Training on these topics is scheduled on an as-needed basis by the P2 Team Leader in coordination with the P2 Team.

4.1.9 Non-Stormwater Discharges

Inspection and elimination of unauthorized non-stormwater discharges is discussed in Section 3.6. To ensure continued prevention and elimination of non-stormwater discharges from the site, a BMP factsheet has been created for this baseline BMP and is located in Appendix B (BL-1).

4.1.10 Waste, Garbage, and Floatable Debris

As part of daily operations and general good housekeeping practices, all employees routinely inspect and sweep their work areas to ensure waste materials, garbage, or other floatable debris are not permitted to accumulate. Garbage receptacles are located throughout the site and are kept with their lid closed to minimize contamination of runoff. Garbage bins are maintained and regularly emptied by a service contactor.

4.1.11 Recordkeeping and Internal Reporting Procedures

Recordkeeping is an important aspect of determining the long-term history and practices at a facility. It is also necessary to prove a facility is in compliance with local, state, and federal laws and programs. A template for additional documentation requirements is provided in Appendix C.

In addition to items listed in Appendix C, records will be maintained for the following:

- Current inventory of materials used onsite
- Records of routine site inspections
- Reports of spills
- Records of annual and additional stormwater training sessions

4.2 ACTIVITY-SPECIFIC BMPS

In addition to the baseline BMPs, the P2 Team and staff will consider their individual activities and the techniques that are available to aid in reducing stormwater pollution. The following AS BMPs are provided in a series of fact sheets in Appendix B:

- BMP Sheet AS1 Vehicle and Equipment Maintenance
- BMP Sheet AS2 Vehicle and Equipment Fueling
- BMP Sheet AS3 Vehicle and Equipment Washing, Cleaning, and Degreasing
- BMP Sheet AS4 Outdoor Storage of Waste and Materials
- BMP Sheet AS5 Waste/Garbage Handling and Disposal
- BMP Sheet AS6 Building and Grounds Maintenance
- BMP Sheet AS7 Aboveground Storage Tank Management

All AS BMPs listed above apply to the PAG facility.

4.3 SITE-SPECIFIC AND STRUCTURAL BMPS

In some situations, special practices may be necessary to prevent pollution based on the specific stormwater management structure or a unique site design or practice. In general, the manufacturer of physical structures, such as sand traps and storm filters, can provide documentation for proper maintenance and recommended practices to prevent the release of pollutants to stormwater.

P2 Team members should continue to assess individual areas and processes to determine the need for different or additional BMPs.

The EPA Guidance specifically identifies Site-Specific BMPs for the following items:

\triangleright	Flow	Diversion	Practices
-		Difference	1 1 4 0 1 0 0 0

Stormwater Conveyances	Other Preventive Practices
Diversion Dikes	Preventive Monitoring
Graded Areas and Pavements	Dust Control
	Signs and Labels
Exposure Minimization Practices	Security
Containment Dikes	Area Control Procedures
Curbing	Equipment Washing
Drip Pans	
Collection Basins	Sediment and Erosion Prevention
Sumps	Vegetative Practices
Covering	Structural Erosion Prevention and Sediment
Vehicle Positioning	Control Practices
Loading/Unloading by Air Pressure/Vacuum	
	Infiltration Practices
Mitigative Practices	Vegetated Filter Strips
Sweeping	Grassed Swales
Shoveling	Level Spreaders
Excavation Practices	Infiltration Trenches
Vacuum/Pump Systems	Porous Pavements/Concrete Grids and Modular
Sorbents	Pavement
Gelling Agents	

Ensuring that maintenance and operations personnel are aware of maintenance and use requirements prior to installation is essential for the successful operation of stormwater management structures. As needed, training on the correct use and maintenance of stormwater management structures is included in the annual P2 training or is separately scheduled (See Section 4.1.8).

4.4 BMP IMPLEMENTATION PROGRAM

4.4.1 Scheduling of Implementation

The P2 Team is responsible for implementing the schedule for the goals, reports, activities, and BMPs described above. BMPs will be distributed to the relevant maintenance staff and PAG offices as needed. The P2 Team will meet periodically to identify the need for new BMPs and schedules for their implementation. Annual P2 training is scheduled as described in Section 4.1.8.

5.0 STORMWATER MONITORING AND REPORTING

This section of the SWPPP describes the stormwater monitoring requirements for the PAG facility.

5.1 SUBSTANTIALLY IDENTICAL OUTFALLS

Outfalls 005, 006, 007, 008, 009, and 010 are considered substantially identical due to the types of activities conducted within the drainage areas for these outfalls (i.e., storage of cargo containers on a paved surface); therefore, monitoring one of these outfalls will provide data for all 6 drainage areas. PAG has chosen to monitor Outfall 005.

5.2 BENCHMARK AND INDICATOR MONITORING

5.2.1 Benchmark Monitoring

In accordance with section 4.2.2 of the MSGP benchmark monitoring must be conducted quarterly for the first and fourth years of permit coverage. Monitoring periods for the first year are summarized as follows:

- Monitoring Period 1 April 1 through June 30, 2023
- Monitoring Period 2 July 1 through September 31, 2023
- Monitoring Period 3 October 1 through December 31, 2023
- Monitoring Period 4 January 1 through March 31, 2024

One sample will be collected from each monitored outfall (Outfalls 001, 002, 003, and 005), and will be analyzed for the following parameters:

Parameter	Benchmark Monitoring Concentration
Total Aluminum	1.1 mg/L
Total Lead	0.21 mg/L
Total Zinc	0.09 mg/L

Table 5-1: Quarterly Benchmark Monitoring Criteria

DA-4 is sheet flow and cannot be monitored.

5.2.2 Indicator Monitoring

Because PAG has paved surfaces that will be sealed or re-sealed with coal-tar sealcoat in areas of the port covered under the MSGP, in accordance with section 4.2.1.1b of the MSGP, indicator monitoring for polycyclic aromatic hydrocarbons (PAHs) must be conducted biannually for the first and fourth year of permit coverage. Monitoring periods for the first year are summarized as follows:

- Monitoring Period 1 April 1 through June 30, 2023
- Monitoring Period 2 October 1 through December 31, 2023

One sample will be collected from each monitored outfall (Outfalls 001, 002, 003, and 005), and will be analyzed for the following parameters:

Parameter	Benchmark Monitoring Concentration
	Report only/
PAHs	No thresholds or
	baseline values

Table 5-2: Biannual Indicator Monitoring Criteria

5.2.3 Benchmark and Indicator Monitoring Reports

Monitoring data must be reported to the EPA in accordance with Section 7.3 of the MSGP. Data must be submitted to EPA using the EPA's Net-DMR system (available at <u>https://npdes-ereporting.epa.gov/net-netdmr</u>) no later than 30 days after receiving analytical results for all outfalls monitored during the reporting period.

Refer to Section 4.2.2.3 of the MSGP for additional guidance regarding the benchmark monitoring program and to determine if continued monitoring is required.

5.2.4 Benchmark and Indicator Monitoring Procedure

Benchmark monitoring samples will be collected by the sampling team, which shall at minimum consist of one member of the P2 Team and/or a qualified contracted professional. Stormwater sampling should occur during measurable storm events, which are defined as a storm event that results in an actual discharge from the site and occurs at least 72 hours after the previous measurable storm event. The 72-hour storm interval does not apply if you can document that less than a 72-hour interval is representative for local storm events during the monitoring period. National Weather Service forecasts can be used as a planning tool for gauging storm events.

Sampling will be performed using the following equipment:

- Sample bottles, sample cooler with ice
- Rope and bucket to lower and collect discharge water from the outfall
- Measuring glass and a watch to calculate the flow rate
- Disposable gloves
- Field notebook, marking pen, and chain of custody form

Once a rainfall has been determined to result in a discharge and there has not been a measurable storm event in the last 72 hours, the sampling team should conduct sampling activities.

Personnel shall collect one grab sample for analysis during the first 30 minutes of the discharge. If it is not possible to collect the sample within the first 30 minutes of a measurable storm event, the sample must be collected as soon as practicable, and documentation must be kept with the SWPPP explaining why it was not possible to take samples within the first 30 minutes. Samples can be collected directly in the sample bottles. Alternatively, a food grade high density

polyethylene bucket or other suitable container can be lowered down to the outfall and filled with discharge water and then used to fill the sample bottles. This bucket must be decontaminated between each sampling event. Sample bottles will be labeled and placed in a cooler with ice. The team members will record the time that the rain ceased in the field notebook and take the samples to the laboratory for analysis.

All sample containers will have a label that is placed on the side of the container. Sample container caps should not be labeled. The labels will include the following information:

- Date
- Time
- Collector
- Sample Number (this should correspond to the Outfall; i.e. SW-001, SW-002)
- Sampling Site (PAG Facility)
- Sample Type (i.e. grab)
- Preservative used (i.e. ice)
- Tests Required (indicated on chain of custody)

A chain of custody form shall be properly filled out and signed by the sampling personnel to ensure sample integrity.

5.3 IMPAIRED WATERS MONITORING

Apra Harbor is currently listed as an impaired water body due to the presence of polychlorinated biphenyls (PCBs) in fish tissue. In accordance with Section 4.2.5 of the MSGP, monitoring of impaired waters must be conducted once annually at each of the four monitored outfalls. The annual monitoring period begins in the first full quarter of permit coverage.

One sample will be collected from each monitored outfall (Outfall 001, Outfall 002, Outfall 003, and Outfall 005), and will be analyzed for the following:

Total PCBs

Currently, there are no EPA-approved or established Total Maximum Daily Load Waste Load Allocation values for Apra Harbor, and PCBs are not expected to be present in stormwater discharges covered under this SWPPP. In accordance with Section 4.2.5.1 of the MSGP, monitoring for total PCBs can be discontinued for the next two years if the contaminant is not detected in the stormwater discharge monitoring results. The facility must resume monitoring for PCBs in year four of permit coverage.

Refer to Section 6.2.4 of the MSGP to determine if continued monitoring is required. Section 6.2.4 of the MSGP also provides additional guidance regarding documentation and records necessary to support this determination.

5.3.1 Impaired Waters Monitoring Reports

Impaired waters monitoring data must be reported to the EPA in accordance with Section 7.3 of the MSGP. DMRs must be submitted to EPA using the EPA's NetDMR system (available at <u>https://npdes-ereporting.epa.gov/net-netdmr</u>) no later than 30 days after receiving analytical results for all outfalls monitored during the reporting period.

5.3.2 Impaired Waters Monitoring Procedure

Collection of stormwater samples for impaired waters monitoring shall be conducted in

accordance with the procedures outlined in Section 5.1.2 of this document. To minimize the burden of sample collection, the impaired waters monitoring samples can be collected at the same time as one of the quarterly benchmark monitoring samples.

5.4 ANNUAL REPORT

An annual report containing information from the previous calendar year must be submitted to the EPA by 30 January for each year of permit coverage. Annual reports must be submitted via EPA's eReporting tool, which can be accessed at:

https://npdes-ereporting.epa.gov/net-msgp/

Refer to Section 7.4 of the MSGP for additional information and guidance regarding preparation and submittal of the annual report.

6.0 INSPECTIONS

6.1 ROUTINE FACILITY INSPECTIONS

Regular visual inspections are the most effective way to ensure that all the elements of the SWPPP are in place and are effective at preventing stormwater pollution. Routine facility inspections occur at least quarterly and include all areas of the facility, but specifically focus on the equipment washing area, equipment maintenance and repair areas, painting areas, material storage areas (indoor and outside), material handing/fueling areas, and storm drain inlets and conveyances. Due to the higher risk for pollutant discharge associated with equipment washing activities, the equipment wash rack are inspected at least monthly to ensure potential issues are identified and corrected in a timely manner.

Routine inspections are conducted by qualified personnel and include one member of the P2 Team. Routine inspections are tentatively scheduled to occur during the months of February, May, August, and November. Inspections of the wash rack area occur monthly. At least one such inspection per year occurs during stormwater discharge.

Although not reported to the EPA, documentation of routine inspections is maintained onsite and made available upon request. Documentation includes the following:

- The inspection date and time;
- The name(s) and signature(s) of the inspector(s);
- Weather information and a description of any discharges occurring at the time of the inspection;
- Any previously unidentified discharges of pollutants from the facility;
- Any evidence of, or the potential for, pollutants entering the drainage system;
- Observations regarding the physical condition of the outfalls and the surrounding area, including any evidence of pollutants in the discharge and/or the receiving water;
- Any control measures needing maintenance or repairs;
- Any failed control measures that need replacement;
- Any incidents of noncompliance observed; and
- Any additional control measures needed to comply with the permit requirements.

Sample routine facility inspection forms are located in Appendix C.

6.2 QUARTERLY VISUAL STORMWATER ASSESSMENTS

One stormwater sample from each outfall is collected quarterly for visual assessment. These samples are representative of the stormwater discharge and are made:

- Of a sample in a clean, clear glass, or plastic container, and examined in a well-lit area;
- Of samples collected within the first 30 minutes of an actual discharge from a storm event. If it is not possible to collect the sample within the first 30 minutes of discharge, the sample must be collected as soon as practicable after the first 30 minutes and documentation must be made noting why it was not possible to take samples within the first 30 minutes; and
- Of samples collected from discharges that occur at least 72 hours (3 days) from the previous discharge.

The sample is visually inspected for the following characteristics:

- Color;
- Odor;
- Clarity;
- Floating solids;
- Settled solids;
- Suspended solids;
- Foam;
- Oil sheen; and
- Other obvious indicators of stormwater pollution.

Documentation of the visual sample assessments is maintained onsite with the SWPPP. Documentation includes the following:

- Sample location(s);
- Sample collection date and time, and visual assessment date and time for each sample;
- Personnel collecting the sample and performing visual assessment, and their signatures;
- Nature of the discharge (i.e., runoff)
- Results of observations of the stormwater discharge;
- Probable sources of any observed stormwater contamination;
- If applicable, why it was not possible to take samples within the first 30 minutes.

If the results of the visual assessment identify signs of stormwater pollution, corrective action must be implemented in accordance with Part 4 of the MSGP. Sample visual assessment forms are located in Appendix C.

6.2.1 Visual Assessment of Substantially Identical Outfalls

Outfalls 005, 006, 007, 008, 009, and 010 are considered substantially identical due to the types of activities conducted within the drainage areas for these outfalls (i.e., storage of cargo containers on a paved surface); therefore, visually assessing one of these outfalls will provide data for all six drainage areas. PAG has chosen to visually assess Outfall 005.

7.0 DOCUMENTATION TO SUPPORT ELIGIBILITY CONSIDERATIONS UNDER OTHER FEDERAL LAWS

7.1 DOCUMENTATION REGARDING ENDANGERED SPECIES

Consultation of the United States Fish and Wildlife Service and National Marine Fisheries Service was performed in 2012 as part of the Environmental Assessment conducted to support PAG facility expansion activities. Potential impacts to endangered species as a result of pollutant discharges were evaluated during the consultation and determined to be insignificant. Additionally, no critical habitat was identified in the vicinity of the site. Supporting documentation is provided in Appendix E.

7.2 DOCUMENTATION REGARDING HISTORIC PROPERTIES

From 2010 to 2015, PAG expanded their facility and worked closely with the State Historic Property Office to establish the absence of historic structures. Stormwater discharges and stormwater control measures at the facility will therefore not impact historic properties. Supporting documentation is provided in Appendix F.

8.0 CORRECTIVE ACTIONS AND ADDITIONAL IMPLEMENTATION MEASURES

Corrective actions and additional implementation measures (AIM) must be implemented in accordance with Part 5 of the 2021 MSGP. The following provides a summary of conditions requiring corrective action and procedures for response. Refer to Part 5 of the MSGP for additional guidance.

8.1 CONDITIONS REQUIRING SWPPP REVISIONS

If the following events occur, PAG will revise this SWPPP to meet effluent limits:

- Unauthorized release or discharge of non-stormwater
- Discharge violates numeric effluent limits depicted in this SWPPP
- Non-numeric effluent limits depicted in this SWPPP are not met
- A required control measure was not installed, was incorrectly installed, or not properly operated or maintained
- Visual assessment yields evidence of stormwater pollution such as color, odor, floating solids, settled solids, suspended soils, etc.

8.2 CONDITIONS REQUIRING SWPPP REVIEW

If the following events occur, PAG will review the SWPPP to determine if modifications are necessary:

- Construction, changes in operation, or maintenance at the facility.
- Average of four quarterly sampling results exceeds an applicable benchmark.

8.3 ADDITIONAL IMPLEMENTATION MEASURES (AIM)

If any of the AIM triggering events described in Parts 5.2.3, 5.2.4, or 5.2.5 of the MSGP occur, PAG will follow the response procedures described in those parts, called "additional implementation measures" or "AIM." There are three AIM levels: AIM Level 1, Level 2, and Level 3. PAG will respond as required to different AIM levels which prescribe sequential and increasingly robust responses when a benchmark exceedance occurs. PAG will follow the corresponding AIM level responses and deadlines described in Parts 5.2.3, 5.2.4, and 5.2.5 unless the port qualifies for an exception under Part 5.2.6.

8.4 CORRECTIVE ACTION AND AIM DOCUMENTATION AND DEADLINES

If corrective action is required, PAG shall take immediate action to prevent events described in Section 8.1.

Subsequent actions must be implemented within 14 calendar days of discovery of the event. If this is not feasible, then PAG must document why it is infeasible and provide a revised schedule within the allocated 14 calendar days. The revised schedule can be no longer than 45 days. The corrective action must be documented as follows:

- Description of event
- Date of event
- Description of immediate actions
- Statement, signed and certified that actions are complete per schedule requirements

Documentation of any of the conditions listed in Sections 8.1 or 8.2 must be made within 24 hours of becoming aware of the condition. Such documentation must be made available to the EPA upon request and will also be summarized in the annual stormwater report. Refer to Section 5.3 of the MSGP for additional guidance regarding corrective action documentation.

9.0 REFERENCES AND INFORMATION SOURCES

IP&E Holdings, LLC (IP&E). 2018. Spill Prevention, Control, and Countermeasure Plan, IP&E F-3 Dock Facility. October.

U.S. Environmental Protection Agency (EPA). 2009. *Developing Your Stormwater Pollution Prevention Plan: A Guide for Industrial Operators*. EPA 833-B-09-002.

U.S. Environmental Protection Agency (EPA). 2021. *Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity (MSGP)*

APPENDICES

A. FIGURES (NOT INCLUDED)

B. BMP FACT SHEETS

	Port Authority of Guam	
Equipment Maintenance and Repair Facility SWPPP		
BL BMP 1	ELIMINATION OF NON-STORMWATER DISCHARGE TO STORM DRAIN	
PURPOSE	Existing discharges: Eliminate non-stormwater discharges to the stormwater collection system.	
	Non-storm water discharges can be classified as follows: 1) Activity-based (subtle), and 2) Overt	
	(hard pipe connection). Activity-based non-stormwater discharges may include: wash water, and	
	spillage. Overt non-storm water discharges may include: building floor drains and sanitary	
	wastewater. Prevention of illicit connections: Prevent improper physical connections to the	
	storm drain system from sanitary sewers, floor drains, and washbays through education,	
	developing project approvals conditions, and performing both construction phase and post-	
	APPROACH TO FUTURE FACILITIES AND UPGRADES Design of New Egcilities and Existing Egcility upgrades	
• Pe	rform inspections during the design review and project construction phases to ensure drainage,	
Wa	stewater, and water supply connections are correct (no cross connections or micit nookups).	
• De	velop a set of as-built prints for all projects. Reep a set of prints at the facility.	
• De	sign projects to include adequate waste repositories at locations field waste origin points.	
• Pro	processing painting machanical maintenance, chemical/fuel storage and delivery material handling,	
	ste bandling and storage, and lavatory service that may produce non-stormwater discharges	
vva	ste handling and storage, and lavatory service that may produce non-stormwater discharges.	
	APPROACH TO EXISTING FACILITY ACTIVITIES	
• • •	Operational Considerations	
Contin	gency Response:	
 De set 	velop and implement a Spill Prevention Control and Countermeasure (SPCC) plan under guidelines forth in 40 CFR, Section 112.3(a), (b).	
• No	tify the Team Leader in the event of a spill (any size).	
• Ma	intain adequate supplies of spill response equipment and materials in accessible locations near	
are	eas where spills may be likely to occur (i.e. near the scale house, entrances/exits, compaction area	
an	d areas where large quantities of hazardous materials are stored).	
Inspec	tion and Training:	
• Ins	pect waste containers and storage tanks, including any piping and appurtenances, on a routine	
bas	sis for leaks, drip marks, and discoloration and proper closure seal.	
• De	velop employee training programs which emphasize the proper disposal procedures for	
op	erations-derived wastes.	
• Pro	by de annual employee training in the following areas: spill prevention and response, storm waste	
po		
	REQUIREMENTS	
• Ca wa	ter discharges.	
	LIMITATIONS	
• Ac	tivity-based (subtle) non-storm water discharges from a particulate facility are typically sporadic,	
tra	nsient, and often require frequent inspections to detect.	
RECOMMENDATIONS		
Use dry cleaning procedures.		
implement regular training of start in materials disposal, and spill response.		

Port Authority of Guam				
Equipment Maintenance and Repair Facility SWPPP				
BL BN	MP 2 EMERGENCY SPILL CLEANUP PLANS			
PURP	POSE Prevent or reduce the discharge of pollutants to storm water resulting from spills of			
	petroleum products or other materials.			
-	General Approach			
Owners	and operators of facilities that store, process, or refine oil or oil products may be required by			
federal	law (40CFR 112) to develop and implement a Spill Prevention, Control, and Countermeasure			
(SPCC) P	Plan. Emergency spill cleanup plans should include the following information:			
•	A description of the facility including the nature of the facility activity and the general types and			
	quantities of chemicals stored at the facility.			
•	A site plan showing the location of chemical storage areas, fire hydrant location, and the			
	location and description of any devices used to contain spills such as positive shut-off control			
	valves.			
•	Notification procedures to be implemented in the event of a spill, such as keep company			
	personnel and local, state, and federal agencies.			
•	Instructions regarding cleanup procedures.			
•	Designated personnel with overall spill response cleanup responsibility.			
	APPROACH TO EXISTING FACILITY ACTIVITIES			
	Operational Considerations			
Operati	onal Considerations:			
•	Maintain an inventory of appropriate cleanup materials on-site (absorbent material,			
	solvent/cleaning material) and store spill kits near the Maintenance Building, materials transfer			
	points, material storage areas, and other areas where spills are likely.			
Conting	ency Response:			
•	If the spilled material is of a reportable quantity, the EC should call:			
	 National Response Center at 1-800-424-8802 			
	 U.S. Coast Guard Guam Chapter Prevention Department at 671-355-4937 (if spill reaches 			
	Apra Harbor/Philippine Sea)			
	• Guam EPA (GEPA) Emergency Response pager number is 671-635-9500 and their main line is			
	671-475-1658 (if spill reaches State Water).			
•	A written notification must also be submitted to the GEPA Clean Water contact (671-475-1628)			
	no later than five (5) days following the violation and a written notification must be submitted			
	to the Guam Department of Health Director's Office at 671-735-7173 no later than thirty (30)			
	days following the discovery of the release. Containment and cleanup of spills shall begin			
	immediately.			
	REQUIREMENTS			
•	Capital and operations and maintenance (O&M) costs should be small to moderate (locate spill			
	kits containing absorbent material and cleaning solvent at facility).			
•	Maintenance costs include periodic training and equipment replacement.			
	LIMITATIONS			
•	Spills occurring after work hours may go undetected until impacting off-site areas.			
	RECOMMENDATIONS			
•	Train staff in spill response.			
•	Locate spill kits near the Maintenance Shop, Fueling Area, material storage areas, and other			
	area where spill are likely.			

	Port Authority of Guam	
Equipment Maintenance and Repair Facility SWPPP		
BL BMP 3	STORM WATER POLLUTION PREVENTION EDUCATION	
PURPOSE	Prevent or reduce the discharge of pollutants to stormwater through implementing an	
	education program.	
	APPROACH TO FUTURE FACILITIES AND UPGRADES	
	Design of New Facilities and Existing Facility upgrades	
 Incorp 	orate proactive stormwater management features into projects such as, decreased	
imperv	rious areas, infiltration Best Management Practices (BMPs) biofilters, oil/water	
separa	tors, etc.	
	APPROACH TO EXISTING FACILITY ACTIVITIES	
	Operational Considerations	
Contin	gency Response:	
 Train e 	mployees in the use of spill response equipment and materials.	
Inspec	tion and training:	
 Perfori 	m and document in a log book, inspections of work areas, waste storage facilities,	
mainte	nance areas, and contractor projects to examine compliance with BMPs. Follow up with	
additic	nal training or enforcement as required. Incorporate inspection findings into subsequent	
trainin	g efforts.	
 Implen 	nent regular stormwater pollution prevention education programs:	
o Pro	pmote the proper storage and use of all materials, chemicals, and equipment inside a	
bu	ilding, garage, or covered area. Dispose of materials in a proper and timely fashion.	
o Pro	pmote the use of environmentally safe products.	
o Pe	rform all vehicle and equipment washing in contained washing area.	
o En	courage good housekeeping practices on site.	
o Inc	rease awareness of the detrimental environmental impacts that result when fuel	
an	tifreeze, pesticides, lubricants, detergent, paints and other wastes are dumped onto the	
gro	ound or into storm drains.	
o Pro	pmote source reduction and recycling of waste materials.	
o Inc	rease awareness of what is and what is not allowed to enter storm drains.	
	REQUIREMENTS	
 Capital 	and operation and maintenance (O&M) costs are minimal for educational programs.	
 Educat 	ional programs need to be ongoing. Information and training must be disseminated at	
regulai	r intervals.	
LIMITATIONS		
• The su	ccess of educational programs is difficult to measure. Acceptance and awareness are	
critical	factors.	
	RECOMMENDATIONS	
Condu	ct annual training of staff in proper materials handling and disposal.	

Port Authority of Guam		
	Equipment Maintenance and Repair Facility SWPPP	
AS BMP 1		
PURPOSE	Prevent or reduce the discharge of pollutants to storm water drains from vehicles and	
	equipment maintenance and repair.	
	APPROACH TO FUTURE FACILITIES AND UPGRADES Design of New Eacilities and Existing Eacility ungrades	
Provide	a covered maintenance areas when designing new facilities or ungrading existing facilities	
	indoor areas overhangs or nortable covers	
	maintenance areas so minimal quantities of runoff cross the site	
	appropriate storm water quality structures (oil/water separators, sumps, first flush	
diversi	on hasing etc.) in the design of outdoor maintenance and storage areas	
	APPROACH TO EXISTING FACILITY ACTIVITIES	
	Operational Considerations	
Implement the	following to the maximum extent practicable:	
Good Housekee	eping	
 Use dri 	p pans to collect fluid leaks.	
Use ab	sorbent materials at potential problem areas.	
Adequa	ately collect/remove absorbent materials from area after use and dispose of them in an	
approp	riate manner.	
 Perform 	n all vehicle maintenance within the Maintenance Shop. All byproducts from that	
mainte	nance (i.e. oil filters, batteries, etc.) should be stored in a covered storage area and	
dispose	ed of in a proper fashion.	
Drain a	nd crush oil filters (and oil containers) before recycling or disposal. Store crushed oil	
filters a	and empty lubricant containers in a leak-proof container.	
 Label s waste. 	torm drain inlets ("Don't Dump" or "Drains to Bay") to indicate they are to receive no	
 Employ work a 	only dry cleaning in the buildings and work areas (i.e. sweeping). Do not hose down reas.	
 Drain a equipm 	 Drain and properly dispose of all fluids and remove batteries salvaged from vehicles and equipment 	
Drain p	arts and equipment of all fluids. Store in secondary containment within covered storage	
	or properly dispose of the following: grease oil antifreeze brake fluid cleaning	
solutio	ns hydraulic fluid batteries transmission fluid and filters. If materials are stored on-site	
prior to	disposal, keep in labeled containers appropriately	
 Use hic 	degradable products and substitute materials with less bazardous properties where	
feasible		
Mainta	in and organized inventory of materials used in maintenance areas.	
Physical Site Us		
Store n	nechanical parts and equipment that may yield even small amounts of contaminants	
(e.g., o	il or grease) under cover and away from drains.	
Store v	ehicles and equipment awaiting maintenance in designated areas only. Vehicles	
awaitir	g maintenance should be stored under cover if possible.	
REQUIREMENTS		
Capital	investment may be required depending on the facility layout.	
Sapital		

• Operation and maintenance (O&M) investment is not expected to be significant.

LIMITATIONS

- Size, space and time limitations may preclude work from being performed indoors.
 RECOMMENDATIONS
- Perform all vehicle maintenance indoors. Keep all vehicles awaiting maintenance under cover as much as possible
- All byproducts of vehicle and equipment maintenance will be labeled, stored under cover, and disposed of in a proper and timely manner.
- Use biodegradable and eco-friendly materials as much as possible. Do not use materials containing phosphorus and minimize chlorine use.
- Train staff regularly in materials handling, pollution prevention, and spill response.

Port Authority of Guam		
Equipment Maintenance and Repair Facility SWPPP		
AS BMP 2	VEHICLE AND EQUIPMENT FUELING	
PURPOSE	Prevent fuel spills and leaks, and reduce their impacts to stormwater.	
	APPROACH TO FUTURE FACILITIES AND UPGRADES	
	Design of New Facilities and Existing Facility upgrades	
 Design 	fueling areas to prevent the run-on of storm water and the runoff of spills by employing	
the follo	owing approaches:	
•	Cover the fueling area if possible	
•	Use a perimeter drain or slope the fueling area to a dead-end sump or oil/water	
	separator.	
If storm	• If stormwater runoff from fueling areas is not collected, install an appropriately-sized oil/water	
separat	or.	
Design	facilities to include secondary containment where required and/or appropriate.	
	APPROACH TO EXISTING FACILITY ACTIVITIES	
	Operational Considerations	
Implement the	following to the maximum extent practicable:	
Good Housekee	ping	
Perform	n all vehicle fueling on secondary containment pad or under cover whenever possible to	
minimiz	te the discharge of fuel to the surrounding environment.	
Use spil	l and overflow protection whenever possible	
 Fuel pu 	mps intended for vehicular use should be posted with signs stating "No topping off" to	
prevent	overflow.	
RECOMMENDATIONS		
Monito	r fueling area and fueling truck to ensure that no leaking is occurring.	
Locate :	spill kits near the fueling station.	
Train st	aff in spill response.	

Port Authority of Guam		
Equipment Maintenance and Repair Facility SWPPP		
AS BMP 3	VEHICLE AND EQUIPMNET WASHING, CLEANING, AND DEGREASING	
PURPOSE	Prevent or reduce the discharge of pollutants to storm water drains from vehicles and	
	equipment washing, and cleaning and degreasing activities.	
	APPROACH TO FUTURE FACILITIES AND UPGRADES	
	Design of New Facilities and Existing Facility upgrades	
Outdoo	or washing operations should not occur without the following design characteristics:	
0	Paved area (Portland cement concrete pavement resists degradation from petroleum	
	products)	
0	Bermed and/or covered to prevent contact with storm water.	
0	Sloped to facilitate wash water collection.	
0	Wash water should be collected in a dead-end sump for removal to off-site treatment or	
	discharged to the sanitary sewer through a permitted connection.	
0	Drainage piping serving uncovered was areas should be equipped with control valves	
	that are easy to operate from the surface and can direct discharges wither to the storm	
	drain system or sanitary sewer as appropriate.	
0	Wash areas should be clearly identified with appropriate signage.	
0	Equip with an oil/water separator designed to operate under storm water runoff	
	conditions to treat storm water volumes and flow rates.	
	APPROACH TO EXISTING FACILITY ACTIVITIES	
	Operational Considerations	
Implement the	following to the maximum extent practicable:	
Good Housekee	ping	
 Provide cleaning 	secondary containment, and cover if possible, for containers of washing and steam	
Use inle	et covers over catch basins, spill berms or spill mats to control the discharge of wash	
water.		
 Use bio 	degradable phosphate-free detergents.	
 Keep was 	ash area clean and free of waste.	
 Include 	proper signage to prohibit the discharge of waste oils into the drains.	
Collect	and discharge wash water to an approved treatment facility.	
	REQUIREMENTS	
Capital	costs vary depending on measures implemented.	
Operati	on and maintenance (O&M) costs increase with capital investment.	
	LIMITATIONS	
Steam of the second secon	leaning and de-greasing operations can generate significant pollutant concentrations	
that ma	v require permitting, monitoring, pretreatment, and inspections.	
RECOMMENDATIONS		
Perform	n all vehicle washing within the designated washing area.	
Do not	use phosphate or chlorine based detergents.	

Port Authority of Guam		
Equipment Maintenance and Repair Facility SWPPP		
AS BMP 4	OUTDOOR STORAGE OF WASTE AND MATERIALS	
PURPOSE	Prevent or reduce the discharge of pollutants to stormwater from outdoor storage	
	areas for waste or materials (i.e. fuel, chemicals, bagged solids, contaminated soil, bulk	
	storage, etc.). Outdoor material storage is discouraged. Storage of materials in	
	designated areas indoors is preferred.	
	APPROACH TO FUTURE FACILITIES AND UPGRADES	
	Design of New Facilities and Existing Facility upgrades	
Require	the appropriate use of water quality control structures for fuel, waste, and chemical	
storage a	reas such as berms, detention/retention basins, and sumps. Develop appropriate	
minimum	n performance standards for these water quality control structures and implement a	
reporting	program to monitor the performance and maintenance of these structures.	
Chemical	, fuel, oil dispensing sites, and waste collection areas should be covered, if possible.	
Develop	standard guidelines for the management of stormwater which collect in secondary	
containm	nent areas.	
	APPROACH TO EXISTING FACILITY ACTIVITIES	
	Operational Considerations	
Implement the fo	bilowing to the maximum extent practicable:	
Good Housekeep	ing	
Avoid dis	pensing from drums positioned norizontally in cradies. Dispensing materials from	
upright d	rums equipped with hand pumps is preferred. Always use secondary containment and	
Sell Closif	ig spigots it dispensing from norizontally positioned drums.	
 Store dru container 	r out of containers on spill containment pallets or other structures to keep the	
 Use drum 	n lids and drum-top absorbent pads to prevent rainfall from washing materials and	
drips fror	n the top of containers to the storm drain system.	
 Discharge 	e collected stormwater from secondary containment areas according to guidelines	
develope	d by the federal government and applicable state and local regulations.	
Store all	materials in their original containers or containers approved for that use. Ensure that all	
containe	rs are appropriately sealed. Store empty containers in fully enclosed area, under cover,	
or move	them off-site.	
 Properly 	label all containers with information, including their contents, hazards, spill response	
and first	aid procedures, manufacturer's name and address, and storage requirements.	
 Maintain 	copies of MSDS on file for any material stored and/or handled by the applicator	
 Maintain 	a spill response plan near the material or waste storage area.	
	REQUIREMENTS	
 Capital ar 	nd operation and maintenance (O&M) costs will vary widely depending on the size of	
the facilit	and the necessary controls.	
 Store ma 	terials under cover as much as possible	
 If materia 	als have to be stored outdoors, locate the materials to minimize the contact with	
stormwa	ter (i.e. under a cover, on a raised platform, inside secondary containment).	
 Locate sp 	ill kits near the Maintenance Shop, Fueling area, material storage location and other	
areas wh	ere spills are likely.	
 Regularly 	inspect outdoor waste storage areas to ensure that the containers are not leaking.	
 Store drums and containers on spill containment pallets or other structures to keep the container out of contact with stormwater. Use drum lids and drum-top absorbent pads to prevent rainfall from washing materials and drips from the top of containers to the storm drain system. Discharge collected stormwater from secondary containment areas according to guidelines developed by the federal government and applicable state and local regulations. Store all materials in their original containers or containers approved for that use. Ensure that all containers are appropriately sealed. Store empty containers in fully enclosed area, under cover, or move them off-site. Properly label all containers with information, including their contents, hazards, spill response and first aid procedures, manufacturer's name and address, and storage requirements. Maintain copies of MSDS on file for any material stored and/or handled by the applicator Maintain a spill response plan near the material or waste storage area. REQUIREMENTS Capital and operation and maintenance (O&M) costs will vary widely depending on the size of the facility and the necessary controls. Store materials under cover as much as possible If materials have to be stored outdoors, locate the materials to minimize the contact with stormwater (i.e. under a cover, on a raised platform, inside secondary containment). Locate spill kits near the Maintenance Shop, Fueling area, material storage location and other areas where spills are likely. Regularly inspect outdoor waste storage areas to ensure that the containers are not leaking. 		

Port Authority of Guam				
Equipment Maintenance and Repair Facility SWPPP				
AS BMP 5	WASTE HANDLING AND DISPOSAL			
PURPOSE	Prevent or reduce the discharge of pollutants to storm water from proper waste			
	storage, handling and disposal; reducing waste generation and disposal through source			
	reduction, reuse, and recycling; and preventing run-on and runoff from waste			
	management areas.			
	APPROACH TO FUTURE FACILITIES AND UPGRADES			
	Design of New Facilities and Existing Facility upgrades			
 Avoid t 	he following characteristics when examining candidate sites for storing wastes:			
0	Excessive slope			
0	High water table			
0	Locations near storm drain inlets			
0	Locations near public access area			
Waste h	andling and storage areas should be covered.			
Develop	standard guidelines for the management of stormwater that collects in secondary			
containi	nent areas.			
Provide	contained and covered area for hazardous waste collection sites.			
	APPROACH TO EXISTING FACILITY ACTIVITIES			
	Operational Considerations			
Implement the f	ollowing to the maximum extent practicable:			
Good Housekee	ping			
Perform	regular housekeeping to maintain waste storage areas in a clean and orderly condition.			
Recycle	materials whenever possible.			
 Inspect 	waste management areas for spills and waste management containers for leaks.			
 Ensure t off-site 	hat sediments and waste are prevented from being washed, leached, or otherwise carried			
Complete	tely drain containers (e.g. quart oil cans) prior to disposal			
Regular	v service waste storage areas to avoid overloaded/ overfilled disposal containers			
 Minimiz 	e snills and fugitive losses such as dust or mist from loading areas			
Maintai	n a minimal inventory of required chemicals to reduce the magnitude of notential snills			
and limi	t waste generation			
Eind sub	estitutes for harmful chemicals			
Properly	dispose of unusable chemical inventory			
e Canital a	and energy and maintenance (OPM) costs for these programs will vary substantially			
	and operation and maintenance (Owiv) costs for these programs will vary substantially			
depend				
Lazarda	us waste that cannot be rejused or regulady must be dispessed of at a permitted facility			
	nsed bazardous waste bauler			
by a lice				
a Damili I				
Kegulari	y service waste storage areas to prevent a build-up of accumulated waste.			
 Keep all 	garbage dumpsters covered.			
	Port Authority of Guam			
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	Equipment Maintenance and Repair Facility SWPPP			
AS BMP 6	BUILDING AND GROUNDS MAINTENANCE			
PURPOSE	Prevent or reduce the discharge of pollutants to stormwater from building and grounds			
	maintenance by washing and cleaning up with as little water as possible, preventing			
	and cleaning up spills immediately, keeping debris from entering storm drains, and			
	maintaining the storm water collection system.			
	APPROACH TO FUTURE FACILITIES AND UPGRADES			
	Design of New Facilities and Existing Facility upgrades			
 Specify 	low-maintenance structures/features for capital improvements.			
 Incorpo 	rate storm water detention/retention to reduce peak runoff flows and for water quality			
control.				
 Incorpo 	rate design considerations such as leaving vegetation or planting native vegetation to			
reduce	irrigation, fertilizer, and pesticide/herbicide needs.			
	APPROACH TO EXISTING FACILITY ACTIVITIES			
	Operational Considerations			
Implement the	following to the maximum extent practicable:			
Good Housekee	ning			
Do not	pillig			
	employ any wet cleaning procedures.			
	hy accumulated trash/debris from stormwater management reatures.			
Regular	iy inspect and service oil/water separators.			
• Seek les mainter	 Seek less harmful/toxic products to replace ones currently used for building or grounds maintenance. 			
 Properly 	 Properly dispose of landscape waste, sweepings, and sediments. 			
 Regular techniq 	 Regularly clean paved surfaces that are exposed to industrial activity. Use "dry" cleaning techniques. 			
REQUIREMENTS				
Costs w	ill vary depending on the type and size of the facility. Costs of on-site stormwater			
detenti	on/retention facility could be high.			
	RECOMMENDATIONS			
Regular	Regularly clean site surfaces using dry techniques.			

Port Authority of Guam			
AS BMP 7 ABOVEGROUND STORAGE TANK MANAGEMENT			
PURPOSE	Prevent or reduce the discharge of pollutants to storm water from aboveground		
	storage tanks (ASTs).		
	APPROACH TO FUTURE FACILITIES AND UPGRADES		
	Design of New Facilities and Existing Facility upgrades		
 Use application 	ppropriate and adequate secondary containment and water quality control structures for		
ASTs su	uch as berms, detention/retention basins, and sumps. Minimum requirements for		
perfori	mance structures and reporting program to monitor the performance and maintenance of		
these s	tructures are set forth under guidelines in 40 CFR, section 112.7 9c)		
 Provide locatio 	e adequate supplies of spill response equipment and materials in a readily accessible n in close proximity to ASTs/dispensers.		
 Manag 112.8 (e storm water that collects in secondary containment areas as set forth in 40 CFR, section 1).		
 New st regulat 	orage thanks must be properly labeled and permitted in accordance with applicable ions.		
 Obtain 	the necessary permits when handling hazardous or flammable materials, as applicable.		
Provide	• Provide sufficient protection for tanks from vehicles, etc. by providing structural barriers or		
adequate buffer from high traffic areas. A higher degree of protection may be appropriate for non-metallic ASTs.			
	APPROACH TO EXISTING FACILITY ACTIVITIES		
	Operational Considerations		
 Proper hazard and store 	 Properly label all ASTs with their contents and capacity. Retain information regarding potential hazard, spill response and first air procedures, tank/piping manufacturer's name and address, and storage requirements. 		
 Mainta 	in copies of MSDS on file for any materials stored and/or handled by the operator.		
MaintaMainta	in a spill response plan and specifications book near the material or waste storage area. In all necessary permits and keep up-to-date.		
Require adequate supplies of spill response equipment and materials in a readily accessi			
location in close proximity to ASTs/dispensers.			
Require the use of appropriately trained personnel during AST filing or transferring of mate			
• Maintain records of any testing, repairs and/or problems that have occurred with ASTs.			
	RECOMMENDATIONS		
Regula	rly inspect AST's and document.		
 Locate areas v 	spill kits near Maintenance building, Fueling area, material storage locations, and other vhere spill are likely.		
Train staff in spill response.			

C. ADDITIONAL DOCUMENTATION

Additional MSGP Documentation

for:

Port Authority of Guam 1026 Cabra Highway, Suite 201 Piti, Guam, 96915 (671) 477-5931 GUR053001 Page Intentionally Blank

Instructions:

- Keep the following inspection, corrective action, monitoring, and certification records in the same location that you keep your SWPPP:
 - A copy of the NOI submitted to EPA along with any correspondence exchanged between you and EPA specific to coverage under this permit (you should already have this);
 - A copy of the authorization email you receive from the EPA assigning your NPDES ID (you should already have this);
 - A copy of the 2021 MSGP (either a hard copy or an electronic copy easily available to SWPPP personnel);
 - Documentation of maintenance and repairs of stormwater control measures and industrial equipment and systems, including the date(s) of regular maintenance, date(s) of discovery of areas in need of repair/replacement, and for repairs, date(s) that the control measure(s)/industrial equipment/system(s) returned to full function, and the justification for any extended maintenance/repair schedules (see Part 2.1.2.3);
 - All inspection reports, including the Routine Facility Inspection Reports (see Part 3.1.6) and Visual Assessment Documentation (see Part 3.2.3);
 - Description of any deviations from the schedule for visual assessments and/or monitoring, and the reason for the deviations (e.g., adverse weather or it was impracticable to collect samples within the first 30 minutes of a measurable storm event) (see Parts 3.2.4 and 4.1.5);
 - Corrective action documentation required per Part 5.1;
 - Documentation of any benchmark threshold exceedances, which AIM Level triggering event the exceedance caused, and AIM response employed per Part 5.2, including:
 - The AIM triggering event;
 - The AIM response taken;
 - Any rationale that SWPPP/SCM changes were unnecessary; or
 - Any documentation required to meet any AIM exception per Part 5.2.6;
 - Documentation to support any determination that pollutants of concern are not expected to be present above natural background levels if you discharge directly to impaired waters, and that such pollutants were not detected in your discharge after three years or were solely attributable to natural background sources (see Part 4.2.5.1); and
 - Documentation to support your claim that your facility has changed its status from active to inactive and unstaffed with respect to the requirements to conduct routine facility inspections (see Part 3.1.5), quarterly visual assessments (see Part 3.2.4.4), benchmark monitoring (see Part 4.2.2.4), and/or impaired waters monitoring (see Part 4.2.5.2).
 - With the exception of the first three items, these are records that you will be updating throughout the permit term. Follow the instructions in Sections A through L of this template to keep your records complete.

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A. EMPLOYEE TRAINING

Instructions:

- Keep records of employee training, including the date of the training (see Parts 2.1.2.8 and 6.2.5.1.e of the 2021 MSGP).
- For in-person training, consider using the tables below to document your employee trainings. For computer-based or other types of training, keep similar records on who was trained, the training date, and the type of training conducted.

Training Date: Insert Date of Training	
Training Description: Insert Description of Training	
Trainer(s): Insert Trainer Name(s)	
Employee(s) Trained:	Employee Signature
Insert Name	

Training Date: Insert Date of Training			
Training Description: Insert Description of Training			
Trainer(s): Insert Trainer Name(s)			
Employee(s) Trained: Employee Signature			
Insert Name			

Training Date: Insert Date of Training				
Training Description: Insert Description of Training				
Trainer(s): Insert Trainer Name(s)				
Employee(s) Trained: Employee Signature				
Insert Name				

B. MAINTENANCE

Instructions:

- Include in your records documentation of maintenance and repairs of stormwater control measures and industrial equipment and systems (see Part 2.1.2.3 and 6.5), including:
 - o the control measure(s)/equipment/system(s) maintained,
 - o date(s) of regular maintenance,
 - date(s) of discovery of areas in need of repair/replacement, and for repairs, date(s) that the control measure(s)/equipment/system(s) returned to full function, and
 - the justification for any extended maintenance/repair schedules and the notification to your EPA Region that you need an extension past 45 days to complete repairs/maintenance.
- As a reminder:
 - you are required to immediately take all reasonable steps to prevent or minimize the discharge of pollutants until the final repair or replacement is implemented.
 - final repair/replacements of stormwater controls should be completed as soon as feasible but no later than 14 days, or if that is infeasible within 45 days.
 - if the completion of stormwater control measure/equipment/system repairs/replacement will exceed the 45 day timeframe, you may take the minimum additional time necessary to complete the maintenance, provided that you notify the EPA Regional Office of your intention to exceed 45 days and document your rationale for your modified maintenance timeframe in your SWPPP.
- Provide information, as shown below, to document your maintenance activities for each stormwater control
 measure and industrial equipment/system. Repeat as necessary by copying and pasting the information
 below for additional stormwater control measures and industrial equipment/systems.

Note that maintenance documentation in this section is separate from corrective action and AIM documentation required in Part 5.3 of the 2021 MSGP. For any condition or event triggering the need for corrective action review and/or AIM response you must include documentation in section G of this Template.

<u>Stormwater Control Measure Maintenance Records</u> (copy information below for each stormwater control measure)

Stormwater Control Measure: Insert Name of Stormwater Control Measure Regular Maintenance Activities: Describe Maintenance Activities Regular Maintenance Schedule: Insert Maintenance Schedule

Date of Maintenance Action: Insert Date of Action

Reason for Action: Regular Maintenance Discovery of Problem If Problem,

- Description of Action Required: Describe Actions Taken in Response to Problem
- Date Control Measure Returned to Full Function: Insert Date
- Justification for Extended Schedule, if applicable: Insert Justification (if applicable) Notes: Insert Notes (if applicable)

Date of Maintenance Action: Insert Date of Action Reason for Action:

Regular Maintenance
Discovery of Problem If Problem,

- Description of Action Required: Describe Actions Taken in Response to Problem
- Date Industrial Equipment Returned to Full Function: Insert Date
- Justification for Extended Schedule, if applicable: Insert Justification (if applicable)

Notes: Insert Notes (if applicable)

Date of Maintenance Action: Insert Date of Action

Reason for Action: Regular Maintenance Discovery of Problem If Problem,

- Description of Action Required: Describe Actions Taken in Response to Problem
- Date Industrial Equipment Returned to Full Function: Insert Date

- Justification for Extended Schedule, if applicable: Insert Justification (if applicable) Notes: Insert Notes (if applicable)

Industrial Equipment and Systems Maintenance Records (copy information below for each industrial equipment/system)

Industrial Equipment/System: Insert Name of Industrial Equipment/System Regular Maintenance Activities: Describe Maintenance Activities Regular Maintenance Schedule: Insert Maintenance Schedule

Date of Maintenance Action: Insert Date of Action

Reason for Action: Regular Maintenance Discovery of Problem If Problem,

- Description of Action Required: Describe Actions Taken in Response to Problem
- Date Industrial Equipment Returned to Full Function: Insert Date
- Justification for Extended Schedule, if applicable: Insert Justification (if applicable) Notes: Insert Notes (if applicable)

Date of Maintenance Action: Insert Date of Action

Reason for Action: Regular Maintenance Discovery of Problem If Problem,

- Description of Action Required: Describe Actions Taken in Response to Problem
- Date Industrial Equipment Returned to Full Function: Insert Date
- Justification for Extended Schedule, if applicable: Insert Justification (if applicable) Notes: Insert Notes (if applicable)

Date of Maintenance Action: Insert Date of Action

- Description of Action Required: Describe Actions Taken in Response to Problem
- Date Industrial Equipment Returned to Full Function: Insert Date

- Justification for Extended Schedule, if applicable: Insert Justification (if applicable) Notes: Insert Notes (if applicable) Date of Maintenance Action: Insert Date of Action

- Description of Action Required: Describe Actions Taken in Response to Problem
- Date Industrial Equipment Returned to Full Function: Insert Date
- Justification for Extended Schedule, if applicable: Insert Justification (if applicable)

Notes: Insert Notes (if applicable)

C. ROUTINE FACILITY INSPECTION REPORTS

Instructions:

- Include in your records copies of all routine facility inspection reports completed for the facility.
- The sample inspection report is consistent with the requirements in Part 3.1.6 of the 2021 MSGP relating to routine facility inspections. Facilities subject to state industrial stormwater permits may also find this form useful. If your permitting authority provides you with an inspection report, use that form.

Using the Sample Routine Facility Inspection Report

- This inspection report is designed to be customized according to the specific control measures and
 activities at your facility. For ease of use, you should take a copy of your site plan and number all of the
 stormwater control measures and areas of industrial activity that will be inspected. A brief description of the
 stormwater control measures and areas that were inspected should then be listed in the site-specific
 section of the inspection report.
- You can complete the items in the "General Information" section that will remain constant, such as the facility name, NPDES ID, and inspector (if you only use one inspector). Print out multiple copies of this customized inspection report to use during your inspections.
- When conducting the inspection, walk the site by following your site map and numbered control
 measures/areas of industrial activity to be inspected. Also note whether the "Areas of Industrial Materials or
 Activities exposed to stormwater" have been addressed (customize this list according to the conditions at
 your facility). Note any required corrective actions and the date and responsible person for the correction.

Stormwater Industrial Routine Facility Inspection Report

General Information				
Facility Name	Port Authority of Guam			
NPDES ID.	GUR053001			
Date of Inspection	Insert Date	Start/End Time	Insert Start/End Time	
Inspector Name(s)	Insert Name(s)			
Inspector Title(s)	Insert Title(s)			
Inspector Contact Information	Insert Contact Information			
Inspector Qualifications	Insert Qualifications or Add	Reference to the SW	/PPP	
	Weather Info	ormation		
Weather at time of this inspection	on?			
🗆 Clear 🔹 Cloudy 🔹 Rain 🔷 Sleet 🔷 Fog 🔤 Snow 📄 High Winds				
Other: Temperature:				
Observations				
Have any previously unidentified discharges of pollutants occurred since the last inspection? Ves No				
If yes, describe: Describe				
Are there any discharges occurring at the time of inspection? Yes No				
If yes, describe: Describe				

Stormwater Control Measures

- Number the structural stormwater control measures identified in your SWPPP on your site map and list them below (add as many control measures as are implemented on-site). Carry a copy of the numbered site map with you during your inspections. This list will ensure that you are inspecting all required control measures at your facility.
- Identify if maintenance or corrective action is needed.
 - o If maintenance is needed, fill out section B of this template
 - o If corrective action is needed, fill out section G of this template

		Control Measure	If No, In Need of	
	Structural Control	is Operating	Maintenance, Repair,	Maintenance or Corrective Action
	Measure	Effectively?	or Replacement?	Needed and Notes
1	Insert Control	🗆 Yes 🗖 No	Maintenance	Describe Maintenance and/or Corrective
	Measure Name		🗌 Repair	Actions Needed
			Replacement	
2	Insert Control	🗆 Yes 🗖 No	Maintenance	Describe Maintenance and/or Corrective
	Measure Name		🗆 Repair	Actions Needed
			Replacement	
3	Insert Control	🗆 Yes 🗖 No	Maintenance	Describe Maintenance and/or Corrective
	Measure Name		🗌 Repair	Actions Needed
			Replacement	
4	Insert Control	🗆 Yes 🗌 No	Maintenance	Describe Maintenance and/or Corrective
	Measure Name		🗆 Repair	Actions Needed
			Replacement	

		Control Measure	If No, In Need of	
	Structural Control	is Operating	Maintenance, Repair,	Maintenance or Corrective Action
	Measure	Effectively?	or Replacement?	Needed and Notes
5	Insert Control	🗆 Yes 🗖 No	Maintenance	Describe Maintenance and/or Corrective
	Measure Name		🗆 Repair	Actions Needed
			Replacement	
6	Insert Control	🗆 Yes 🗌 No	Maintenance	Describe Maintenance and/or Corrective
	Measure Name		Repair	Actions Needed
			Replacement	
7	Insert Control	🗆 Yes 🗌 No	Maintenance	Describe Maintenance and/or Corrective
	Measure Name		Repair	Actions Needed
			Replacement	
8	Insert Control	🗆 Yes 🗌 No	Maintenance	Describe Maintenance and/or Corrective
	Measure Name		Repair	Actions Needed
			Replacement	
9	Insert Control	🗆 Yes 🗌 No	Maintenance	Describe Maintenance and/or Corrective
	Measure Name		Repair	Actions Needed
			Replacement	
10	Insert Control	🗆 Yes 🗌 No	Maintenance	Describe Maintenance and/or Corrective
	Measure Name		🗆 Repair	Actions Needed
			Replacement	

Areas of Industrial Materials or Activities Exposed to Stormwater

Below are some general areas that should be assessed during routine inspections. Customize this list as needed for the specific types of industrial materials or activities at your facility that are potential pollutant sources. Identify if maintenance or corrective action is needed. If maintenance is needed, fill out section B of this template. If corrective action is needed, fill out section G of this template.

			Controls Adequate (appropriate,	
	Area/Activity	Inspected?	operating)?	Naintenance or Corrective Action Needed and Notes
1	Material loading/unloading and storage areas	🗆 Yes 🗆 No 🗔 N/A	🗆 Yes 🗔 No	Describe Maintenance and/or Corrective Actions Needed
2	Equipment operations and maintenance areas	🗆 Yes 🗆 No 🗔 N/A	🗆 Yes 🗌 No	Describe Maintenance and/or Corrective Actions Needed
3	Fueling areas	🗆 Yes 🗆 No 🗔 N/A	🗆 Yes 🔲 No	Describe Maintenance and/or Corrective Actions Needed
4	Outdoor vehicle and equipment washing areas	🗆 Yes 🗆 No 🗔 N/A	🗆 Yes 🗌 No	Describe Maintenance and/or Corrective Actions Needed
5	Waste handling and disposal areas	🗆 Yes 🗆 No 🗔 N/A	🗆 Yes 🗌 No	Describe Maintenance and/or Corrective Actions Needed
6	Erodible areas/construction	🗆 Yes 🗆 No 🗔 N/A	🗆 Yes 🗌 No	Describe Maintenance and/or Corrective Actions Needed
7	Non-stormwater/illicit connections	🗆 Yes 🗆 No 🗔 N/A	🗆 Yes 🗖 No	Describe Maintenance and/or Corrective Actions Needed

	Area/Activity	Inspected?	Controls Adequate (appropriate, effective and operating)?	Maintenance or Corrective Action Needed and Notes
8	Salt storage piles or pile containing salt	🗆 Yes 🗆 No 🗔 N/A	🗆 Yes 🗌 No	Describe Maintenance and/or Corrective Actions Needed
9	Dust generation and vehicle tracking	🗆 Yes 🗆 No 🗔 N/A	🗆 Yes 🗌 No	Describe Maintenance and/or Corrective Actions Needed
10	Processing areas	🗆 Yes 🗆 No 🗔 N/A	🗆 Yes 🗌 No	Describe Maintenance and/or Corrective Actions Needed
11	Areas where industrial activity has taken place in the past and significant materials remain and are exposed to storm water	🗆 Yes 🗆 No 🗔 N/A	🗆 Yes 🗖 No	Describe Maintenance and/or Corrective Actions Needed
12	Immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by- products used or created by the facility	□ Yes □ No □ N/A	☐ Yes ☐ No	Describe Maintenance and/or Corrective Actions Needed
13	(Other)	🗆 Yes 🗆 No 🗆 N/A	🗆 Yes 🗌 No	Describe Maintenance and/or Corrective Actions Needed
14	(Other)	🗆 Yes 🗆 No 🗔 N/A	🗆 Yes 🗖 No	Describe Maintenance and/or Corrective Actions Needed

Discharge Points

At discharge points, describe any evidence of, or the potential for, pollutants entering the stormwater drainage system. Also describe observations regarding the physical condition of and around all stormwater discharge points, including any flow dissipation devices, and evidence of pollutants in discharges and/or the receiving water. Identify if any corrective action is needed. Describe Discharge Point Observations

Discharges/Pollutants

Describe any previously unidentified stormwater discharges from and/or pollutants: Describe Discharges and/or Pollutants

Non-Compliance

Describe any incidents of non-compliance observed and not described above: Describe Non-compliance

Additional Control Measures

Describe any additional control measures needed to comply with the permit requirements: Describe Additional Controls Needed

Notes

Use this space for any additional notes or observations from the inspection: Additional Notes

CERTIFICATION STATEMENT

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information contained therein. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information contained is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Print Name and Title: _____

Signature: ______Date Signed: ______

D. VISUAL ASSESSMENT DOCUMENTATION

Instructions:

• Include in your records all visual assessment documentation completed for the facility (Part 3.2.3). An example visual assessment form can be found on the following page.

MSGP Visual Assessment Form					
(Complete a separate form for each discharge poin	t you assess)				
Name of Facility: Enter Name of Facility	NPDES ID. Insert NPDES ID				
Sample Location: Enter Discharge Point ID "Substantially Identical Discharge Point" (SIDP)?	Yes (identify SIDPs):No				
Person(s)/Title(s) Collecting Sample: Enter Name(s)/Title(s)					
Signature(s) of Person(s) Collecting Sample:					
Person(s)/Title(s) Examining Sample: Enter Name(s)/Title(s)					
Signature(s) of Person(s) Examining Sample:					
Date & Time Discharge Began:Date & Time Sample Collected:Enter Date and TimeEnter Date and Time. If sample not taken within fi explain why.	rst 30 minutes, Enter Date and Time				
Substitute Sample?	vas originally scheduled to be collected):				
Is this a substitute sample for quarterly visual assessments distributed during seasons when precipitation more regularly occurs?	rter/year when the sample was originally scheduled				
Nature of Discharge: 🔲 Rainfall 🔲 Snowmelt					
If Rainfall: Rainfall Amount: Previous Storm Ended > 72 hours (three days) Number of inches Before Start of This Storm?	Yes No**				
(describe):					
Pollutants Observed					
Color Other (describe):					
Odor None Musty Sewage Sulfur Sour Petroleum/Gas					
Solvents Other (describe):					
Clarity 🗌 Clear 🗌 Slightly Cloudy 🗌 Cloudy 🔲 Opaque 🗌 Other					
Floating Solids Describe):					
Settled Solids*** No Ves (describe):					
Suspended Solids No Ves (describe):					
Foam (gently shake sample)					
Oil Sheen 🗌 None 🗌 Flecks 🔲 Globs 🗔 Sheen 🗔 Slick					
Other (describe):					

Other Obvious Indicators No Yes (describe): of Stormwater Pollution				
* Your facility must be located in an area where limited rainfall occurs during many parts of the year (e.g., arid or semi-arid climate) or in an area where freezing conditions exist that prevent discharges from occurring for extended periods. Identify the quarter/year when the sample was originally scheduled to be collected.				
** The 72-hour (three day) interval can be waived when the previous storm did not yield a measurable discharge or if you are able to document (attach applicable documentation) that less than a 72-hour (three day) interval is representative of local storm events during the sampling period.				
*** Observe for settled solids after allowing the sample to sit for approximately one-half hour.				
Sampling not performed due to adverse conditions: No Ves (explain):				
Sampling not performed due to no measurable storm event occurring that resulted in a discharge during the monitoring quarter:				
Identify probable sources of any observed stormwater contamination. Also, include any additional comments, descriptions of pictures taken, and any corrective actions necessary below (attach additional sheets as necessary). Insert details				
Certification Statement (Refer to MSGP Appendix B, Part B.11 for Signatory Requirements)				
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information contained therein. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information contained is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.				
A. Name: B. Title:				
C. Signature: D. Date Signed:				

E. MONITORING RESULTS

Instructions:

 Include in your records copies of all monitoring results (including analytical laboratory data, indicator monitoring, benchmark monitoring, annual effluent limitations guidelines monitoring, state- or tribal-specific monitoring, impaired waters monitoring, and any other monitoring required or conducted) for the facility. Also include copies of monitoring data submitted to EPA's Net-DMR reporting system or paper DMRs if EPA has granted your facility a waiver from electronic reporting (Part 4.1.9).

F. DEVIATIONS FROM VISUAL ASSESSMENT AND/OR MONITORING SCHEDULE

Instructions:

Include in your records:

- A description of any deviations from the schedule you provided in your SWPPP for visual assessments and/or monitoring (Part 6.5), and
- The reason for the deviations (e.g., it was impracticable to collect samples within the first 30 minutes of a measurable storm event or adverse weather) (Parts 3.2.4 and 4.1.5 of the 2021 MSGP).

Use the fields below to document the deviations. Repeat as necessary for any deviations.

Date:

Visual Assessments	Monitoring				
Describe Deviation from Schedule: Describe Deviation					
Reason for deviation: Des	scribe Reason				

Date: Insert Date

Visual Assessments	Monitoring				
Describe Deviation from Schedule: Describe Deviation					
Reason for Deviation: Deviation:	scribe Reason				

Date: Insert Date

Visual Assessments	Monitoring				
Describe Deviation from Schedule: Describe Deviation					
Reason for Deviation: De	scribe Reason				

Date: Insert Date

☐ Visual Assessments ☐ Monitoring Describe Deviation from Schedule: Describe Deviation Reason for Deviation: Describe Reason

G. CORRECTIVE ACTION AND AIM DOCUMENTATION

Instructions:

Within 24 hours of becoming aware of a condition identified in Parts 5.1.1, 5.2.3, 5.2.4, or 5.2.5 of the 2021 MSGP, document the existence of the condition and subsequent actions. Note that this information must be summarized in the annual report (as required in Part 7.4 of the 2021 MSGP).

Description of Condition: Insert Description of Condition or Event Trigering Need for Corrective Action Review and/or AIM Response

For Spills and Leaks:

Description of Incident: Insert Description Material: Insert Description of Material Date/Time: Insert Date/Time Amount: Insert Amount of Spill/Leak Location: Insert Location of Spill/Leak Reason for Spill: Insert Reason for Spill/Leak Discharge to Waters of U.S.: Insert Whether Spill/Leak/Other Release Discharged to a Water of the U.S.

Date: Insert Date Condition/Triggering Event was Identified Immediate Actions: Insert Description of Immediate Actions Taken Actions Taken within 14 Days: Insert Description of Corrective Actions and/or AIM Responses Taken Within 14 days of Discovery of Condition/Triggering Event

14 Day Infeasibility: If Applicable, Document Why It Is Infeasible to Complete Necessary Corrective Actions and/or AIM Responses Within 14 Day Timeframe and Describe Schedule

45 Day Extension: If Applicable, Document Rationale Provided to EPA for Extension of 45 Day Timeframe

Description of Condition: Insert Description of Condition or Event Trigering Need for Corrective Action Review and/or AIM Response

For Spills and Leaks:

Description of Incident: Insert Description Material: Insert Description of Material Date/Time: Insert Date/Time Amount: Insert Amount of Spill/Leak Location: Insert Location of Spill/Leak Reason for Spill: Insert Reason for Spill/Leak Discharge to Waters of U.S.: Insert Whether Spill/Leak/Other Release Discharged to a Water of the U.S.

Date: Insert Date Condition/Triggering Event was Identified

Immediate Actions: Insert Description of Immediate Actions Taken

Actions Taken within 14 Days: Insert Description of Corrective Actions and/or AIM Responses Taken Within 14 days of Discovery of Condition/Triggering Event

14 Day Infeasibility: If Applicable, Document Why It Is Infeasible to Complete Necessary Corrective Actions and/or AIM Responses Within 14 Day Timeframe and Describe Schedule

45 Day Extension: If Applicable, Document Rationale Provided to EPA for Extension of 45 Day Timeframe

H. BENCHMARK THRESHOLD EXCEEDANCES

Instructions:

Include in your records documentation of any annual average benchmark threshold exceedances, which AIM Level triggering event the exceedances caused, and AIM response employed per Part 5.2, including:

- The AIM triggering event;
- The AIM response taken;
- Any rationale that SWPPP/SCM changes were unnecessary; or
- Any documentation required to meet any AIM exception per Part 5.2.6.

Note: an annual average exceedance for a parameter can occur if the four-quarterly annual average for a parameter exceeds the benchmark threshold, or fewer than four quarterly samples are collected, but a single sample, or the sum of any sample results withing the sampling year exceeds the benchmark threshold by more than four times for a parameter (Part 5.2.2).

Date: Insert Date

Pollutant Exceeded and Results: Insert Pollutant Name Sample 1 (Sample date: Insert Sample Date) Result: Insert Sample Result Sample 2 (Sample date: Insert Sample Date) Result: Insert Sample Result Sample 3 (Sample date: Insert Sample Date) Result: Insert Sample Result Sample 4 (Sample date: Insert Sample Date) Result: Insert Sample Result Average Result: Insert Value Benchmark Value: Insert Benchmark Value from 2021 MSGP

AIM Level Triggered (select one)

AIM Level 1 (quarterly benchmark monitoring results indicate that an AIM triggering event per Part

5.2.2 has occurred)

AIM Level 2 (continued quarterly benchmark monitoring results indicate that an AIM triggering event per Part 5.2.2 has occurred)

AIM Level 3 (continued quarterly benchmark monitoring results indicate that an AIM triggering event per Part 5.2.2 has occurred)

AIM Response Taken: Document AIM response taken in section G of this Template

Do You Qualify for an Exception from AIM Requirements and Continued Benchmark Monitoring?

Exception(s): (if applicable)

Solely Attributable to Natural Background Pollutant Levels

Pollutant(s): Insert Pollutant Maintain supporting rationale and applicable data as required in Part 5.2.6.1

Due to Run-On

Pollutant(s): Insert Pollutant

Attach documentation and concurrence from EPA Regional Office required in Part 5.2.6.2

Due to An Abnormal Event

Pollutant(s): Insert Pollutant Attach documentation required in Part 5.2.6.3

Demonstrated to Not Result in An Exceedance of Facility-Specific Value Using National Recommended Water Quality Criteria in Lieu of Applicable MSGP Benchmark Threshold (For Aluminum and Copper Benchmark Parameters Only)

Pollutant(s): Insert Pollutant Attach documentation and concurrence from EPA Regional Office required in Part 5.2.6.4

Demonstrated Not to Result in Any Exceedance of Water Quality Standards

Pollutant(s): Insert Pollutant Attach documentation and concurrence from EPA Regional Office required in Part 5.2.6.5

I. IMPAIRED WATERS MONITORING: DOCUMENTATION OF NATURAL BACKGROUND SOURCES OR NON-PRESENCE/ACCEPTABLE RANGE OF IMPAIRMENT POLLUTANT

Instructions:

This section applies only if your facility:

- Discharges directly to an impaired water without an EPA-approved or established total maximum daily load (TMDL); and
- Your first or fourth year annual impaired waters monitoring results indicate that the pollutant(s) for which the water is impaired is (1) not detected in your discharge, or is within the acceptable range for a given parameter for the waterbody to meet its designated use (e.g., pH or temperature) or (2) is detected in your discharge, but you have determined that its presence is caused solely by natural background sources. See Part 4.2.5.1 of the 2021 MSGP.

Date: Insert Date

Check one of the boxes below and complete the additional documentation:

 \Box 1 – Pollutant(s) for which the water is impaired is not present in your discharge or is within the acceptable range for a given parameter for the waterbody to meet its designated use.

Attach documentation that the impairment pollutant(s) was not detected in your discharge sample(s) or was detected within an acceptable range.

\Box 2 – Pollutant(s) for which the water is impaired is present, but you have determined its presence is caused solely by natural background sources.

Attach the following documentation:

 An explanation of why you believe that the presence of the pollutant(s) causing the impairment in your discharge is not related to the activities at your facility; and Data and/or studies that tie the presence of the pollutant(s) causing the impairment in your discharge to natural background sources in the watershed.

J. ACTIVE/INACTIVE STATUS CHANGE

Instructions:

If your facility changes its status from active to inactive and unstaffed (or from inactive/unstaffed to active), include documentation in this section to support your claim.

Date: Insert Date of Change in Status New Facility Status: Inactive and Unstaffed Active Reason for Change in Status: Describe Reason

K. SWPPP AMENDMENT LOG

Instructions:

Include in your records:

• A log of the date and description of any amendments to your SWPPP.

Fill in the appropriate columns of this table for each amendment to your SWPPP. Copy and paste additional rows into the table as necessary.

Amend. No.	Description of the Amendment	Date of Amendment	Amendment Prepared by [Name(s) and Title(s)]
1	Insert Description of Amendment	Insert Date	Insert Name(s)/Title(s)
2			
3			
4			
5			
6			
7			
8			
9			
10			

L. MISCELLANEOUS DOCUMENTATION

Instructions:

Use this section to keep records of any additional documentation that relates to your compliance with the 2021 MSGP.

D. NOTICE OF INTENT AND 2021 MULTI-SECTOR GENERAL PERMIT

The NOI and submission receipt are available from the Port upon request.

E. ENDANGERED SPECIES DOCUMENTATION

Endangered Species Eligibility Determination

Appendix E - Procedures Relating to Endangered Species Protection

E.1 Assessing the Effects of Your Discharges and Discharge-Related Activities

In accordance with Part 1.1.4, you must follow the procedures in this appendix to determine which of the eligibility criteria (i.e., criterion A - E) you qualify under, if any, with respect to the protection of threatened or endangered species listed, and "critical habitat" designated, under the federal Endangered Species Act (ESA). If you do not meet one of these criteria, you are not eligible for coverage under this permit.

The procedures in this appendix will help you assess the potential effects of applicable stormwater discharges, discharge-related activities, and authorized non-stormwater discharges on federally listed threatened and endangered species and their designated critical habitat. In accordance with Part 6.2.6.1 of this permit, you must keep any documentation that supports your eligibility criteria determination, including the completed <u>Criterion Selection Worksheet</u> in Part E.4 of this appendix, with your Stormwater Pollution Prevention Plan (SWPPP).

You must complete your eligibility determination outlined in the Endangered Species Protection section of the Notice of Intent (NOI) in the NPDES eReporting Tool (NeT-MSGP) and provide all information as required on your NOI that supports the Part 1.1.4 eligibility criterion you qualify under. Note that if you have determined that you may be eligible under Criterion C3 or Criterion F, you must complete additional questions in the Endangered Species Protection section of the NOI in NeT-MSGP, unless the EPA Regional Office grants you a waiver from electronic reporting, in which case you must submit a completed <u>Criterion C3 Eligibility Form</u> to EPA a minimum of 30 days <u>prior</u> to submitting your NOI for permit coverage.

While coordination between you and the U.S. Fish and Wildlife Service (USFWS) and/or the National Marine Fisheries Service (NMFS) (together, the "Services") is not necessarily required in all cases, EPA encourages you to coordinate with the Services, to document that coordination, and to do so early in the planning process prior to submitting your NOI.

When evaluating the potential effects of your activities, you must consider effects to listed species or critical habitats within the "action area" of your industrial activity, as identified by the <u>USFWS IPaC</u> and/or the <u>NOAA Species Directory</u> (see Part E.4 of this appendix). Action area is defined in Appendix A of the MSGP and below:

Action Area – all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action. See 50 CFR 402. For the purposes of this permit and for application of Endangered Species Act requirements, the following areas are included in the definition of action area:

• The areas where stormwater discharges originate and flow from the industrial facility to the point of discharge into receiving waters. (Example: Where stormwater flows into a ditch, swale, or gully that leads to receiving waters and where listed species (such as listed amphibians) are found in the ditch, swale, or gully.)

• The areas where stormwater from industrial activities discharge into receiving waters and the areas in the immediate vicinity of the point of discharge. (Example: Where stormwater from industrial activities discharges into a stream segment that is known to harbor listed aquatic species.) • The areas where stormwater controls will be constructed and operated, including any areas where stormwater flows to and from the stormwater controls. (Example: Where a stormwater retention pond would be built.)

• The areas upstream and/or downstream from the stormwater discharge into a stream segment that may be affected by these discharges. (Example: Where sediment discharged to a receiving stream settles downstream and impacts a breeding area of a listed aquatic species.)

E.2 Eligibility Criterion

As required by Part 1.1.4, you must certify in your NOI that you meet one of the following criteria (A - E) to be eligible for coverage under the permit. Once you determine the applicable eligibility criterion, you must:

- Specify the basis for your selection of the applicable eligibility criterion, and if required, provide documentation that is the basis for your determination with the NOI form; and
- Provide documentation in your SWPPP that is sufficient to support your determination that you satisfy the requirements of the applicable criterion.

NOTE: You must use the information from the <u>USFWS IPac</u> and <u>NOAA Species Directory</u> (see Step 2 and Step 3 of this appendix) when determining the presence of ESA listed species and critical habitat. Attaching aerial image(s) of the site to this NOI is helpful to EPA, USFWS, and NMFS in confirming eligibility under this criterion. Please Note: NMFS' jurisdiction includes ESA-listed marine and estuarine species that spawn in inland rivers.

Criterion A. No ESA-listed species and/or critical habitat present in action area. No ESA-listed species and designated critical habitat(s) are likely to occur in your facility's "action area" as defined in Appendix A. You must provide a description below of the basis for selecting this criterion and provide documentation supporting your eligibility determination in your SWPPP.

Basis statement content: A basis statement supporting the selection of this criterion must identify the USFWS and NMFS information sources used. State resources are not acceptable. Attaching aerial image(s) of the site to this NOI is helpful to EPA, USFWS, and NMFS in confirming eligibility under this criterion. Note that NMFS' jurisdiction includes ESA-listed marine and estuarine species that spawn in inland rivers.

Criterion B. Eligibility requirements met by another operator under the 2021 MSGP. Your industrial activity's discharges and discharge-related activities were already addressed in another operator's valid certification of eligibility for your "action area" under eligibility criteria A, C, D, or E of the 2021 MSGP and you have confirmed that no additional ESA-listed species and designated critical habitat not considered in that certification may be present or located in the "action area" (e.g., due to a new species listing or critical habitat designation). To certify your eligibility under this criterion, there must be no lapse of NPDES permit coverage in the other 2021 MSGP operator's certification. By certifying eligibility under this criterion, you must comply with any conditions upon which the other operator's certification was based. You must include in your NOI the NPDES ID assigned to the other 2021 MSGP operator's authorization under this permit. If your certification is based on another 2021 MSGP operator's certification under

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criterion C, you must provide EPA with the relevant supporting information required (i.e., permit tracking number, industrial activity SWPPP, a description of the basis for the criterion selected) in your NOI form.

Basis statement content: A basis statement supporting the selection of this criterion must identify the eligibility criterion of the other MSGP NOI, the authorization date, and confirmation that the authorization is effective.

Criterion C1. Facility eligible for Criterion C in the 2015 MSGP with NO CHANGE to listed

species, critical habitat, or action area. Your facility was eligible for Criterion C in the 2015 MSGP and there has been no change in your facility's action area and you have confirmed that there are no additional threatened or endangered species or designated critical habitat listed by USFWS and/or NMFS in your action area since your certification under Criterion C in the 2015 MSGP. You must provide a description of the basis of this criterion selected on your NOI form and provide documentation supporting your eligibility determination in your SWPPP.

Basis statement content: A basis statement supporting the selection of this criterion must provide the USFWS and/or NMFS resources consulted that helped you determine that there are no additional and/or critical habitat listed by under the jurisdiction of the Services in your action area.

Criterion C2. Facility eligible for Criterion C in the 2015 MSGP with CHANGES to listed species, critical habitat, or action area. Your facility was eligible for Criterion C in the 2015 MSGP, but there have been changes in your facility's action area, and/or additional threatened or endangered species and/or designated critical habitat have been listed by USFWS and/or NMFS in your action area since your certification under Criterion C under the 2015 MSGP. You must provide a description of the basis of this criterion selected on your NOI form and provide documentation supporting your eligibility determination in your SWPPP. You must submit your completed Criterion C2 Eligibility information at the same time that you submit your NOI, which will be held for 30 additional days prior to the standard 30-day review for all NOIs.

Basis statement content: A basis statement supporting the selection of this criterion must identify the following:

- 1. A description of the changes in the facility's action area (if applicable).
- 2. The USFWS and/or NMFS resources consulted that helped you determine that additional species and/or critical habitat have been listed/designated by either of the Services in your action area.
- 3. What ESA-listed species and/or designated critical habitat are located in your "action area".
- 4. Distance in miles between your site and the ESA-listed species and/or designated critical habitat within the action area (in miles, or state "on site" if the ESA-listed species and/or designated critical habitat is within the area to be disturbed).
- 5. A description of EPA approved measures you will implement or will continue to implement, including additional measures previously
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suggested by the services and required by the EPA under the 2015 MSGP, to ensure no likely adverse effects on ESA-listed species and/or critical habitat.

Criterion C3. ESA-listed species and/or designated critical habitat likely to occur, but discharges not likely to adversely affect them. ESA-listed threatened or endangered species or their designated critical habitat(s) under the jurisdiction of USFWS and/or NMFS are likely to occur in or near your facility's "action area," and you certify to EPA that your industrial activity's discharges and dischargerelated activities are not likely to adversely affect ESA-listed and/or critical habitat. To certify your eligibility under this criterion, you must complete the Criterion C3 Eligibility Form, which you must complete additional questions in the Endangered Species Protection section of the NOI in NeT-MSGP, unless the EPA Regional Office grants you a waiver from electronic reporting, in which case you must submit to EPA at least 30 days prior to filing your NOI for permit coverage. After evaluation of your Criterion C3 Eligibility Form, EPA may require additional measures that you must implement to avoid or eliminate likely adverse effects on ESA-listed species and/or critical habitat from discharges and dischargerelated activities. You must submit your completed Criterion C3 Eligibility information at the same time that you submit your NOI, which will be held for 30 additional days prior to the standard 30-day review for all NOIs. You must also provide a description of the basis for the criterion you selected on your NOI form and provide documentation supporting your eligibility determination in your SWPPP.

Basis statement content: A basis statement supporting the selection of this criterion must identify the following:

- 1. The USFWS and NMFS information resources and expertise (e.g., state or federal biologists) used to arrive at this conclusion. Any supporting documentation should explicitly state that both ESA-listed species and designated critical habitat under the jurisdiction of the USFWS and/or NMFS were considered in the evaluation.
- 2. What ESA-listed species and/or designated critical habitat are located in your "action area".
- 3. Distance in miles between your site and the ESA-listed species and/or designated critical habitat within the action area (in miles, or state "on site" if the ESA-listed species and/or designated critical habitat is within the area to be disturbed).
- 4. A description of EPA approved measures you will implement to ensure no likely adverse effects on ESA-listed species and/or critical habitat.
- 5. A statement affirming that "I agree to implement any additional measures that were determined by EPA to be necessary to ensure that my discharges and/or discharge-related activities will not have likely adverse effects on listed species and critical habitat."
- 6. If the EPA Regional Office granted you a waiver from electronic reporting, date you sent completed Criterion C3 Eligibility form to EPA.

	(di modified)
Criterion D.	ESA Section 7 consultation has successfully concluded . Consultation between a Federal Agency and the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service under section 7 of the Endangered Species Act has concluded. The consultation must have addressed the effects of the facility's discharges and discharge-related activities on ESA-listed species and/or designated critical habitat under the jurisdiction of USFWS and/or NMFS. To certify eligibility under this criterion, indicate the result of the consultation:
	i. A biological opinion and/or conference opinion that concludes that the action in question (taking into account the effects of your facility's discharges and discharge-related activities) is not likely to jeopardize the continued existence of ESA-listed species, or result in the destruction or adverse modification of designated critical habitat; or
	 Written concurrence from the applicable Service(s) with a finding that your facility's discharges and discharge-related activities are not likely to adversely affect ESA-listed species or designated critical habitat.
	You must verify that the consultation does not warrant reinitiation under 50 CFR §402.16. If reinitiation of consultation is required, in order to be eligible under this criterion you must ensure consultation is reinitiated and the result of the consultation must be consistent with Criterion D (i), or (ii) above.
	If eligible under Criterion D, you must also provide supporting documentation for your determination in your NOI and SWPPP, including the Biological Opinion (or ECO tracking number) or concurrence letter. You must include copies of the correspondence between yourself and the USFWS and/or NMFS in your SWPPP and your NOI.
	Basis statement content: A basis statement supporting the selection of this criterion should identify the federal action agency(ies) involved, the field office/regional office(s) providing that consultation, any tracking numbers of identifiers associated with that consultation (e.g., IPaC number, ECO number), and the date the consultation was completed.
Criterion E.	Issuance of section 10 permit. Potential take is authorized through the issuance of a permit under section 10 of the ESA by the USFWS and/or NMFS, and this authorization addresses the effects of the facility's discharges and discharge-related activities on ESA-listed species and designated critical habitat. You must include copies of the correspondence between yourself and the participating agencies in your SWPPP and your NOI.

Basis statement content: A basis statement supporting the selection of this criterion should identify whether USFWS or NMFS or both agencies provided a section 10 permit, the field office/regional office(s) providing permit(s), any tracking numbers of identifiers associated with that consultation (e.g., IPaC number, ECO number), and the date the permit was granted.

E.3 Eligibility Compliance

You must comply with any measures that formed the basis of your eligibility determination in Part 1.1.4 for the duration of your coverage under the MSGP in order to maintain your eligibility for coverage under the permit. These measures become permit requirements per Part 2.3. Documentation of these measures must be kept as part of your SWPPP (see Part 6.2.6.1).

E.4 Criterion Selection Worksheet

Instructions:

You must follow the step-by-step instructions in this worksheet in order to determine your eligibility under Part 1.1.4. Alternatively, if you prefer to use a Biological Evaluation (or its equivalent) in making a determination of your eligibility, you should ensure <u>all</u> of the information requested below for the criterion you are selecting is fully addressed in the document and provided. You must attach this completed document or Biological Evaluation.

You may need the following information in order to determine your eligibility:

- 1) Your facility's draft Stormwater Pollution Prevention Plan (SWPPP), including information on receiving waters.
- 2) Any additional site-specific information related to your facility's discharges and discharge-related activities, such as the geographic location.
- 3) The list(s) of threatened and endangered species and/or any designated critical habitat in your action area, as acquired from the Fish and Wildlife Service and/or the National Marine Fisheries Service. Directions on how to acquire species lists is described in a subsequent section below.

Note that much of the information needed to complete this worksheet is also needed in order to prepare your NOI for permit coverage and is information that is part of your SWPPP. You may copy and paste any information that is already required and completed in your SWPPP into this worksheet. (You may also decide to make minor changes or additions to your SWPPP while filling out the worksheet for clarification purposes or to address any concerns that are identified below.)

STEP 1: DETERMINE IF YOU MEET THE ELIGIBILITY REQUIREMENTS OF CRITERION B, D, or E.

- I. You should first determine whether you are eligible under criterion B (because another operator has accounted for your action area in their valid certification of eligibility under the 2021 MSGP), criterion D (because of a previously completed ESA section 7 consultation), or criterion E (because of a previously issued ESA section 10 permit).
- II. If you determine that your facility does not meet criterion B, D, or E (e.g., due to difference in action area described, lack of analysis of appropriate effects, new listings or designation of critical habitat), proceed to <u>Step 2</u> below.

Criterion B Eligibility Requirements

If your industrial activities were already addressed in another operator's valid certification of eligibility under the current 2021 MSGP, you may be eligible for coverage under criterion B. In order to be eligible for coverage under criterion B, you must confirm that **all** three of the following are true:

- □ You have confirmed that the other operator's certification of eligibility accounted for your action area and that the eligibility determination was valid.
- □ There has been no lapse of NPDES permit coverage in the other operator's certification.

□ You will comply with all measures that formed the basis of the other operator's valid certification of eligibility. Provide the operator's NPDES permit number and list any measures that you must comply with in the box below (or enter "N/A" if none exist):

- If all three of the above are true, you may select criterion B on your NOI. You must include in your NOI the NPDES ID assigned to the other operator's authorization under this permit, and a description of the basis for the criterion selected on your NOI form, including the eligibility criterion selected in the other operator's NOI. You must include this completed Worksheet in your SWPPP.
- If any of the above are <u>not</u> true, you may <u>not</u> select criterion B and must proceed to <u>Step</u>
 <u>2</u>. For example, if there are any listed species in your action area that were not addressed in the other operator's certification, you are not eligible under criterion B.

Criterion D Eligibility Requirements

If consultation under section 7 of the ESA has concluded, you may be eligible for coverage under criterion D. In order to be eligible for coverage under criterion D, you must confirm that **all** two of the following are true:

- A consultation between a federal agency and the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service under section 7 of the ESA has concluded. Consultations can be either formal or informal, and would have occurred only as a result of a separate federal action (e.g., during application for an individual wastewater discharge permit or the issuance of a wetlands dredge and fill permit), and the consultation must have addressed the effects of your industrial activity's discharges and discharge-related activities on all ESA-listed threatened or endangered species and all designated critical habitat in your action area. The result of this consultation must be either:
 - i. A biological opinion currently in effect that concludes that the action in question (taking into account the effects of your facility's discharges and discharge-related activities) is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat. The biological opinion must have included the effects of your facility's discharges¹ and discharge-related activities on all the listed species and designated critical habitat in your action area. To be eligible under (i), any

¹ Effects of discharge includes, but is not limited to, the analysis of the hydrological, chemical, and biological effects of the discharge on listed species, their prey, and their habitat, as well as critical habitat, where designated. For example, the effects analysis would have evaluated whether the various pollutants in the discharge (e.g., TSS, metals) would adversely affect listed species through exposure to the pollutants, or to their prey or habitat. Effects that look only at short-term effects unrelated to the stormwater discharge effects to listed species are not sufficient for these purposes.

reasonable and prudent measures specified in the incidental take statement must be implemented;

ii. Written concurrence (e.g., letter of concurrence) from the applicable Service(s) with a finding that your facility's discharges and discharge-related activities are not likely to adversely affect ESA-listed species and/or designated critical habitat. The concurrence letter <u>must</u> have included the effects of your facility's discharges and discharge-related activities on all the ESA-listed species and/or designated critical habitat on your species list(s) acquired from the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service as part of this worksheet.

- The consultation does not warrant reinitiation under 50 CFR §402.16; or, if reinitiation of consultation is required (e.g., due to a new species listing or critical habitat designation; new information), you have reinitiated the consultation and the result of the consultation is consistent with the statements above. Attach a copy of any reinitiation documentation from the Services or other consulting federal agency.
 - If both of the above are true, you may select criterion D on your NOI. You must also provide a description of the basis for the criterion selected on your NOI form and you must include this completed worksheet in your SWPPP. In both your SWPPP and NOI you must also provide the Biological Opinion (or ECO tracking number) or concurrence letter and any other documentation supporting your eligibility determination.
 - If any of the above are not true, you may not select criterion D and must proceed to <u>Step 2</u>. For example, if the biological opinion or written concurrence did not include the effects of the discharge or discharge-related activities as described above (e.g., the previous consultation covered some but not all of the species or critical habitat in your action area as shown on your species list), or if the consultation is no longer valid (e.g., due to new species listings), you are not eligible under criterion D.

Criterion E Eligibility Requirements

If your industrial activities are the subject of a permit under section 10 of the ESA, and this authorization addresses the effects of your facility's discharges and discharge-related activities on ESA-listed species and designated critical habitat in your action area, you may be eligible for coverage under criterion E. In order to be eligible or coverage under criterion E, you must confirm that the following is true:

- A permit has been issued under section 10 of the ESA. The permit authorization specifically addresses the effects of your facility's discharges and discharge-related activities (if applicable) on all federally-listed species and designated critical habitat in your action area.
 - If the above is true, you may select criterion E on your NOI. You must also provide a description of the basis for the criterion selected on your NOI form and must include this completed worksheet in your SWPPP. In both your SWPPP and your NOI you must provide a copy of the section 10 permit issued by the Services.
 - If the above is not true, you may not select criterion E and must proceed to <u>Step 2</u>. For example, if a permit has been issued under section 10 of the ESA, but the permit authorization did not address the effects of your facility's discharges and/or discharge-related activities on all federally-listed species and designated critical

habitat in your action area, you are not eligible under criterion E, but you should attach a copy of the permit to the SWPPP for reference.

STEP 2: DETERMINE THE EXTENT OF YOUR ACTION AREA

You must determine whether species listed as either threatened or endangered, or their critical habitat(s) are located in your facility's <u>action area</u> (i.e., all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action, including areas beyond the footprint of the facility that are likely to be affected by stormwater discharges, discharge-related activities, and authorized non-stormwater discharges). Consider the following in determining the action area for your facility:

- Discharges of pollutants into downstream areas can expand the action area well beyond the footprint of your facility and the discharge point(s). Take into account the controls you will be implementing to minimize pollutants and the receiving waterbody characteristics (e.g., perennial, intermittent, ephemeral) in determining the extent of physical, chemical, and/or biotic effects of the discharges. All receiving waterbodies that could receive pollutants from your facility must be included in your action area.
- Discharge-related activities must also be accounted for in determining your action area. Discharge-related activities are any activities that cause, contribute to, or result in stormwater and authorized non-stormwater point source discharges, and measures such as the siting, construction, and operation of stormwater controls to control, reduce, or prevent pollutants from being discharged. For example, any new or modified stormwater controls that will have noise or other similar effects, and any disturbances associated with construction of controls, are part of your action area.

If you have any questions about determining the extent of your action area, you may contact EPA or the Services for assistance. <u>https://www.epa.gov/npdes/contact-us-stormwater#regional</u>

You must include a **map and a written description of** the action area of your facility in <u>Attachment 1</u> of this appendix. You may choose to include the map that is generated from the FWS' on-line mapping tool IPaC (the *Information, Planning, and Consultation System*) located at <u>http://ecos.fws.gov/ipac/ (see Step 3 for information about using this tool).</u>

You must proceed to <u>Step 3</u> below.

STEP 3: DETERMINE IF LISTED THREATENED OR ENDANGERED SPECIES AND/OR CRITICAL HABITAT ARE PRESENT IN YOUR ACTION AREA.

You must determine whether species listed as either threatened or endangered under the Endangered Species Act, and/or their designated critical habitat(s) (as defined in Appendix A), are located in your facility's action area. ESA listed species and designated critical habitat are under the purview of the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS), and in many cases, you will need to acquire species and critical habitat lists from both Services.

- For NMFS species and critical habitat information, use the following webpages, which provide up-to-date information on listed species
 - For the Northeastern U.S.: NOAA Fisheries Greater Atlantic Region ESA Section 7 Mapper: <u>https://noaa.maps.arcgis.com/apps/webappviewer/index.html?id=1bc332edc5204e0</u> 3b250ac11f9914a27;

• For Puerto Rico:

- o Acropora critical habitat map:
 - https://www.fisheries.noaa.gov/resource/map/acropora-elkhorn-and-staghorncoral-critical-habitat-map-and-gis-data;
- o Green turtle critical habitat map: <u>https://www.fisheries.noaa.gov/resource/map/green-turtle-critical-habitat-map-and-gis-data;</u>
- o Hawksbill Turtle critical habitat map: https://www.fisheries.noaa.gov/resource/map/hawksbill-turtle-critical-habitatmap-and-gis-data;
- Western U.S.: West Coast Region Protected Resources App: <u>https://www.webapps.nwfsc.noaa.gov/portal/apps/webappviewer/index.html?id=751</u> <u>4c715b8594944a6e468dd25aaacc9</u>; and
- Pacific Islands: Contact the Pacific Islands Regional Office at (808) 725-5000 or pirohonolulu@noaa.gov.

If you need more information, go to <u>https://www.fisheries.noaa.gov/regions</u>. Choose the Region where the project is based from the left-hand column and the office from the About Us on the right-hand column.

If the action area includes coastal waters or waters used by species that migrate between fresh and salt waters (e.g., salmon, sturgeon), you must obtain a species list from NMFS field office.

- For FWS species information, use the on-line mapping tool IPaC (the Information, Planning, and Consultation System) located at http://ecos.fws.gov/ipac/, and follow these steps:
 - Select Get Started.
 - Search or zoom to find your location: Use an address, city name or other location to find your facility then use the zoom in/out feature to see the entire extent of your action area on the screen.
 - **Define you action area:** Use one of the mapping features (e.g., sketch, polygon or line drawing tool) to draw your entire action area.
 - For the aquatic portion of your action area, trace the waterbody(ies) with the tool to characterize your action area.
 - If your proposal will include any upland activities (i.e., discharge-related activities), or if there is some aspect of your discharge that would potentially result in effects to terrestrial species, include the corresponding upland areas within your actionarea.
 - When you are done, go to confirm and press Continue.
 - Select Define Project to request an Official Species List.
 - Complete the fields on the Official Species List Request page and include "(MSGP)" at the end of the project description.
 - For Classification, select "Water Quality Modification".
 - Select the appropriate requesting agency/organization type (for most operators, this should be "Other").

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- Submit the request to acquire an Official Species List, which should show both listed species as well as any designated critical habitat that are present in the action area in the previous step.
- Note: If a link to an Official Species List is not available on the page, follow the web link of the office(s) indicated, or contact the office directly by mail or phone if a web link is not shown.

The principle authority for critical habitat designations and associated requirements is found at 50 CFR Parts 17 and 226.

Attach a copy of the species and critical habitat list(s) from the Service(s) to <u>Attachment 2</u> of this appendix and use the list(s) to complete the rest of this worksheet. For FWS species, include the full printout from your IPaC query/Official Species List in Attachment 2. You can include the map from your IPaC query in Attachment 1. For NMFS species, include the full printout from the Species Directory with the correct Region selected.

If after following the steps you have determined that there are no listed species and/or designated critical habitat in your action area, you may be eligible for coverage under <u>criterion</u> <u>A</u>.

If you have determined that there are or may be listed species and/or designated critical habitat in your action area, you are not eligible under criterion A and must proceed to <u>Step 4</u> below.

Criterion A Eligibility Requirements

In order to be eligible for coverage under criterion A, you must confirm that the following is true:

- I have confirmed there to be no ESA-listed species and no critical habitat in my action area.
 - If the above is true, you may select criterion A on your NOI form. You must also provide a description of the basis for the criterion selected on your NOI form. You must include this completed worksheet in your SWPPP. Note: If your Official Species List from the USFWS indicated no species or critical habitat were present in your action area, include the full consultation tracking code at the top of your Official Species List in your NOI in the basis statement for Criterion A. If an Official Species List was not available on IPaC, list the contact date and name of the Service staff with whom you corresponded to verify no USFWS species or critical habitat were present in your action area.

Note: For existing dischargers that have previously obtained coverage under criterion A, you must verify whether ESAprotected species and/or critical habitat are expected to exist in your action area, as described above. Please note that if you now find that your action area overlaps with ESA-protected species or critical habitat, you must proceed to Step 4.

If the above is <u>not</u> true, you <u>may not</u> select criterion A and must proceed to <u>Step 4</u> to determine if you can become eligible under criterion C.

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STEP 4: DETERMINE IF YOUR INDUSTRIAL FACILITY'S DISCHARGES OR DISCHARGE-RELATED ACTIVITIES ARE LIKELY TO ADVERSELY AFFECT LISTED THREATENED OR ENDANGERED SPECIES OR DESIGNATED CRITICAL HABITAT AND ANY MEASURES THAT MUST BE IMPLEMENTED TO AVOID ADVERSE EFFECTS.

If in Step 3 you determined that listed species and/or designated critical habitat could exist in your action area, you must next assess whether your discharges and discharge-related activities are likely to adversely affect ESA-listed threatened or endangered species or designated critical habitat, and whether any additional measures are necessary to ensure no likely adverse effects. In order to make a determination of your facility's likelihood of adverse effects, you must complete additional questions in the Endangered Species Protection section of the NOI in NeT-MSGP, unless the EPA Regional Office grants you a waiver from electronic reporting, in which case you must complete the attached <u>Criterion C3 Eligibility Form</u> and must submit this form to EPA a minimum of 30 days prior to filing your NOI for permit coverage. After you submit your NOI containing Criterion C3 information or your <u>Criterion C3 Eligibility Form</u>, you may be contacted by EPA with additional measures that you must implement in order to ensure your eligibility under criterion C3.

Criterion C3 Eligibility Form

Instructions:

In order to be eligible for coverage under criterion C3, you must complete the Endangered Species Protection section of the Notice of Intent in the NPDES eReporting Tool (NeT-MSGP). Per Part 7.1, you must submit your NOI electronically via NeT-MSGP, unless the EPA Regional Office grants you a waiver from electronic reporting, in which case you may use this paper Criterion C3 form. If using the paper form, you must complete the following form and you must submit it to EPA following the instructions in Section VII a <u>minimum of 30 days prior to filing your NOI for permit</u> <u>coverage</u>. After you submit your form, you may be contacted by EPA with additional measures (e.g., additional stormwater controls or modifications to your discharge- related activities) that you must implement in order to ensure your eligibility under criterion C3.

If after completing this worksheet you cannot make a determination that your discharges and discharge-related activities are not likely to adversely affect ESA listed threatened or endangered species or designated critical habitat, you must submit this completed worksheet to EPA, and you may not file your NOI for permit coverage until you receive a determination from EPA that your discharges and/or discharge-related activities are not likely to adversely affect ESA-protected species and critical habitat.

Note: Much of the information needed for this form can be obtained from your draft SWPPP which will be needed when you file your NOI.

SECTION I. OPERATOR, FACILITY, AND SITE LOCATION INFORMATION.

- 1) Operator Information
 - a) Operator Name: _____
 - b) Point of Contact

First Name: _____ Last Name: _____

Phone Number: _____

E-mail: _____

- 2) Facility Information
 - a) Facility Name: _____
 - b) Check which of the following applies:
- □ I am seeking coverage under the MSGP as a new discharger or as a new source.
- □ I am seeking coverage under the MSGP as an existing discharger and my facility has modifications to its discharge characteristics (e.g., changes in discharge flow or area drained, different pollutants) and/or discharge-related activities (e.g., stormwater controls).

Indicate the number of years the facility has been in operation: _____years

2021 MSGP Appendix E - Procedures Relating to Endangered Species Protection (as modified)

Provide MSGP	e your NPDES II coverage:	D (i.e., permit track	ing number) fr	om your previous	
l am se are no	eeking coverag modifications	ge under the MSGF to my facility.	° as an existing	discharger and there	è
Indica	te the number	of year(s) the facil	ity has been in	operation:	year
Provide MSGP	e your NPDES II coverage:	D (i.e., permit track	ting number) fr	om your previous	
c)	Facility Addre	ess:			
	Address 1:				
	Address 2:				
	City:		State:	Zip Code:	
d)	Identify the p	rimary industrial se	ctor to be cove	ered under the 2021 N	NSGP:
	SIC Code	or Primary A	ctivity Code _		
	SIC Code Sector	or Primary A and Subsecto	ctivity Code _ r		
e)	SIC Code Sector Identify the se MSGP:	or Primary A and Subsecto	ctivity Code r cated activitie:	s to be covered unde	r the 2021
e)	SIC Code Sector Identify the se MSGP: Sector	or Primary A and Subsecto ectors of any co-loo Subsector	ctivity Code r cated activitie: 	s to be covered unde	r the 2021
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3) <u>Receiving Waters Information</u>

List all the s	tormwater ou	ffalls from your fac	For each outfall, provide the following receiving water information:								
Discharge Point ID	Design Capacity (if known)	Latitude (decimal degrees)	Longitude (decimal degrees)	Name of the receiving water that receives stormwater from the discharge point and/or from the MS4 that the discharge point discharges to	Type of Waterbody (e.g., lake, pond, river/stream/creek, estuarine/marine water)						

SECTION II. ACTION AREA

As required in <u>Step 2</u>, you must include a map and a written description of the action area of your facility in Attachment 1 of this appendix.

SECTION III. LISTED SPECIES AND CRITICAL HABITAT LIST

As required in <u>Step 3</u>, attach a copy of the species and critical habitat list(s) from the Service(s) to <u>Attachment 2</u> of this appendix and use the list(s) to complete the rest of this worksheet. For FWS species, include the full printout from your IPaC query/Official Species List in Attachment 2. You can include the map from your IPaC query in Attachment 1.

Review your species list in Attachment 2, choose one of the following three statements, and follow the corresponding instructions:

Note: For the purposes of this permit, "terrestrial species" would <u>not</u> include animal or plant species that 1) spends any portion of its life cycle in a waterbody or wetland, or 2) if an animal, depends on prey or habitat that occurs in a waterbody or wetland. For example, shorebirds, wading birds, amphibians, and certain reptiles would not be considered terrestrial species under this definition. Please also be aware that some terrestrial animals (e.g., certain insects, amphibians) may have an aquatic egg or larval/juvenile phase.

□ The species list includes only terrestrial species

and/or their designated critical habitat. No aquatic or aquatic-dependent species or their critical habitat are present in the action area. You may skip to <u>Section IV</u> of this form. You are not required to fill out <u>Section V</u>.

□ The species list includes only aquatic and/or aquatic-dependent species and/or their designated critical habitat. No terrestrial species or their critical habitat are present in the action area. You may skip to Section V of this form and are not required to fill out Section IV.

 \Box The species list includes both terrestrial and aquatic or aquatic-dependent species and/or their designated critical habitat. You must fill out both Sections \underline{V} and \underline{V} of this form.

SECTION IV. EVALUATION OF DISCHARGE-RELATED ACTIVITIES EFFECTS

Note: You are only required to fill out this section if your facility's action area contains terrestrial species and/or their designated critical habitat. If your action area only contains aquatic and/or aquatic-dependent species and/or their designated critical habitat, you can skip directly to <u>Section V</u>.

Most of the potential effects related to coverage under the MSGP are assumed to occur to aquatic and/or aquatic-dependent species. However, in some cases, potential effects to terrestrial species and/or their critical habitat should be considered as well from any discharge-related activities that occur during coverage under the MSGP. Examples of discharge-related activities that could have potential effects on listed terrestrial species or their critical habitat include the storage of materials and land disturbances associated with stormwater management-related activities (e.g., the installation or placement of stormwater control measures).

A. Select the applicable statement(s) below and follow the corresponding instructions:

- There are no discharge-related activities that are planned to occur during my coverage under the 2021 MSGP. You can conclude that your discharge-related activities will have no likely adverse effects, and:
 - If there are any aquatic or aquatic-dependent species and/or their critical habitat in your action area, you must skip to <u>Section V</u>, *Evaluation of Discharge Effects,* below.
 - If there are no aquatic or aquatic-dependent species, you may skip to <u>Section VI</u> and verify that your activities will have no likely adverse effects. You must submit this form to EPA as specified in <u>Section VII</u> of this form. You may select criterion C on your NOI form and may submit your NOI for permit coverage 30 days after you have submitted this *Criterion C Eligibility Form*. You must also provide a description of the basis for the criterion you selected on your NOI form, <u>including the species and critical</u> <u>habitat list(s) in your action area</u>, as well as any other documentation supporting your eligibility. You must also include this completed *Criterion C Eligibility Form* in your SWPPP.
- □ There are discharge-related activities planned as part of the proposal. Describe your discharge- related activities in the following box and continue to (B) below.

B. In order to ensure any discharge-related activities will have no likely adverse effects on ESA-listed threatened and endangered species and/or their designated critical habitat, you must certify that all the following are true:

- Discharge-related activities will occur:
 - on previously cleared/developed areas of the site where maintenance and operation of the facility are currently occurring or where existing conditions of the area(s) in which the discharge-related activities will occur precludes its use by listed species (e.g., work on existing impervious surfaces, work occurring inside buildings, area is not used by species), and
 - if discharge-related activities will include the establishment of structures (including, but not limited to, infiltration ponds and other controls) or any related disturbances, these structures and/or disturbances will be sited in areas that will not result in isolation or degradation of nesting, breeding, or foraging habitat or other habitat functions for listed animal species (or their designated critical habitat), and will avoid the destruction of native vegetation (including listed plant species).
- □ If vegetation removal (e.g., brush clearing) or other similar activities will occur, no terrestrial listed species that use these areas for habitat would be expected to be present during vegetation removal and these activities will not occur within critical habitat.

If all the above are true, you can conclude that your discharge-related activities will have no likely adverse effects, and:

- If there are any aquatic or aquatic-dependent species and/or critical habitat in your action area, you must skip to <u>Section V</u>, Evaluation of Discharge Effects, below.
- If there are no aquatic or aquatic-dependent species, you may skip to <u>Section VI</u> and verify that your activities will have no likely adverse effects. You must submit this form to EPA as specified in <u>Section VII</u> of this form. You may select criterion C on your NOI and may submit your NOI for permit coverage 30 days after you have submitted this completed form. You must also provide a description of the basis for the criterion you selected on your NOI form, <u>including the species and critical habitat list(s)</u>, and any other documentation supporting your eligibility. You must also include this completed Criterion C Eligibility Form in yourSWPPP.
- If any of the above are <u>not</u> true, you cannot conclude that your discharge-related activities will have no likely adverse effects. You must complete the rest of this form (if applicable) and must submit the form to EPA for assistance in determining your eligibility for coverage.

SECTION V. EVALUATION OF DISCHARGE EFFECTS

Note: You are only required to fill out this section if your facility's action area includes aquatic and/or aquatic-dependent species and/or their critical habitat.

In this section, you will evaluate the likelihood of adverse effects from your facility's discharges. The scope of effects to consider will vary with each facility and species/critical habitat characteristics. The following are examples of discharge affects you should consider:

• Hydrological Effects. Stormwater discharges may adversely affect receiving waters by causing changes in water quality parameters such as turbidity, temperature, salinity, or pH. Stormwater discharges may adversely affect the immediate vicinity of the discharge point through streambank erosion and scour. These effects will vary with the amount of stormwater discharged and the volume and condition of the receiving water. Where a stormwater

discharge constitutes a minute portion of the total volume of the receiving water, adverse hydrological effects are less likely.

• Toxicity of Pollutants. Pollutants in stormwater may have toxic effects on listed species and may adversely affect critical habitat. Exceedances of benchmarks, effluent limitation guidelines, or state or tribal water quality requirements may be indicative of potential adverse effects on listed species or critical habitat. However, some listed species may be adversely affected at pollutant concentrations below benchmarks, effluent limitation guidelines, and state or tribal water quality standards due to exposures to multiple stressors at the same time. In addition, stormwater pollutants identified in Part 6.2.3.2 of your SWPPP, but not monitored as benchmarks or effluent limitation guidelines, may also adversely affect

As these effects are difficult to analyze for listed species, their prey, habitat, and designated critical habitat, this form helps you to analyze your discharges to make a determination of whether your discharges will likely have adverse effects and whether there are any additional controls you can implement to ensure no likely adverse effects.

A. Evaluation of Pollutants and Controls to Avoid Adverse Effects. In this section, you must document <u>all</u> of your pollutant sources and pollutants expected to be discharged in stormwater (see Part 8). You must also document the controls you will implement to avoid adverse effects on listed aquatic and aquatic-dependent species and critical habitat. You must include specific details about the expected effectiveness of the controls in avoiding adverse effects to the listed aquatic-and aquatic-dependent species and critical habitat. Attach additional pages if needed.

Potential Pollutant Source	Potential Pollutants	Controls to Avoid Adverse Effects on Listed Aquatic and Aquatic-Dependent Species and Critical Habitat. Include information supporting why the control(s) will ensure no adverse effects, including any data you have about the effectiveness of the control(s) in reducing pollutant concentrations. You may also attach photos of your controls to this form.
e.g., • vehicle and equipment fueling	e.g., • Oil & grease • Diesel • Gasoline • TSS • Antifreeze	 e.g., Fueling operators (including the transfer of fuel from tank trucks) will be conducted on an impervious or contained pad or under cover Drip pans will be used where leaks or spills of fuel can occur and where making and breaking hose connections Spill kit will be kept on-site in close proximity to potential spill areas Any spills will be cleaned-up immediately using dry clean-up methods Stormwater runoff will be diverted around fueling areas using diversion dikes and curbing

Potential Pollutant Source	Potential Pollutants	Controls to Avoid Adverse Effects on Listed Aquatic and Aquatic-Dependent Species and Critical Habitat.

Potential Pollutant Source	Potential Pollutants	Controls to Avoid Adverse Effects on Listed Aquatic and Aquatic-Dependent Species and Critical Habitat.

Check if you are not able to make a preliminary determination that any of your pollutants will be controlled to a level necessary to avoid adverse effects on aquatic and/or aquatic-dependent listed species and their designated critical habitat. You must check in <u>Section VI</u> that you are unable to make a determination of no likely adverse effects and must complete the rest of the form. You must submit your completed form to EPA for assistance in determining your eligibility for coverage.

В.	Ana	lysis of Effects Based on Past Monitoring Data. Select which of the following applies to your facility:
_		I have no previous monitoring data for my facility because there are no applicable monitoring requirements for my facility's sector(s).
		I have no previous monitoring data for my facility because I am a new discharger or a new source, but I am subject to monitoring under the 2021 MSGP. You must provide information to support a conclusion that your facility's discharges are not expected to result in benchmark or numeric effluent limit exceedances that will adversely affect listed species or their critical habitat:
		My facility has not had any exceedances under the 2015 MSGP of any required benchmark(s) or numeric effluent limits. I comply with the applicable monitoring requirements and have not had any exceedances.
		My facility has had exceedances of one or more benchmark(s) or numeric effluent limits under the 2015 MSGP, but I have addressed them during my coverage under the 2015 MSGP, or in my evaluation of controls to avoid adverse effects in (A) above. Describe all actions (including specific controls) that you will implement to ensure that the pollutants in your discharge(s) will not result in likely adverse effects from future exceedances.
		Check if your facility has had exceedances of one or more benchmarks or numeric effluent limits under the 2015 MSGP and you have not been able to address them to avoid adverse effects from future exceedances, or if you are a new discharger or a new source but you are not sure if you can avoid adverse effects from possible exceedances. You must check in <u>Section VI</u> that you are unable to make a determination of no likely adverse effects. You must submit your completed form to EPA for assistance in determining your eligibility for coverage. You may not file your NOI for permit coverage until you are able to make a determination that your discharges will avoid adverse effects on listed species and designated critical habitat.

SECTION VI. VERIFICATION OF PRELIMINARY EFFECTS DETERMINATION

Based on Steps I – V of this form, you must verify your preliminary determination of effects on listed species and designated critical habitat from your discharges and/or discharge-related activities:

- Following the applicable Steps in I V above, I have provided information supporting a preliminary determination that my discharges and/or discharge-related activities are not likely to adversely affect listed species and designated critical habitats.
- Following the applicable Steps in I V above, I am <u>not</u> able to provide information supporting a preliminary determination that my discharges and/or discharge-related activities are not likely to adversely affect listed species and designated critical habitats.

Certification Information

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

First Name, Mic initial, Last Nam	ddle ne																			
Title																				
Signature:				 		 	 	 	 	 		 		Da	te:					
E-mail:																				

SECTION VII CRITERION C ELIGIBILITY FORM SUBMISSION INSTRUCTIONS

Only if the applicable EPA Regional Office has granted you a waiver from electronic reporting, you must submit this completed form to EPA at msgpesa@epa.gov, including any attachments and any additional information that demonstrates how you will avoid or eliminate adverse effects to listed threatened and endangered species or designated critical habitat (e.g., specific controls you will implement to avoid or eliminate adverse effects). Any missing or incomplete information may result in a delay of your coverage under the permit.

If you have made a preliminary determination that your discharges and/or discharge-related activities are not likely to adversely affect listed species and critical habitat, this form must be submitted a minimum of 30 days prior to submitting your NOI for permit coverage under criterion C. Please note that during either the 30-day *Criterion C Eligibility Form* review period prior to your NOI submission, or within 30 days after your NOI submission and before you have been

authorized for permit coverage, EPA may advise you that additional information is needed, or that there are additional measures you must implement to avoid likely adverse effects.

If you are unable to make a preliminary determination that your discharges and/or dischargerelated activities are not likely to adversely affect listed species and critical habitat, this worksheet must be submitted to EPA, but you may not file your NOI for permit coverage until you have received a determination from EPA that your discharges and/or discharge-related activities are not likely to adversely affect listed species and critical habitat.

Attachment 1

Include a **map and a written description** of the action area of your facility, as required in <u>Step 2</u>. You may choose to include the map that is generated from the FWS' on-line mapping tool IPaC (the Information, Planning, and Consultation System) located at <u>http://ecos.fws.gov/ipac/</u>.

The written description of your action area that accompanies your action area map must explain your rationale for the extent of the action area drawn on your map. For example, your action area written description may look something like this:

The action area for the (name of your facility)'s stormwater discharges extends downstream from the outfall(s) in (name of receiving waterbody) (# of meters/feet/kilometers/miles). The downstream limit of the action area reflects the approximate distance at which the discharge waters and any pollutants would be expected to cause potential adverse effects to listed species and/or critical habitat because (insert rationale). The action area does/does not extend to the (name of receiving waterbody)'s confluence with (name of confluence waterbody) because (insert rationale).

Note: If your action area written description will be highly site-specific, depending on the expected effects of your facility's discharges and discharge-related activities, receiving waterbody characteristics, etc.

Attachment 2

List or attach the list(s) of species and critical habitat in your action area on this sheet, as required in <u>Step 3</u>. You must include a list for applicable listed NMFS and USFWS species and critical habitat. If there are listed species and/or critical habitat for only one Service, you must include a statement confirming there are no listed species and/or critical habitat for the other Service. For USFWS species, include the USFWS Official Species List full printout from your IPaC query (including the consultation code and event code at the top of the FWS printout).

Note: If your Official Species List from the USFWS indicated no species or critical habitat were present in your action area, include the consultation code and event code that can be found at the top of your Official Species List in your NOI basis statement. If an Official Species List was not available on IPaC, list the contact date, the ecological services field office and the name of the Service staff with whom you corresponded to identify the existence of any USFWS species or critical habitat present in your action area.

Agency Consultation Letters



1200 New Jersey Avenue, S.E. Washington, D.C. 20590

Michael Tosatto Regional Administrator Pacific Islands Regional Office NOAA/NMFS 1601 Kapiolani Boulevard, Suite 1110 Honolulu, HI 96814

August 22, 2012

SUBJECT Port Authority of Guam Port Modernization Project Federal Threatened and Endangered Species Determination

Mr. Tosatto:

The United States Department of Transportation, Maritime Administration (MARAD) is in the process of preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended; Council on Environmental Quality Regulations (40 Code of Federal Regulations [CFR] 1500–1508); DOT Order 5610.1c; and MARAD MAO 600-1 to identify and assess the potential impacts associated with the proposed Port Authority of Guam Port Modernization Project (Project). MARAD seeks National Marine Fisheries Service (NMFS) concurrence with the determination that although Federal Threatened and Endangered Species may be affected by the subject action, it is not likely to be adversely affected.

The proposed action for the Project is to modernize, improve, and reconfigure the Port's existing 52-acre Terminal Yard and develop a 19-acre Expansion Area immediately east of the Terminal Yard with new cargo storage facilities in order to increase cargo-handling capacity and operating efficiency (Attachment 1, Figures 1-1, 1-2). The overall purpose of the Project is to update facilities and reconfigure operations in order to create sufficient capacity to support projected cargo handling demand, while maintaining ongoing Port operations.

All proposed work would be done above and out of the water. The only project component with any direct impact on marine waters would be the replacement of one existing storm water outfall, and the installation of two additional stormwater outfalls. The outfalls would be constructed to include treatment systems (oil-water separators). The current outfall is untreated. The new outfalls would require permitting by the U. S. Environmental Protection Agency under the National Pollutant Discharge Elimination System (NPDES). Based on the agencies' responses to the letters of inquiry regarding federally threatened and endangered species, as well as follow-up communication, the federally threatened and endangered species under NMFS jurisdiction that are expected to occur in the action area are: the green turtle (*Chelonia mydas*) – a federally threatened species, and the hawksbill turtle (*Eretmochelys imbricata*) – a federally endangered species. The anticipated prevalence of these species on and near the site is summarized below.

Sea Turtles (green turtle and hawksbill turtle) – Guam's Division of Aquatic Wildlife Resources (DAWR) has maintained a bimonthly aerial survey program that confirms the year-round presence of a resident population of green sea turtles in Guam's nearshore waters. Sightings include low numbers of turtles observed throughout Apra Harbor (DAWR unpublished data). Grimm and Farley (2008) report that hawksbills are frequently sighted in the nearshore waters surrounding Guam. However, they are less common than green sea turtles. According to Wiles et al. (1995), hawksbills represent about 13% of turtles sighted around Guam. Aerial turtle survey information obtained from 1992 to 2009 by DAWR indicated that the nearest record of nesting is at the Sea Plane Ramp located approximately 4,000 feet west of the site, and known nesting by both species occurs at Spanish Steps at the west end of Orote Peninsula (DAWR 2004; Grimm and Farley 2008). Although neither turtle nests at the project site, both inhabit Apra Harbor in low numbers, and as such either species may utilize marine waters in the project area to forage, shelter, or they may swim through the area to reach other nearby habitats.

Proposed Action

The Proposed Action would not be expected to result in significant direct or indirect impacts to federally threatened and endangered species during construction or operation of the proposed Project.

Construction Effects

Based on the planned above- and near-water work, with the absence of any in-water work, the stressors expected by the proposed action on in-water sea turtles is limited to: Disturbance from human activity and equipment operation, and exposure to wastes and discharges.

Disturbance from human activity and equipment operation: Sea turtles that are exposed to project-related activity may experience a startle reaction. The reaction could range from one extreme where an animal calmly approaches and investigates the activity, to an opposite reaction of panicked flight, where an animal injures itself in an attempt to flee. However, sea turtles typically avoid human activity in Apra Harbor. Thus, the most likely effect of this interaction would be a moderate to high energy avoidance behavior leading to the animal rapidly leaving project areas without injury. The project best management practices (BMP) require contractors to reduce the likelihood of this interaction by watching for and avoiding sea turtles. Based on that expectation, we have determined that disturbances related to the proposed action would be infrequent and non-injurious, resulting in insignificant effects on the ESA-listed sea turtles.

Exposure to wastes and discharges: Construction wastes may include plastic trash and bags that may be ingested and cause digestive blockage or suffocation, or if large enough, along with discarded sections of ropes and lines, may entangle marine life. Equipment spills and discharges likely consist of hydrocarbon-based chemicals such fuel oils, gasoline, lubricants, hydraulic

fluids and other toxicants, which could expose protected species to toxic chemicals. Depending on the chemicals and their concentration, exposure could result in a range of effects, from avoidance of an area to death. Local and Federal regulations prohibit the intentional discharge of toxic wastes and plastics into the marine environment. Additionally, the project BMPs includes measures intended to prevent the introduction of wastes and toxicants into the marine environment. Based on this, we expect that discharges and spills are unlikely to occur, but will be infrequent, small, and quickly cleaned if they do occur. Therefore, we have determined that exposure to construction wastes and discharges that may result from this action will result in insignificant effects on ESA-listed sea turtles.

Operational Effects

Significant impacts to federally threatened and endangered species would not be expected during operation of the Project, as none of these species are expected to seasonally or permanently inhabit the site.

With operation of the Port facilities under the Proposed Action, there would be a long-term increase in activity levels (related to increases in vessel and vehicular traffic), noise, and light at the Port relative to existing conditions. The increase in activity levels, noise, and light could impact federally threatened and endangered species (if any) on and in the vicinity of the site. However, the site currently is an active commercial port and activity levels, noise, and light onsite are already relatively high. Therefore, the incremental increase in these levels with the Proposed Action would not be expected to result in significant impacts on federally threatened and endangered species.

Mitigation Measures

The following mitigation measures are proposed by the Proponent to address potential impacts to federally threatened and endangered species during construction of the Proposed Action:

During Construction

- The site would be surveyed for Marianas common moorhen prior to vegetation clearing associated with construction of the storm water outfalls, to determine the status of Marianas common moorhen. If nests are located, clearing would not be completed until birds and nestlings leave on their own volition.
- Engineering controls (i.e. light focusing reflectors, deflective shrouds, and fence screens) would be installed to minimize stray light from construction activities from reaching adjacent habitat areas.

In conclusion, based on the effects analyses provided above, the MARAD has concluded that the potential stressors posed by the proposed action would result in insignificant impacts, or the likelihood of impacts would be discountable, for ESA-listed sea turtles. As such, MARAD has determined that the proposed action may affect, but is not likely to adversely affect any ESA listed marine species under NMFS jurisdiction, and we request your written concurrence with that determination under Section 7 of the ESA.

Thank you for your consideration of this request. If you have any questions, please call Mr. Daniel Yuska of my staff at 202-366-0714.

Sincerely,

142 \mathcal{C} Michael C. Carter

Director, Office of Environment



U.S. DEPARTMENT OF COMMERCE National Oceanic and Atmospheric Administration NATIONAL MARINE FISHERIES SERVICE Pacific Islands Regional Office 1601 Kapiolani Blvd., Suite 1110 Honolulu, Hawaii 96814-4700 (808) 944-2200 • Fax: (808) 973-2941

SEP 1 2 2012

Mr. Michael C. Carter Director, Office of Environment U.S. Department of Transportation Maritime Administration 1200 New Jersey Avenue, S.E. Washinton, D. C. 20590

Dear Mr. Carter:

This letter responds to your August 22, 2012 letter regarding the proposal by the U.S. Department of Transportation, Maritime Administration (MARAD) and the Port Authority of Guam to modernize the commercial port, on the island of Guam. In the letter, MARAD determined that the proposed action is not likely to adversely affect endangered or threatened species under National Marine Fisheries Service (NMFS) jurisdiction, and requested our concurrence under section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. §1531 et seq.), with that determination.

Proposed Action/Action Area: The action is described in your letter with its attachments (MARAD 2012). In summary, the proposed action consists of MARAD funding the Port Authority of Guam to perform above water work to modernize, improve, and reconfigure the existing 52-acre Terminal Yard and to develop a new 19-acre Expansion Area with new cargo storage facilities. The only project component with direct impacts on the marine environment would be the replacement of the single existing storm water outfall, and the installation of two new additional storm water outfalls. All three outfalls would be equipped with oil-water separators. The outfalls would require permitting under the U. S. Environmental Protection Agency's National Pollutant Discharge Elimination System (NPDES). All work would occur above water, and the project includes comprehensive BMP that include requirements to minimize and control erosion, sedimentation, and discharges. The action area for this project is estimated to be the in-water area within 50-yards around project-related activities, and the in-water ot of any plumes that may result from mobilized sediments or discharges of wastes or toxic chemicals such as fuels and/or lubricants associated with the machinery used for this activity.

Listed Species/Critical Habitat: MARAD determined that green sea turtles (*Chelonia mydas*) and hawksbill sea turtles (*Eretmochelys imbricata*) are the only ESA-listed species under NMFS



jurisdiction that occur within the action area for the proposed action. Detailed information to describe the biology, habitat, and conservation status for sea turtles can be found in the recovery plans and other sources at <u>http://www.nmfs.noaa.gov/pr/species/turtles/</u>.

<u>Critical Habitat</u>: There is no designated critical habitat for any listed marine species within or adjacent to the action area. Therefore, this action would have no effect on designated critical habitat.

Analysis of Effects: In order to determine that a proposed action is not likely to adversely affect listed species, NMFS must find that the effects of the proposed action are expected to be insignificant, discountable, or beneficial as defined in the joint USFWS-NMFS Endangered Species Consultation Handbook: (1) insignificant effects relate to the size of the impact and should never reach the scale where take occurs; (2) discountable effects are those that are extremely unlikely to occur; and (3) beneficial effects are positive effects without any adverse effects (USFWS & NMFS 1998). This standard, as well as consideration of the probable duration, frequency, and severity of potential interactions, was applied during the analysis of effects of the proposed action on ESA-listed marine species, as is described in the MARAD consultation request. MARAD determined that disturbance from human activity and equipment operation and exposure to wastes and discharges would result in insignificant effects on ESA-listed sea turtles. Based on consideration of the record, NMFS agrees with MARAD that the proposed action would have insignificant impacts on the sea turtles considered in this consultation.

<u>Conclusion</u>: NMFS concurs with your determination that funding the Port Authority of Guam to perform the proposed Port Modernization Project at the Guam Commercial Port is not likely to adversely affect ESA-listed marine species or their designated critical habitat. Our concurrence is based on the finding that the effects of the proposed action are expected to be insignificant, discountable, or beneficial as defined in the joint USFWS-NMFS Endangered Species Consultation Handbook (USFWS-NMFS 1998) and summarized at the beginning of the Analysis of Effects section above. This concludes your consultation responsibilities under the ESA for species under NMFS's jurisdiction. However, this consultation focused solely on compliance with the ESA. Any additional compliance review that may be required of NMFS for this action (such as assessing impacts on Essential Fish Habitat) would be completed by NMFS Habitat Conservation Division in separate communication, if applicable.

ESA Consultation must be reinitiated if: 1) a take occurs; 2) new information reveals effects of the action that may affect listed species or designated critical habitat in a manner or to an extent not previously considered; 3) the identified action is subsequently modified in a manner causing effects to listed species or designated critical habitat not previously considered; or 4) a new species is listed or critical habitat designated that may be affected by the identified action.

If you have further questions please contact Donald Hubner on my staff at (808) 944-2233. Thank you for working with NMFS to protect our nation's living marine resources.

Sincerely,

m_92 Michael D. Tosatto

Regional Administrator

cc: Patrice Ashfield, ESA Section 7 Program Coordinator, USFWS, Honolulu Tony Montgomery, Coastal Conservation, USFWS, Honolulu

NMFS File No. (PCTS): I/PIR/2012/03725 PIRO Reference No.: I-PI-12-1026-LVA

Literature Cited

U.S. Dept of Transportation, Maritime Administration (MARAD). 2012. Letter to request informal consultation under Section 7 of the Endangered Species Act for the Port Authority of Guam Port Modernization Project. August 22, 2012.

U.S. Fish and Wildlife Service and National Marine Fisheries Service. 1998. Endangered Species Consultation Handbook. Procedures for Conducting Consultation and Conference Activities Under Section 7 of the Endangered Species Act. http://www.nmfs.noaa.gov/pr/pdfs/laws/esa_section7 handbook.pdf



Dan Polhemus Administrator U.S. Fish and Wildlife Service Pacific Islands Ecoregion 300 Ala Moana Boulevard Room 3-122, Box 50088 Honolulu, HI 96850 1200 New Jersey Avenue, S.E. Washington, D.C. 20590

August 22, 2012

SUBJECT: Port Authority of Guam Port Modernization Project Federal Threatened and Endangered Species Determination

Mr. Polhemus:

The United States Department of Transportation, Maritime Administration (MARAD) is in the process of preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended; Council on Environmental Quality Regulations (40 Code of Federal Regulations [CFR] 1500–1508); DOT Order 5610.1c; and MARAD MAO 600-1 to identify and assess the potential impacts associated with the proposed Port Authority of Guam Port Modernization Project (Project). MARAD seeks United States Fish and Wildlife Service (USFWS) concurrence with the determination that although Federal Threatened and Endangered Species may be affected by the subject action, it is not likely to be adversely affected.

The proposed action for the Project is to modernize, improve, and reconfigure the Port's existing 52-acre Terminal Yard and develop a 19-acre Expansion Area immediately east of the Terminal Yard with new cargo storage facilities in order to increase cargo-handling capacity and operating efficiency (Attachment 1, Figures 1-1, 1-2). The overall purpose of the Project is to update facilities and reconfigure operations in order to create sufficient capacity to support projected cargo handling demand, while maintaining ongoing Port operations.

Based on the agencies' responses to the letters of inquiry regarding federally threatened and endangered species, as well as follow-up communication, the federally threatened and endangered species on and in the vicinity of the site are: the green turtle (*Chelonia mydas*) – a

federally threatened species; hawksbill turtle (*Eretmochelys imbricata*) – a federally endangered species; and Marianas common moorhen (*Gallinula chloropus guami*) – a federally endangered species. The anticipated prevalence of these species on and near the site is summarized below.

- Sea Turtles (green turtle and hawksbill turtle) Due to lack of habitat, there is a low likelihood of either of the sea turtles (C. mydas and E. imbricata) nesting or foraging onsite, particularly in the location of the two new proposed outfalls in the Expansion Area. Aerial turtle survey information obtained from 1992 to 2009 by DAWR indicated that the nearest record of nesting is at the Sea Plane Ramp located approximately 4,000 feet west of the site. Neither turtle species is likely to nest onsite, because of the lack of sandy beaches along the shoreline. No sea turtles were observed in the vicinity of the site during either the June 2010 biological survey or the December 2010 and January 2011 marine surveys for this EA.
- Marianas common moorhen The Marianas common moorhen (G. chloropus guami) is unlikely to forage or nest onsite due to the lack of appropriate habitat and protected nesting areas. The Marianas common moorhen was not observed during the June 2010 field survey.

Proposed Action

The Proposed Action would not be expected to result in significant direct or indirect impacts to federally threatened and endangered species during construction or operation of the proposed Project.

Construction Effects

Significant impacts to federally threatened and endangered species (i.e. the hawksbill turtle- *E. imbricata*, green turtle - *C. mydas*, and Marianas common moorhen - *G. chloropus guami*) would not be expected during construction activities for the proposed Project, as there is little likelihood that these species seasonally or permanently inhabit the site.

However, to minimize the potential to impact federally threatened and endangered species (if any), construction activities would be conducted in compliance with Guam EPA (GEPA) and DAWR requirements to minimize potential disturbance from construction during bird migration periods, and direct impacts (i.e. for installation of the proposed storm water outfalls) would be avoided during active bird nesting. Engineering controls would be installed to minimize stray construction lighting from reaching adjacent habitat areas. Therefore, construction activities would not be expected to result in significant adverse effects on federally threatened and endangered species.

Operational Effects

Significant impacts to federally threatened and endangered species would not be expected during operation of the Project, as none of these species are expected to seasonally or permanently inhabit the site.

With operation of the Port facilities under the Proposed Action, there would be a long-term increase in activity levels (related to increases in vessel and vehicular traffic), noise, and light at the Port relative to existing conditions. The increase in activity levels, noise, and light could impact federally threatened and endangered species (if any) on and in the vicinity of the site.

However, the site currently is an active commercial port and activity levels, noise, and light onsite are already relatively high. Therefore, the incremental increase in these levels with the Proposed Action would not be expected to result in significant impacts on federally threatened and endangered species.

Mitigation Measures

The following mitigation measures are proposed by the Proponent to address potential impacts to federally threatened and endangered species during construction of the Proposed Action:

During Construction

- The site would be surveyed for Marianas common moorhen prior to vegetation clearing associated with construction of the storm water outfalls, to determine the status of Marianas common moorhen. If nests are located, clearing would not be completed until birds and nestlings leave on their own volition.
- Engineering controls (i.e. light focusing reflectors, deflective shrouds, and fence screens) would be installed to minimize stray light from construction activities from reaching adjacent habitat areas.

In conclusion, The Maritime Administration has determined that while the Proposed Action may temporarily affect Federal Threatened and Endangered Species, the effects would not result in significant impacts. MARAD seeks USFWS written concurrence with this determination.

Thank you for your consideration of this request. If you have any questions, please call Mr. Daniel Yuska of my staff at 202-366-0714.

Sincerely,

Aichael C. Carter Director, Office of Environment

To:PAG EA Admin RecordSubject:FW: 2012-I-0422 Port of Guam Modernization Project Section 7
Consultation

From: Jodi Charrier@fws.gov [mailto:Jodi Charrier@fws.gov]
Sent: Friday, September 14, 2012 6:01 PM
To: Yuska, Daniel (MARAD)
Subject: RE: 2012-I-0422 Port of Guam Modernization Project Section 7 Consultation

Hello Daniel,

Thank you for providing the survey.

We can agree to the modification of #2. Although the area is highly industrialized, we like to recommend adding as little to current ambient light as possible. Also, though no turtles nest in the immediate vicinity, they are definitely found in waters nearby and the brighter our shores and night-time horizons, the more potential for disorientation. It is my understanding that shielding lights or installing shielded lights is not cost prohibitive when compared to standard lighting. However, I will not slow down the consultation process for this detail.

I will edit the measure and draft the letter today. You should receive it within 30 days. No additional or official correspondence is needed.

Aloha, Jodi Charrier

Fish & Wildlife Biologist Pacific Islands Fish and Wildlife Service 300 Ala Moana Boulevard Room 3-122, Box 50088 Honolulu, Hawaii 96850-5000 Ph: 808-792-9400 Fax: 808-792-9580

<<u>Daniel.Yuska@dot.gov</u>>

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09/14/2012 08:39 AM

To <<u>Jodi Charrier@fws.gov</u>>

cc <<u>tino\_aguon@hotmail.com</u>>, <<u>jeff.quitugua@yahoo.com</u>>, <<u>dsavercool@eaest.com</u>> Subject RE: 2012-I-0422 Port of Guam Modernization Project Section 7 Consultation

Jodi,

Thank you for the email. We can agree and comply with the conditions below, however we would like to propose one modification. Regarding condition #2, sea turtle-friendly lighting, we propose that we use engineering controls (i.e. light focusing reflectors, deflective shrouds, or fence screens) to minimize stray light from construction activities that may reach adjacent habitat areas. Our reasoning is that results from biological surveys conducted as part of this project show there are no beaches in the project area, no turtle nesting areas, and no foraging habitat. Essentially, the area is highly industrialized and has served as an active port for over 60 years. Please let me know if our proposal is acceptable.

As a matter of procedure, would you prefer we edit our initial consultation letter to reflect the conditions and re-submit or will an email confirmation suffice?

As discussed yesterday, I have attached the biological survey of the project site and surrounding area. Please let me know if there is anything else you need. Because of our time difference, feel free to reach me on work cell at 202-281-5474. I have cc'ed our environmental consultant on this email so we can get you any additional information expeditiously.

Thanks for your assistance, Dan

From: Jodi\_Charrier@fws.gov [Jodi\_Charrier@fws.gov]
Sent: Thursday, September 13, 2012 4:26 PM
To: Yuska, Daniel (MARAD)
Cc: tino\_aguon@hotmail.com; jeff.quitugua@yahoo.com
Subject: 2012-I-0422 Port of Guam Modernization Project Section 7 Consultation

Aloha Mr. Yuska,

Nice to finally catch up with you via phone this morning. As mentioned, we received your request for concurrence with your NLAA determination for the Port of Guam Modernization Project in our office on August 27. As mentioned this morning, we have 30 days from the day that we receive all of the data necessary to complete our analysis to complete the consultation. I will do my best to expedite.

The following are our standard recommendations to avoid and minimize impacts to sea turtles and Mariana moorhen. If it is amenable with your agency to include these as nondiscretionary conservation measures in your Section 7 consultation, we can send a concurrence letter and finish the Section 7 process.

1. Pre-construction surveys will be completed one week prior to the onset of work by a biologist experienced in the identification of the moorhen by sight and vocalization and experienced with implementation of the Service protocol survey methodology to ensure no nesting moorhen are present. If nesting moorhen are present within 984 ft (300 m), clearing and construction will be postponed until chicks have fledged and the moorhen has left voluntarily. If work stops for more than one week, pre-construction surveys will be repeated to ensure that no moorhen have begun nesting. Guam Division of Aquatic and Wildlife Resources (DAWR) personnel will be contacted at 671 735-3955 if moorhen are detected at any time prior to or during construction.

2. Sea turtle-friendly lighting will be installed for any replaced or proposed lighting. This will reduce the direct and ambient lighting of the beach and will reduce disorientation of nesting or hatchling sea turtles. This lighting will follow guidelines found in the technical report by The Florida Fish and Wildlife Conservation Commission found on-line here:

http://www.sescolighting.com/turtlelighting/Sea%20Turtle%20Booklet.pdf

3. Any construction-related debris that may pose an entanglement hazard to marine protected species must be removed from the project site when it is not actively being used and at the conclusion of the construction work.

4. NMFS's standard best management practices regarding sediment control, pollution and erosion will be followed.

5. All best management practices and conservation measures will be reviewed with all workers and made available on the project site. This includes species and habitat specific measures, the erosion control plan, spill prevention and control plan and the Hazard Analysis and Critical Control Points plan.

6. A litter control program shall be instituted at the entire project site. All workers ensure their food scraps, paper wrappers, food containers, cans, bottles, and other trash from the project area are deposited in covered or closed trash containers. The trash containers shall be removed from the project area at the end of each working day.

Thank you, Jodi Charrier -----Fish & Wildlife Biologist Pacific Islands Fish and Wildlife Service 300 Ala Moana Boulevard Room 3-122, Box 50088 Honolulu, Hawaii 96850-5000 Ph: 808-792-9432

Fax: 808-792-9580



### United States Department of the Interior

FISH AND WILDLIFE SERVICE Pacific Islands Fish and Wildlife Office 300 Ala Moana Boulevard, Room 3-122, Box 50088 Honolulu, Hawaii 96850



JUN 1 3 2013

In Reply Refer To: 2012-I-0422

Mr. Michael C. Carter U.S. Department of Transportation Maritime Administration 1200 New Jersey Avenue, S.E. Washington, D.C. 20590

Subject: Informal Section 7 Consultation on the Proposed Guam Port Modernization Project, Guam

Dear Mr. Carter:

We received your letter dated August 22, 2012, requesting our concurrence with your determination that the proposed Guam Port Modernization Project may affect, but is not likely to adversely affect the federally endangered Mariana common moorhen (*Gallinula chloropus guami*; moorhen) and hawksbill turtle (*Eretmochelys imbricata*), and the threatened green turtle (*Chelonia mydas*). This letter also addresses biosecurity concerns regarding the brown treesnake (*Boiga irregularis*). In early October 2012, Service staff notified MARAD that a brown treesnake biosecurity plan needed to be developed, approved and incorporated into the project description as part of the section 7 consultation. Since that time, MARAD has worked with the Service (both invasive species and section 7 staff), Port of Guam Authority (PAG), and the U.S. Department of Agriculture Animal and Plant Inspection Service, Wildlife Services (USDA) to develop a sound brown treesnake biosecurity plan. MARAD submitted a draft version of the plan in early December, 2012. The final version was accepted in May, 2012

The findings and recommendations in this consultation are based on: (1) your August, 22 2012, consultation request; (2) a meeting held in our office on June 4, 2012, (3) phone call and email exchanges between Jodi Charrier, Dawn Greenlee, Kevin Foster, Domingo Cravalho, and Earl Campbell, (U.S. Fish and Wildlife Service (Service)) and Daniel Yuska (The United States Department of Transportation, Maritime Administration (MARAD)) and other information available to us. A complete administrative record is on file in our office. This response is in accordance with section 7 of the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq.*).



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#### **Project Description**

MARAD is proposing to reconfigure and expand the Jose D. Leon Guerrero Commercial Cargo Port (Port) at Piti, Guam. The Port is planning to update facilities and reconfigure operations to support projected increased cargo handling demand and to maintain ongoing Port operations. Expansion of the existing 52-acre terminal will include the development of a 19-acre area immediately east of the terminal yard. Elements of the Guam Port Modernization Project include construction of a new break-bulk terminal area and new entrance and exit gates, demolition and refurbishment of buildings, and installation of oil and water separators in the eight existing storm water outfalls, and construction of two new outfalls.

### **Invasive Species**

The brown treesnake was accidentally introduced to the island of Guam shortly after World War II. It has colonized the island at densities reaching 32 individuals per acre and is directly responsible for the extinction of 10 of 12 native forest birds historically found on Guam (USDA 2011). The brown treesnake poses a risk to biodiversity, natural resources, food security, economic development, human health, and ecosystem services on Guam as well as other Pacific islands. The cryptic nature and extreme abundance on Guam creates a significant risk of dispersal via civilian and Department of Defense (DoD) cargo transferred from the island to other ports.

The increased cargo traffic due to the Guam Port Modernization Project will increase the likelihood that the brown treesnake may be transported from Guam to other locations. The introduction of this highly invasive snake to other islands would be devastating to native fauna, particularly listed species. As part of the proposed action, PAG has committed to developing a HACCP plan, assuring all incoming and outbound cargo is inspected, and securing the funding to do so.

**During Construction:** A Hazard Analysis and Critical Control Point Plan (HACCP) or similar plan will be created for vegetation removal, construction activities, and increased maritime traffic resulting from the proposed Port Modernization Project. A HACCP plan is a tool designed to prevent the accidental spread of non-native invasive species by eliminating or reducing risk through pathway analysis and critical control point planning. The HACCP plan will incorporate measures to ensure there is no inadvertent transport of invasive species into and out of Guam.

**During Port Operation:** Most outbound freight arrives at the Port in the form of sealed shipping containers and comes from privately owned freight forwarding companies. Currently, USDA inspects containers at the freight-forwarding company properties. However, there is concern that uninspected containers are transported to the Port and co-mingled with previously inspected containers. PAG will actively work with all cooperating freight forwarding companies in the brown treesnake inspection program to ensure inspections are complete. Prior to entry, all containers arriving to the Port via roads must be cleared at the security gate. Containers without proof of inspection documentation will be refused at the gate and not allowed to enter the Port.

Existing levels of brown treesnake interdiction efforts conducted by USDA will be increased to address increases in commercial cargo exports to U.S. states and territories, and other locations resulting from the Port Modernization Project. PAG, in consultation with the Guam Customs and Quarantine Agency, DAWR, DoD, and other pertinent agencies, agrees to develop a

mechanism to ensure necessary funding is provided for increased brown treesnake interdiction efforts by USDA. The mechanism will be developed no later than 12 months after the start of the Port Modernization Project. The amount of funding necessary will be determined by comparing the amount of commercial cargo handled by the Port over the 60-month period immediately before the Port Modernization Project begins in relation to the current level of interdiction effort required by USDA (number of traps, number of inspections, etc.). This amount will represent the baseline condition for future brown treesnake interdiction efforts to be compared against. If commercial cargo handled by the Port decreases below the baseline level, then additional funding will not be required for that year. PAG will re-evaluate funding needs every 5 years. During this 5-year period, a working group consisting of members from PAG, USDA, the Service, and other Guam agencies, will meet annually to discuss the status of commercial cargo movement and interdiction efforts.

In addition to agreeing to fund that portion of the increase in brown treesnake interdiction measures required due to construction and increased maritime traffic related to the Port Modernization Project, PAG will employ an iterative adaptive management process, consistent with the brown treesnake interdiction commitment made by DoD (Service 2010). The adaptive management process will establish a system of reporting, monitoring, and threshold metrics that can be used to guide the appropriate level of brown treesnake interdiction.

#### Avoidance and Minimization Measures

The following measures identified in your letter will be implemented at the project site to avoid and minimize effects to the species listed above. These conservation measures are considered part of the project description. Any changes to, modifications of, or failure to implement these conservation measures may result in the need to reinitiate this consultation.

- Pre-construction surveys will be completed one week prior to the onset of work to ensure no nesting moorhen are present. These surveys will be conducted by a biologist experienced in the identification of the moorhen by sight and vocalizations and experienced with implementation of the Service survey protocol methodology. If nesting moorhen are present within 300 meters (m) (984 feet [ft]) of the project, clearing and construction will be postponed until chicks have fledged and the moorhen have left voluntarily. If work stops for more than one week, surveys will be repeated to ensure no moorhen have initiated nesting. Guam Division of Aquatic and Wildlife Resources (DAWR) personnel will be contacted at (671) 735-3955 if moorhen are detected at any time prior to or during construction.
- 2. Engineering controls (i.e. light focusing reflectors, deflective shrouds, or fence screens) will be used to minimize stray light from construction activities that may reach adjacent turtle habitat.
- 3. Construction work will follow the Environmental Protection Plan (EPP) developed for the project and tailored to the specific construction methods. Although no in-water work is involved, the EPP measures will control discharges and manage spills from heavy equipment operating at the site near fresh and marine waters. Containment booms and absorbent pads will be readily available onsite for cleaning up lubricant or petroleum spills. To minimize erosion, sedimentation, and other adverse impacts to aquatic resources and nearby coral reef ecosystems, environmental protection measures will be

installed prior to construction or demolition activities. These will include Standard Best Management Practices (BMPs) as identified in the enclosed list.

- 4. All tools, gear, and construction scrap generated from this project will be removed upon completion of work to prevent the attraction of invasive pests.
- 5. No project-related materials will be stockpiled in the intertidal zone, reef flats, or stream channels.

## **Affected Species**

# The Mariana Common Moorhen

The Mariana common moorhen occurred historically on the islands of Guam, Tinian, Saipan, and Pagan (Baker 1951; Service 1991; Stinson et al. 1991). Archaeological evidence also indicates they were present on Rota between 1,500 to 2,000 years ago (Butler 1988). The most recent survey information indicates there are approximately 90 moorhen on Guam, 154 on Saipan, 41 on Tinian, and only 2 individuals on Rota (Takano and Haig 2004). Currently, the two main threats to the moorhen are: (1) loss and degradation of wetland habitat, including filling, alteration of hydrology, invasion of habitat by non-native plants, and unrestricted grazing of domestic and feral ungulates; and 2) predation by introduced species (Service 1991; Service 1996).

Moorhen are opportunistic breeders and may be attracted to ephemeral water bodies. The 19acre expansion area consists of scrub forest and wet areas that may contain suitable habitat for moorhen. No moorhen were detected during a June 2010, survey. Due to the implementation of pre-construction monitoring for moorhen, lack of moorhen presence in recent years, and curtailing project activities if a moorhen is nesting within 300 m (984 ft), we concur the proposed action may affect, but is not likely to adversely affect the moorhen.

#### Green and Hawkbill Turtles

*Green turtle* - The biology and ecology of this species is summarized in the *Recovery Plan for* U.S. Pacific Populations of the Green Turtle (Chelonia mydas) (NMFS and Service 1998a) and the five-year Status Review (2007a) that indicate nesting may occur on the island of Guam, but not in high numbers. In addition to nesting, green turtles may also use beaches to haul out and bask, although this behavior has never been documented in Guam (Kelly 2009; Wusstig 2009). Nesting activity on Guam occurs throughout the entire year and peaks between April and July (Grimm and Farley 2008).

*Hawksbill turtle* - The biology and ecology of this species is summarized in the *Recovery Plan for U.S. Pacific Populations of the Hawksbill Turtle (Eretmochelys imbricata)* (NMFS and Service 1998b) and five-year Status Review (2007b). Hawksbill turtles are frequently sighted in the near-shore waters surrounding Guam (Grimm and Farley 2008), though the population is thought to be declining, with only 5 to 10 females estimated to nest annually (NMFS and Service 2007b). Hawksbill turtles were reported nesting in June and July at Tarague Beach, Guam; however, this is based on only one year of data (Wusstig, 2008a). Between 1991 and 1994, hawksbill turtles nested in Sumay Marina, Apra Harbor, Guam, in October, December, February, and March (Wusstig, 2008b). In 2008, four nesting attempts at Adotgan Dikiki, Guam were attributed to the hawksbill turtle (Grimm and Farley 2008).

According to aerial surveys conducted by DAWR from 1992 to 2009, the nearest record of nesting turtles is at the Sea Plane Ramp, located approximately 4,000 feet west of the project site. There are no suitable nesting beaches and there have been no reported sea turtle nesting activities in the immediate vicinity of the project. Therefore, we concur with your determination the proposed project may affect, but is not likely to adversely affect green or hawksbill turtles.

#### Summary

Based on the project description, including the implementation of the conservation measures you provided, we concur with your determination that the project may affect, but is not likely to adversely affect the Mariana moorhen, and hawksbill or green turtles. In addition, your agreement to develop a HACCP Plan and implement increased BTS interdiction adequately addresses our concerns regarding invasive species, and therefore, we conclude your project is not likely to adversely affect other listed species. Unless the project description changes, or new information reveals that the effects of the proposed action may affect listed species in a manner or to an extent not considered, or a new species or critical habitat is designated that may be affected by the proposed action, no further action pursuant to the Act is necessary.

If you have any questions or concerns regarding this consultation, please contact Jodi Charrier, Fish and Wildlife Biologist (phone: 808-792-9423, email: jodi\_charrier@fws.gov) or regarding invasive species, please contact Domingo Cravalho, Invasive Species Biologist (phone: 808-872-9445, e-mail: domingo\_cravalho@fws.gov).

Sincerely.

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For Loyal Mehrhoff Field Supervisor

Enclosure(s): Brown treesnake Control Plan Standard Best Management Practices

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Mr. Daniel Vice, U.S. Department of Agriculture, Guam Mr. Celestino Aguon, Guam Department of Agriculture

#### Literature cited

- Baker, R.H. 1951. The avifauna of Micronesia, its origin, evolution and distribution. University of Kansas Publications 3:1-359.
- Butler, B.M. (ed.). 1988. Archaeological investigations on the north coast of Rota, Mariana Islands. Micronesian Archaeological Survey Report 23:1-482.
- Grimm, G. and J. Farley. 2008. DRAFT Sea turtle nesting activity on Navy Base Guam 2007-2008. NAVFAC Marianas Report. 7 pp.
- Kelly, I. 2009. Electronic mail dated May 6, 2009 regarding sea turtle activity within the Commonwealth of the Northern Mariana Islands and Guam.
- National Marine Fisheries Service and U.S. Fish and Wildlife Service. (NMFS and Service). 1998a. Recovery Plan for U. S. Pacific Populations of the Green Turtle (*Chelonia mydas*). National Marine Fisheries Service, Silver Spring, MD. 97 pp. <u>http://www.nmfs.noaa.gov/pr/pdfs/recover/turtle\_green\_pacific.pdf</u>
- \_\_\_\_\_. 1998b. Recovery Plan for U. S. Pacific Populations of the Hawksbill Turtle (*Eretmochelys imbricata*). National Marine Fisheries Service, Silver Spring, MD. 95 pp. http://www.nmfs.noaa.gov/pr/pdfs/recover/turtle\_hawksbill\_pacific.pdf
- \_\_\_\_\_. 2007a. Green Sea Turtle (*Chelonia mydas*). 5-Year Review: Summary and Evaluation. 105pp. <u>https://www.nmfs.noaa.gov/pr/pdfs/species/greenturtle\_5yearreview.pdf</u>
- \_\_\_\_\_. 2007b. Hawksbill Sea Turtle (*Eretmochelys imbricata*). 5-Year Review: Summary and Evaluation. 93pp. https://www.nmfs.noaa.gov/pr/pdfs/species/hawksbill\_5yearreview.pdf
- Service. 2010. Biological Opinion for the Joint Guam Program Office Relocation of the U.S. Marine Corps from Okinawa to Guam and Associated Activities on Guam and Tinian.
- \_\_\_\_\_. 1991. Recovery plan for the Mariana common moorhen (= Gallinule) (*Gallinula chloropus guami*). Portland, Oregon. 55 pp.
- . 1996. Characteristics of Mariana common moorhens and wetland habitats within the U.S. Department of the Navy's military lease area and exclusive military use area on the island of Tinian, Commonwealth of the Northern Mariana Islands, July 1994 August 1995. 26 pp. + Appendix.
- Stinson, D.W., M.W. Ritter, and J.D. Reichel. 1991. The Mariana common moorhen: decline of an island endemic. Condor 93:38-43.
- Takano, L.L. and S.M. Haig. 2004. Distribution and abundance of the Mariana subspecies of the common moorhen. Waterbirds 27(2):245-250.

USDA 2011.Brown Treesnake Containment Plan for Guam.

Wusstig, S. 2009. Electronic mail dated May 6, 2009, through May 13, 2009, regarding nesting and movement of green sea turtles detected on or near Guam.

\_\_\_\_\_. 2008a. Electronic mail dated March 5, March 18, and March 26, 2008.

\_\_\_\_\_. 2008b. Electronic mail dated March 27, 2008, providing information regarding sea turtle data for Guam.

## U.S. Fish and Wildlife Service Recommended Standard Best Management Practices

The U.S. Fish and Wildlife Service recommends that the measures below be incorporated into projects to minimize the degradation of water quality and minimize the impacts to fish and wildlife resources.

- 1. Turbidity and siltation from project-related work shall be minimized and contained within the vicinity of the site through the appropriate use of effective silt containment devices and the curtailment of work during adverse tidal and weather conditions.
- 2. Dredging/filling in the marine environment shall be scheduled to avoid coral spawning and recruitment periods and sea turtle nesting and hatching periods.
- 3. Dredging and filling in the marine/aquatic environment shall be designed to avoid or minimize the loss special aquatic site habitat (beaches, coral reefs, wetlands, etc.) and the function of such habitat shall be replaced.
- 4. All project-related materials and equipment (dredges, barges, backhoes, etc.) to be placed in the water shall be cleaned of pollutants prior to use.
- 5. No project-related materials (fill, revetment rock, pipe, etc.) should be stockpiled in the water (intertidal zones, reef flats, stream channels, wetlands, etc.) or on beach habitats.
- 6. All debris removed from the marine/aquatic environment shall be disposed of at an approved upland or ocean dumping site.
- 7. No contamination (trash or debris disposal, non-native species introductions, attraction of non-native pests, etc.) of adjacent habitats (reef flats, channels, open ocean, stream channels, wetlands, beaches, forests, etc.) shall result from project-related activities. This shall be accomplished by implementing a litter-control plan and developing a Hazard Analysis and Critical Control Point Plan (HACCP see <a href="http://www.haccp-nrm.org.Wizard\_default.asp">http://www.haccp-nrm.org.Wizard\_default.asp</a>) to prevent attraction and introduction of non-native species.
- 8. Fueling of project-related vehicles and equipment should take place away from the water and a contingency plan to control petroleum products accidentally spilled during the project shall be developed. Absorbent pads and containment booms shall be stored onsite, if appropriate, to facilitate the clean-up of accidental petroleum releases.
- 9. Any under-layer fills used in the project shall be protected from erosion with stones (or core-loc units) as soon after placement as practicable.
- 10. Any soil exposed near water as part of the project shall be protected from erosion (with plastic sheeting, filter fabric etc.) after exposure and stabilized as soon as practicable (with native or non-invasive vegetation matting, hydroseeding, etc.).

# F. HISTORIC PROPERTIES DOCUMENTATION

Historic Properties Eligibility Determination



Governor of Guam

MICHAEL W. CRUZ Lieutenant Governor

### PORT AUTHORITY OF GUAM ATURIDAT I PUETTON GUAHAN Jose D. Leon Guerrero Commercial Port GOVERNMENT OF GUAM

1026 Cabras Highway, Suite 201 Piti, Guam 96925



Telephone: (671) 477-5931/35 (671) 477-2683/85 Facsimile: (671) 477-2689/4445 Webpage: www.portofguam.com

December 15, 2010

Mr. Joe Duenas State Historic Preservation Office Guam Historic Resources Division 490 Chalan Palasyo Agana Heights, Guam 96910

## Subject: Port Authority of Guam Terminal Yard Reconfiguration Maintenance and Repair Project Section 106 Concurrence

Happy Holidays Mr. Duenas:

The Port Authority of Guam (PAG) is undertaking the above-referenced project to address much needed improvements to its facilities and is preparing a NEPA Environmental Assessment (EA) to address potential project-related impacts. The Maritime Administration (MARAD) is the lead agency for the NEPA process. As a federal undertaking, the project will comply with Section 106 of the National Historic Preservation Act (NHPA). PAG is considering potential impacts to historic resources (defined as cultural resources deemed eligible for nomination to the National or Guam Register of Historic Places (NRHP/GRHP) which may be affected by the project. Please review this letter and if in concurrence with the determinations provided, sign and date the letter as provided on page 2.

# **Project Description**

This project will reconfigure and expand the Port terminal yard to enhance its cargo handling capacity. To help achieve efficient use of the site, the project will include demolition, expansion or refurbishment of buildings and construction of new buildings; installation of utilities (water, sewer, stormwater and fire protection systems and high-mast lights); and installation of one new 36-inch stormwater outfall and one new 30-inch stormwater outfall into Apra Harbor. Other project elements include paving of currently unpaved portions of the terminal yard; upgrades to existing terminal yard pavement; installation of security infrastructure; new gates and parking areas; and new cargo handling and equipment systems. The proposed terminal plan layout and details of the breakbulk yard and proposed terminal buildings are shown in Figures 1 and 2, respectively.

The terminal yard will be redesigned to accommodate separate break-bulk and container operations and will allow for wheeled and grounded container storage. Gate and Terminal Operating Systems will be installed to control the movement and tracking of increased cargo volumes and will add to overall port operating efficiency. A new break bulk terminal will be constructed on ten acres of the West Terminal Yard, using the Berth F-4 frontage for waterside

The Port Authority of Guam, Jose D. Leon Guerrero Commercial Port is an Equal Employment Opportunity Employee. Complaints of discrimination should be sent to the Human Resources Division. Subject: Port Authority of Guam Terminal Yard Reconfiguration Maintenance and Repair Project Section 106 Concurrence

Page 2

access. Most of the demolition, reconfiguration and expansion changes to the buildings will occur on the west side of the site and are adjacent to the expanded break-bulk terminal (see Figure 2).

As shown in Figures 3, 4 and 5, two new stormwater outfalls will originate at the southeastern portion of the site and terminate atop riprap before discharge into Apra Harbor (approximately 100 cubic yards (CY) of rip-rap will be placed at each outfall (for a total of 200 CY) and will cover a total of approximately 1530 square feet (0.035 acres) in regulated wetland areas. The maximum water depth at the location of the rip-rap is approximately 1.5 feet below Mean Higher High Water (MHHW). At low tide, the rip-rap will be aerially exposed.

Approximately 40 acres of unpaved area will be re-graded in constructing the expanded terminal yard areas. Concurrent with this re-grading, several thousand feet of utilities (water, electric, sanitary sewer, storm sewer, communications) infrastructure will be installed. The depth of regrading will range between 0 feet and 20 feet. Following re-grading, utility trench depths will range from 3 feet to 10 feet. The location and details of the proposed high mast lights are shown in Figures 6 through 9. Footings for the high-mast lights will be installed at a depth of 17 feet.

#### The Area of Potential Effect

the Area of Potential Effect (APE) for this project is within the proposed construction footprint. This APE accommodates the anticipated proposed staging areas and other temporary impacts necessary during construction.

#### **Historic Properties**

Identification of historic properties included consulting a number of sources. These sources include:

- · Consultation with the Guam Historic Preservation Office,
- GIS files of historic site locations on Guam,
- · Soil Survey of Territory of Guam of 1988 by the U.S. Department of Agriculture,
- Jose D. Leon Guerrero Commercial Port of Guam Master Plan Update 2007 Report, and
- Cultural Resources Reconnaissance, Cabras Island, Apra Harbor, Territory of Guam-April 1977

The Port of Guam was constructed starting in 1966, with a peak of construction activity between 1967 and 1969. The Port started providing service in 1969. As construction is slated to be complete by 2013, a fifty-year period would include properties built before 1963. Buildings constructed after 1963 are considered out of period. Notable, relatively unmodified buildings, such as the Port Administration Building (1967-1968), Control Tower (1968-1969), and the Port Police Station (post-1970) were built after this date. There have been several expansion projects since construction, which have impacted the historic integrity of any resources in the Port. Since Port buildings were constructed in or after 1966, they are considered out-of-period, and not historic properties as defined in 36 CFR 800.

Subject: Port Authority of Guam Terminal Yard Reconfiguration Maintenance and Repair Project Section 106 Concurrence

Page 3

No archaeological sites are documented within the APE for this project. Further, it is unlikely that the APE holds undocumented sites, as most of the area has been subject to recent commercial and military development. Much of the area is underlain with coral and rock at shallow depth, and does not hold potential for significant subsurface deposits.

#### Findings of Effect

Since there are no known historic properties within the APE, we believe that a finding of No Historic Properties Affected is appropriate, pursuant to 36 CFR 800.4(d)(1). It also is unlikely that any undocumented historic properties will be encountered. If any properties are identified during construction, PAG will consult with the Guam SHPO.

If you have any questions or concerns, please contact me by phone at 671-477-5931 or via email at rjagustin@portguam.com.

Si Yu'os Ma'ase,

GUSTII General Manager

I, the undersigned, concur with the APE and findings of effect stated above for the Port Authority of Guam Terminal Yard Reconfiguration Maintenance and Repair Project

Joe Duenas, State Historic Preservation Officer

Date





Figure 2. Breakbulk Yard and Proposed Terminal Buildings











Figure 5.

NOTES: NOTES: system concents and winners pleage refer to electrical system concents due to all lofiting proved recteds due to all lofiting proved recteds and concurt for all lofiting of the terrelation of the approximate set and other all the same recommendent set provide the support oranness as required street light Two may dreethon 30' hdight pole Led 01200ma2 2774-14-6042 STREET LIGHT ONE WAY DIPECTION 40" HEIGHT POLE LED @1800 277V-14-60HZ STREET LIGHT ONE WAY DRECTION 40' HEIGHT POLE LED 0120W 277V-18-60HZ STREET LIGHT TWO WAY DIFFECTION 40° HEIGHT POLE LED @120W 277V-14-6042 STREET UGAT ONE WAY DIRECTION 30° MIDGAT POLE LEO @120W 277V-19-60N2 HW-1-15 HIGHT MAST UICHT FATURES HUD UNNE GIOGOMAI2 277V-19-6042 1000 HEIGHT POUL, FACD TYPE --- LIGHTING POWER LINE пестяю наменое STREET LIGHT LED HIGH MUST LIGHT PRELIMINARY SUBMITTAL | | | ~ þ + SL-1 1-15 51-15 2-3 2-3 LEGEND: 2--15 \$I-1\$ 13 ł ۲ M 3 1 Ø 惊 ۴ ÷ i \$ } \$ î 1 | Į þ Ė Li MICHINE - END LAVID -1.)→---( 1 Ę I ¢ ij I Ū H H ģ | || Ė 1 | |} [] • ģ ۲ ig F şγ Å łł § Ý Ŷ ų ۲ Ч 1 Ы 

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Figure 6. Location of High Mast Lighting

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Figure 8. Location of High Mast Lighting

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Figure 9. High Mast Lighting Detail





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Figure 2. Breakbulk Yard and Proposed Terminal Buildings



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Figure 3. Aerial photograph of Port Authority of Guam with annotated outfall drain locations



Edward J.B. Calvo Governor

Raymond S. Tenorio Lt. Governor

In reply refer to: RC09-5225

January 19, 2011

Department of Parks and Recreation Government of Guam 490 Chalan Palasyo Agana Heights, Guam 96910 Director's Office: (671) 475-6296/7 Facsimile: (671) 475-6288/9 Guam Historic Resources Division: (671) 475-6294/5 Facsimile: (671) 477-2822



Peter S. Calvo Acting Director

anager's Office RECEIVED

Mr. Enrique J.S. San Agustin General Manager Port Authority of Guam Jose D. Leon Guerrero Commercial Port Government of Guam 1026 Cabras Highway, Suite 201 Piti, Guam 96915

Subject: Section 106 Project Review: Port Authority of Guam Terminal Yard Reconfiguration Maintenance and Repair Project, Piti, Guam

We reviewed for the above project and have the following comments:

We concur with your determination of "No Historic Property Affected," however, you will need the services of an archaeologist if there is an inadvertent discovery of historic properties during the project undertaking. Additionally, during the permitting process, we will issue a Certificate of Approval with stipulations that the Port Authority of Guam document photo structures within the project area that are 25 years or older and submitted to the Guam Historic Resources Division to assist in this effort you may contact William Hernandez, HP Specialist at 475-6349.

If you have any questions, please contact our office at 475-6294/6295 or fax us at 477-2822.

Sincerely,

Peter S. Calvo Acting Director

cc: BSP

Co-Signature:

Lynda Bordallo Aguon Guam (State) Historic Preservation Officer



Appendix H Recommended Additions to the PAG Standard Lease Agreement

PORT AUTHORITY OF GUAM | Sustainability and Resiliency Plan

# Recommended Additional Terms for Recycling Enterprise Zone Lease Agreement

# **Purpose and Eligibility Criteria**

- Clearly state the purpose of the enterprise zone, emphasizing Public Law 28-92 goals and requirements.
- Define the scope of activities allowed within the zone, such as processing, storage, and transshipment. Emphasize activities that are prohibited, such as storage, handling and spillage of any solid wastes or liquids wastes.
- Specify the criteria for businesses or organizations eligible to operate within the zone.

# **Reporting and Monitoring**

- Require compliance with all applicable local permits and environmental regulations, including terms in the Stormwater Pollution Prevention Plan (SWPPP) permit. Consider adding the following requirements:
  - Include easement to access portions of the property for routine facility inspections, BMP inspections, and outfall discharge monitoring.
  - Require adherence to baseline, activity-specific, and site-specific bestmanagement practices (BMPs) described in the SWPPP.
  - Port Authority of Guam (PAG) has reported historic exceedances for total zinc at two outfalls, which potentially were caused by exposure of stormwater runoff to galvanized metal surfaces and tire dust. Tenants should ensure that they implement the appropriate BMPs to help PAG prevent total zinc exceedances, such as covering automobile, material, and waste storage areas.
  - Require tenants to prevent unauthorized non-stormwater discharges.
  - Require tenants to notify the PAG if their activities, or change in activities, introduce potential pollutant sources that are not covered by PAG's existing SWPPP.
- Specify requirements for submitting reports and metrics on materials collected and shipped off-island for recycling.



Appendix I IFB Options and Partnership Opportunities

PORT AUTHORITY OF GUAM | Sustainability and Resiliency Plan

# Invitation for Bid Options and Partnership Opportunities

# Introduction

Thousands of pounds of recyclable materials<sup>1</sup> are illegally dumped or abandoned throughout villages on Guam, including junk vehicles, tires, and white goods. The Integrated Solid Waste Management Plan (Public Law [PL] 25-175) recognizes the responsibility of the government of Guam to protect the environment and communities through the responsible management of solid waste.

The government of Guam enacted PL 28-92 to establish a Recycling Enterprise Zone (REZ) at the Jose D. Leon Guerrero Commercial Port to process, containerize, and stage materials for transshipment off-island for recycling, with a specific emphasis on junk vehicles. Hundreds of new vehicles are imported and sold on Guam every year by local dealers, but the removal of junk vehicles remains a problem. A movement to initiate an advanced disposal fee on imported cars did not pass the legislature. Instead, the Recycling Revolving Fund (RRF) was developed to manage the recycling of illegally dumped priority wastes, including junk vehicles, tires, and white goods. The RRF is funded by annual fees on vehicle registrations, but use of this fund has not been successful at managing the removal of illegally dumped materials.

Current RRF payments are distributed to village mayors for uses that include removal of illegally dumped vehicles and other priority wastes. Some village mayors sign contracts with haulers to move junk vehicles from villages to centralized junk vehicle lots. However, contracts in place are insufficient to process the annual generation of abandoned wastes for shipment off island.

# **Invitation for Bid Options**

The Port Authority of Guam (PAG) could be a part of the solution using the authority of the REZ under PL 28-92 to contract the processing and recycling of recyclable materials. First, the PAG will use grant funding or RRF funding to prepare an invitation for bid (IFB). The scope of work in the IFB will include the following:

- Securing the recyclable materials staging lots to prevent theft and arson
- Removal and proper disposal of wastes and fluids under a current Guam Environmental Protection Agency (EPA) Storage and Processing Facility permit
- Volume reduction (disassembly, crushing, and/or baling)
- Transfer, staging, and shipping
- Furnishing receipts to document receipt at the ultimate recycling facility
- Comply with all applicable permits and regulations to conduct work

Means and methods for executing these requirements are to be determined by the successful bidders. Funding for this program should come from the RRF. Competitive selection process may include the following options:

• Low bid per ton: Selection could be based on low bid per ton for a guaranteed tonnage recycled for a short time period (to minimize risk of fluctuation in scrap prices). Total annual budget would be provided. Payment will be based on tonnage of recyclable materials received at the ultimate recycling facility.

<sup>&</sup>lt;sup>1</sup> PL 28-92 defines "recyclable materials" as materials that retain useful physical or chemical properties after use.

 Highest minimum tonnage for set annual budget: Contractors would guarantee a minimum tonnage recycled over a given time period. Total annual budget would be provided. Payment will be based on tonnage of recyclable materials received at the ultimate recycling facility.

The IFB will include the option for contractors to lease an operational area at the REZ for staging or processing. The PAG would manage the IFB and contract for priority materials recycling and GovGuam agencies would issue with applicable licenses, permits, etc. Figure 1 below illustrates the IFB and contract management process for recycling of priority wastes.





# **Partnership Opportunities**

The following presents two potential partnership opportunities to accelerate the recycling of priority wastes off-island.

Opportunity 1: Partnership with GovGuam Agency. Junk vehicles, white goods, and other recyclable materials should be processed prior to transshipment by removing hazardous materials, compressing, and containerizing. Recyclable materials processing equipment may include a junk vehicle crusher and/or dismantling systems to remove refrigerants, compressor oils, and electrical units from white goods. Personnel should be trained on proper handling of hazardous materials and fluids.

One example of Opportunity 1 could be the processing of junk vehicles; the Guam Solid Waste Authority (GSWA) recently had a IFB for purchase of a junk vehicle crusher (self-contained) and collects fluids during the crushing process. It is our understanding that GSWA intends to own and maintain this equipment. Fluids drained from the junk vehicles would be handled through GSWA's waste contractor. There is an opportunity to have GSWA staff operate this crusher (and drain and manage fluids during the same process), with labor paid through the RRF. GSWA has stated that they would need to be compensated for their labor. If feasible, this is a possible solution for the first step in the junk vehicle recycling process; crushing/processing done by the entity owning and maintaining the equipment. This option is likely to be lower cost than the private sector conducting processing due to several factors:

- the vehicle crusher is being purchased using grant funding;
- fluids would be managed by existing competitive contract; and
- GSWA labor rates are likely lower than private sector.

In this scenario, the scope of the PAG's IFB would be reduced to baling, then transportation and shipping off-island to the ultimate recycling company. Figure 2 illustrates the example partnership with GSWA.

### Figure 2. Opportunity 1: Partnership Process with GSWA



Opportunity 2: Partnership with Shipping Companies. Evaluate the feasibility of partnering with shipping companies to provide reduced cost for shipping containers with recyclable materials off-island after

unloading of new product shipments to Guam. This would include review of routes to target vessels that move containers to the markets where the recyclable materials are destined. It would also include approaching importers for support to find the shipping companies they use for importing tires, vehicles, white goods, and other relevant products.



# **Policy Decisions to Consider**

The legislature has decided that vehicle end-of-life management should be covered by fees on vehicle registration, which accrue to the RRF. The RRF is intended to support the recycling of priority wastes generated on Guam, including junk vehicles, tires, batteries, and white goods. Therefore, it may be appropriate that the PAG use its commercial staff labor to manage the proposed recyclable materials recycling contract. It is recommended that PAG further discuss the possibility of PAG commercial staff labor to be reimbursed via funding from other agency programs, including the RRF.



Appendix J Updates to the PAG Board Recycling Policy

PORT AUTHORITY OF GUAM | Sustainability and Resiliency Plan



PORT OF GUAM ATURIDAT I PUETTON GUAHAN Jose D. Leon Guerrero Commercial Port 1026 Cabras Highway, Suite 201, Piti, Guam 96925 Telephone: 671-477-5931/35 Facsimile: 671-477-2689/4445 Website: www.portguam.com



Eddie Baza Calvo Governor of Guam Ray Tenorio Lieutenant Governor

# **BOARD POLICY MEMORANDUM NO. 2015-01**

| Division Heads                                                    | Recycling Program            |
|-------------------------------------------------------------------|------------------------------|
| Approved by the Board of Directors:<br><b>April 15, 2015</b> 2024 | Revision Date:               |
| Approved by:<br>FRANCISCO G. SANTOS,                              | Chairman, Board of Directors |

I. **<u>PURPOSE</u>**: To implement a recycling program and establish process and procedures in the disposal of solid waste for a safer and healthier environment.

## II. DEFINITIONS:

*Fixed Assets* are tangible, non-consumable property, which is capitalized. A fixed asset has an acquisition cost of at least \$1,000.00, has a useful life of a least one year and is used to conduct Port business. The cost of a fixed asset includes the purchase price plus all costs to acquire (shipping & handling), install, and prepare equipment for its intended use.

Lease Agreements means any binding agreement by and between the Port Authority of Guam.

*Recycle or Recycling* means a method by which recovered resources are converted for use as raw materials or feedstock to make new products.

**Recycling Company** means any business licensed by the Department of Revenue and Taxation, and has been issued a permit, as required in Section 51104 of Chapter 51 of Title 10, Guam Code Annotated from the Guam Environmental Protection Agency (GEPA) to conduct business on Guam.

*Recyclable Materials* means materials which still have useful physical or chemical properties after serving a specific purpose for the same or other purpose. Recyclable materials are as follows:

- batteries (lead-acid, portable computer batteries, nickel-cadmium, sealed types for power backup);
- 2. automobiles, buses, and trucks or any form of motorized vehicle;
- 3. tires (passenger/commercial);
- enameled white goods (refrigerators, water heaters, air conditioners, washers, dryers and stoves);
- 5. home appliances (other small appliances that are not considered enameled white goods);
- 6. glass and plastic bottles;

Board Policy Memorandum No. 2015-01 Recycling Program Page 2 of 3

- 7. foam padding;
- 8. lead;
- 9. metals (ferrous/non-ferrous);
- 10. organic material (i.e., tree trimmings, palm fronds, grass, food waste, soiled cardboard);
- 11. paper products; and cardboard
- 12. wood pallets and scrap wood;
- 13. construction and demolition debris;
- 14. x-ray film;
- 15. automobile oil and fluids; and filters
- 16. Freon and other refrigerant gases;
- 17. electronic waste (computers, circuit boards, televisions, and portable phones);
- 18. heavy equipment; and
- 19. other recyclable materials deemed recyclable by GEPA pursuant to the Rules and Regulations.

#### III. SCOPE:

- A. This recycling program is prepared specifically for the Port Authority of Guam properties to include Harbor of Refuge, Agat Marina, Gregorio D. Perez Marina, Hotel Wharf, Seaplane Ramp, Port Beach and Family Beach.
- B. Exempted from this recycling program are Fixed Assets of the Port Authority of Guam.
- C. As to leases, the recycling program may be applied towards personal properties that are unclaimed or abandoned, unless manner of disposition is otherwise provided in the subject agreements.

Abandoned or unclaimed personal properties arising from lease agreements, the Port Authority shall make concerted effort to contact the lessee and provide reasonable notice on their final opportunity to retrieve such personal properties. Failure to do so will result in the Port Authority taking whatever action it deems necessary to remove such personal items.

IV. <u>AUTHORITY</u>: The Port Authority General Manager is possessed with the authority to dispose of recyclable materials in accordance with this Policy.

#### V. PROCEDURES AND RESPONSIBILITIES:

- 1. Operations Department or as otherwise designated by the General Manager:
  - a. To administer and facilitate the recycling program.
  - b. Shall make the determination if items are of recyclable materials as defined herein.
  - c. Generate an inventory list of items to be recycled and transmit to Property Control Officer (PCO) for inspection and clearance. This form is identified as the 'Inventory List of Recyclable Materials', as attached.

Board Policy Memorandum No. 2015-01 Recycling Program Page 3 of 3

- d. For purposes of record detention, copies of recycling documents shall be maintained and kept for a period of one year; thereafter said documents are to be transmitted to the Records Transfer and Receipt custodian for further disposition.
- 2. Finance Division:
  - a. Property Control Officer (PCO) shall:
    - i. Inspect and perform quality assurance of recyclable materials to validate that all recyclable materials are not of Fixed Assets of the Port Authority of Guam.
    - ii. Clear inventory list of items being processed for recycling by affixing his/her initials in the appropriate box affirming action of either '*Cleared*' or '*Not Cleared*' as contained in the '**Inventory List of Recyclable Materials**' form.
    - iii. Route inventory list of items ensuring completeness of documents for final approval of the General Manager with cover memo.
- 3. <u>Division Heads</u>: Any recyclable materials falling under this program should be coordinated with the administrator of this Policy for further processing.
- VI. <u>DISPOSAL OF RECYCLABLE MATERIALS</u>: The recyclable materials shall be donated to a duly recognized non-profit organization identified by the General Manager that will be charged with furthering the disposal process.

#### VII. REQUIREMENTS OF A NON-PROFIT ORGANIZATION:

- 1. Responsible for the removal of recyclable materials in coordination with a Recycling Company that is licensed to conduct business on Guam and has been issued a permit as described herein.
- Obtain an itemized official receipt from the Recycling Company to validate that items on the **'Inventory List of Recyclable Materials'** are true and correct, and are of the same items as identified therein for removal from Port properties.
- 3. Provide a copy of the official receipt received from the Recycling Company to the Port Authority of Guam Operations Department and Procurement Division.
- 4. Failure to comply with this Policy shall render cessation of the non-profit organization from future donations.
- VIII. SEVERABILITY: If any provision of this Policy or its application or circumstance(s) is held invalid, the invalidity shall not affect other provisions or applications of this Policy which can be given effect without the invalid provision or application and to this end the provisions of this Policy are severable.

### Port Authority of Guam Inventory List of Recyclable Materials

| Dep | artment:    | Name:    | Date:                        |
|-----|-------------|----------|------------------------------|
|     |             |          | Property Control Officer     |
| No. | Description | Location | Unit Qty Cleared Not Cleared |
|     |             |          |                              |
| 1   |             |          |                              |
|     |             |          |                              |
| 2   |             |          |                              |
|     |             |          |                              |
| 3   |             |          |                              |
|     |             |          |                              |
| 4   |             |          |                              |
|     |             |          |                              |
| 5   |             |          |                              |

(Additional space provided on separate sheet.)

John Santos Operations Manager George Pecina Property Control Officer

To be completed by Recycling Company:

(Name of Company): \_\_\_\_\_

hereby certify receipt of 'Cleared' recyclable materials listed.

Authorized Representative:

Print: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

/ / Approved / / Disapproved

1.5

Joanne M.S. Brown General Manager

Recyclable materials donated to a duly recognized Non-Profit Organization:

Authorized Representative: (Print/Sign)
## Port Authority of Guam Inventory List of Recyclable Materials

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| Department: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Name:    | Date: |                     |         |             |  |  |
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|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |          |       |                     |         |             |  |  |
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Appendix K Implementation Roadmap

PORT AUTHORITY OF GUAM | Sustainability and Resiliency Plan

## Implementation Roadmap

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# Acronyms and Abbreviations

| A        | amp (s)                                                                   |
|----------|---------------------------------------------------------------------------|
| AC       | air conditioning                                                          |
| ASHRAE   | American Society of Heating, Refrigerating and Air-Conditioning Engineers |
| BAS      | building automation system                                                |
| BMS      | building energy management system                                         |
| CNG      | compressed natural gas                                                    |
| DDC      | direct digital control                                                    |
| DX       | direct expansion                                                          |
| ECM      | Energy Conservation Measures                                              |
| EER      | energy efficiency ratio                                                   |
| ESCO     | energy service company                                                    |
| ESPC     | Energy Savings Performance Contracts                                      |
| EV       | electric vehicle                                                          |
| G3       | Guam Green Growth                                                         |
| GDOE     | Guam Department of Education                                              |
| GEDA     | Guam Economic Development Authority                                       |
| GEO      | Guam Energy Office                                                        |
| GHG      | greenhouse gas                                                            |
| GPA      | Guam Power Authority                                                      |
| GRTA     | Guam Regional Transit Authority                                           |
| GSWA     | Guam Solid Waste Authority                                                |
| Guam EPA | Guam Environmental Protection Agency                                      |
| GWA      | Guam Waterworks Authority                                                 |
| HVAC     | heating, ventilation, and air-conditioning                                |
| ICE      | internal combustion engine                                                |
| IPMVP    | International Performance Measurement & Verification Protocol             |
| IRA      | Inflation Reduction Act                                                   |
| kW       | kilowatt(s)                                                               |
| kWh      | kilowatt-hour(s)                                                          |
| LC       | load center                                                               |
| LEAC     | Levelized Energy Adjustment Clause                                        |
| LED      | light-emitting diode                                                      |
| LSEV     | low speed electric vehicle                                                |
| MT CO2e  | metric ton(s) of carbon dioxide equivalent                                |
| MW       | megawatt(s)                                                               |
| O&M      | operations and management                                                 |
| PAG      | Port Authority of Guam                                                    |

| Port  | Port of Guam                                  |
|-------|-----------------------------------------------|
| PPA   | Power Purchase Agreement                      |
| PV    | photovoltaic                                  |
| RACI  | responsible, accountable, consulted, informed |
| REC   | renewable energy certificate                  |
| RLF   | Revolving Loan Fund                           |
| SEER  | seasonal energy efficiency ratio              |
| SHGC  | solar heat gain coefficient                   |
| USEPA | U.S. Environmental Protection Agency          |
| V     | volt(s)                                       |
| VAV   | variable air volume                           |

# 1.0 Introduction

This appendix will provide a deeper dive into the five key solutions identified in the Zero Emissions Strategy presented in Section 4.3, Table 6, of the *Sustainability and Resilience Plan*, following the order of the three action categories:

- Direct Action (Section 2)
- Collaborative Action (Section 3)
- Nature-based Solutions (Section 4)

A Zero Emission Workshop was held with key personnel across the Port Authority of Guam (PAG) and supporting stakeholders to discuss the potential solutions and agree upon a timeline for implementation. Information from the solutions identified by the project team and discussed in the workshop is presented for each category in the following sections. Each of these sections will present the following to address the key solutions:

- Description: Outline of the key solutions and strategies within the category
- Greenhouse Gas (GHG) Emissions: Quantification of the GHG emissions associated with the solution
- The Wedge Diagram: Quantification of the carbon reduction solutions
- Cost Analysis (where appropriate): High-level assessment of the costs and financial levers available for implementing solutions
- Implementation Roadmap: Key activities and next steps

# 2.0 Direct Actions

## 2.1 Electrification of the Passenger Fleet

## 2.1.1 Description

During the Zero Emissions Workshop, the following challenges related to decarbonization of cargo handling equipment and fleet vehicles were identified and discussed:

- Lack of required electric vehicle (EV) charging stations and electrical infrastructure
- Potential disruption to Port of Guam (Port) operations
- Existing cargo handling equipment with service life remaining
- Current electricity mix on Guam is carbon intensive

It was decided that by decarbonizing the passenger fleet before any cargo handling equipment, the lessons learned from electrifying these assets could be applied as the Port continues its decarbonization journey.

Electrification of the passenger fleet, rather than alternative clean fuel options, was identified as the most suitable solution for decarbonization of this emission source (Scope 1 on-road GHG emissions). This is primarily driven by lower emissions of EVs relative to alternative fuels such as compressed natural gas (CNG) or propane. EVs are increasingly becoming more cost competitive because of advances in battery technologies, and now garner a larger market share in the United States (IEA 2024) versus alternatively fueled passenger vehicles. The EV market in the United States is expected to show an annual growth rate of 10.49 percent, reaching \$156.3 billion<sup>1</sup> as a projected market volume by 2029 (statista 2024). Furthermore, multiple initiatives across Guam are supporting the transition to electric vehicles, including the following:

- 1. The Guam Green Growth (G3) Renewable Energy Project (Transportation Measure #1) will see the installation of ten Level 2 EV charging stations, five at the Chamorro Village of Hagatna and five at the University of Guam campus in the village of Mangilao.
- 2. The replacement of the Guam Waterworks Authority (GWA) passenger fleet (20 vehicles in total) with EVs will include the installation of EV charging stations for agency use.
- 3. The replacement of Guam Regional Transit Authority (GRTA) transit vehicles (10 vehicles in total) with EVs will include the installation of EV charging stations, batteries, contracts for installation, maintenance, and training for agency use.
- 4. The replacement of the Guam Department of Public Works passenger fleet (10 vehicles in total) with EVs will include the installation of EV charging stations, batteries, contracts for installation, maintenance, and training for agency use.

There are multiple categories of EVs that the PAG will want to consider as options for decarbonization. Smaller EVs such as golf carts and small utility vehicles (referred to as low speed electric vehicles, or LSEVs) can be charged via standard 120-volt (V) 20-amp (A) outlets and require no additional charging infrastructure. Light duty battery electric work trucks and vans will require 240V-fed charging infrastructure to supply the necessary power outputs, varying from 7 to 19 kilowatts (kW).

<sup>&</sup>lt;sup>1</sup> Note that money amounts in this appendix are presented in U.S. dollars.

### 2.1.2 Greenhouse Gas Emissions

GHG emissions for the passenger fleet are captured in Scope 1 on-road emissions. Table 1 summarizes the results for the GHG baseline. On-road vehicles were categorized per U.S. Environmental Protection Agency (USEPA) Emission Standards guidance (USEPA 2024c). When compared against the total GHG emission baseline of 4,743 metric tons of CO2 equivalent (MT CO2e) per year, the passenger fleet emissions comprise 4 percent of GHG emissions.

| Vehicle Type            | 2021 Emissions<br>(kilograms of<br>CO2e) | 2022 Emissions<br>(kilograms of<br>CO2e) | Yearly Fuel<br>Consumption<br>(gallons) <sup>[a]</sup> | No. of<br>Units <sup>[a]</sup> | Yearly<br>Baseline<br>(MT CO2e) |
|-------------------------|------------------------------------------|------------------------------------------|--------------------------------------------------------|--------------------------------|---------------------------------|
| Passenger Vehicle       | 1,495                                    | 2,141                                    | 207                                                    | 2                              | 2                               |
| Other Light Duty Trucks | 15,317                                   | 15,433                                   | 1,747                                                  | 32                             | 15                              |
| Pickup Truck            | 76,310                                   | 102,837                                  | 10,178                                                 | 32                             | 90                              |
| SUV                     | 110,837                                  | 44,630                                   | 8,833                                                  | 9                              | 78                              |
| Van                     | 7,758.29                                 | 21,542                                   | 1,665                                                  | 9                              | 15                              |
| Total                   | 211,717                                  | 186,583                                  | 22,629                                                 | 83                             | 199                             |

Table 1. Scope 1 GHG Emissions for On-road Vehicle Types

<sup>[a]</sup> Averaged across both years (2021 and 2022)

SUV = sport-utility vehicle

### 2.1.3 Decarbonization Solutions

The electrification of the passenger fleet will increase the electrical consumption of the Port, leading to a potential increase in Scope 2 emissions. To quantify the net carbon savings, the energy demand for the passenger fleet was estimated using the following equation:

$$Gal x Fge x Te = ED$$

Where:

- Gal = yearly fuel consumption in gallons
- Fge = Fuel gallon energy in kilowatt-hour (kWh) per gallon. Estimated to be 33.7 kWh/gallon (energy content for gasoline [USEPA 2024b])
- Te = Thermal efficiency in percent. Estimated to be 30%
- ED = Energy demand in kWh/year (ref)

The carbon intensity factor of the grid could then be applied to the energy demand value to estimate the carbon emissions associated with the conversion of the passenger fleet. Guam's Priority Action Plan indicated their current generation mix results in power at 0.77 kilograms of CO2e per kWh (University of Guam 2024).

Table 2 provides the values quantified, where positive values for the Total Savings column indicate that EV's have a lower GHG footprint when operating than standard internal combustion engine (ICE) vehicles. Values are rounded up to the nearest whole value for brevity.

| Table 2 | . Estimated | GHG E    | missions ir | ו MT  | CO2e per | year whe | n converting | g Internal | Combustion |
|---------|-------------|----------|-------------|-------|----------|----------|--------------|------------|------------|
| Engine  | vehicles to | Electric | : Vehicle e | quiva | alents.  | -        | -            | -          |            |

| Vehicle Type               | Average Fuel<br>Use (gallons/<br>year) | Fuel Emissions<br>(MT CO2e/year) | Energy<br>Demand<br>(kWh/year) | Electric<br>Emissions (MT<br>CO2e/year) | Total Savings<br>(MT CO2e/year) |
|----------------------------|----------------------------------------|----------------------------------|--------------------------------|-----------------------------------------|---------------------------------|
| Passenger Vehicle          | 206                                    | 2                                | 2,088                          | 2                                       | 0                               |
| Other Light Duty<br>Trucks | 1,747                                  | 15                               | 17,661                         | 14                                      | 2                               |
| Pickup Truck               | 10,178                                 | 90                               | 102,897                        | 79                                      | 10                              |
| SUV                        | 8,833                                  | 78                               | 89,300                         | 69                                      | 9                               |
| Van                        | 1,665                                  | 15                               | 16,835                         | 13                                      | 2                               |
| Total                      | 22,629                                 | 199                              | 228,781                        | 176                                     | 23                              |

It is important to note that this provides the most conservative carbon emission values for electrification. LSEVs are a potential solution for passenger fleet electrification as they generally tend to have lower energy consumption than standard EVs, which would provide greater savings in carbon emissions. It is suggested that the PAG facilitate a workshop to understand the transportation requirements of the different teams, as there may be opportunities to convert certain passenger vehicles and other light duty trucks to LSEVs based on the operational requirements.

## 2.1.4 Cost Analysis

A preliminary high-level financial analysis was conducted for the purchase of 86 EVs. For the purposes of this report, it is assumed that the category of other light duty trucks can be converted to LSEVs.

To conduct this analysis, certain assumptions based on the provided passenger fleet data were made (Table 3). These values may be an overestimation of true annual mileage as it is difficult to account for idling time.

| Vehicle Type            | Yearly Fuel consumption (gallons) <sup>[a]</sup> | No. of<br>Units <sup>[a]</sup> | Assumed Efficiency<br>(miles per gallon) | Average Annual<br>Miles per Vehicle |
|-------------------------|--------------------------------------------------|--------------------------------|------------------------------------------|-------------------------------------|
| Passenger Vehicle       | 207                                              | 2                              | 23                                       | 2,375                               |
| Other Light Duty Trucks | 1,747                                            | 32                             | 19                                       | 1,747                               |
| Pickup Truck            | 10,178                                           | 32                             | 16                                       | 5,088                               |
| SUV                     | 8,833                                            | 9                              | 21                                       | 20,607                              |
| Van                     | 1,665                                            | 9                              | 16                                       | 2,960                               |
|                         |                                                  |                                | Average per vehicle                      | 6,555                               |

Table 3. Assumptions of Average Annual Mileage per Vehicle Based on Yearly Fuel Consumption

<sup>[a]</sup> Averaged across both years (2021 and 2022)

Desk-based research for the most appropriate comparison models was conducted for ICE vehicle costs versus EV costs. Table 4 provides a breakdown of these costs as well as net savings after 6 years per vehicle, as well as total savings for entire fleet. Although certain categories suggest a net loss in costs (as indicated by numbers in parentheses), overall, there is a net savings of \$219,029 over 6 years for the entire fleet conversion. It is important to note that this analysis does not account for the maintenance cost difference between ICE vehicles and EVs. However, research suggests that EVs are cheaper to maintain than ICE vehicles, with estimations suggesting EV maintenance totals of 6.1 cents per mile versus ICE vehicle maintenance total of 10.1 cents per mile (U.S. Department of Energy 2021). It is important to note that the costs indicated in this table do not include the requirements for infrastructure upgrades and the installation of charging stations.

The specific needs of the Port may vary, necessitating a series of engagements with subject matter experts to develop a clear path forward. The PAG should consider the operational requirements of each vehicle type to determine the most suitable EV conversions. Identifying the appropriate EV conversion will influence the overall financial results, with further work required to understand the appropriate vehicles. As highlighted in Table 3, converting certain vehicles to LSEVs, such as the Pickman, can result in significant savings in both capital and operating costs. However, these LSEVs have a limited mileage range and will likely need to be charged every night. In contrast, larger vehicles offer a greater mileage range, allowing for longer intervals between charges. This extended range can provide a crucial safety buffer for Port operations in the event of any energy supply disruptions. A successful fleet conversion will hinge on detailed engagement with transportation teams to develop a tailored action plan.

The estimations provided in Table 3 do not include the cost estimations for construction of electrical charging stations. Therefore, the indicated total cost savings for EV conversion may be lower than these estimates suggest.

| Vehicle Type               | ICE Equivalent              | ICE Base<br>Price | ICE Annual<br>Fuel Cost <sup>[a]</sup> | EV Equivalent               | EV Overall Price <sup>[b]</sup> | EV Annual<br>Costs <sup>[c]</sup> | 6-year Net Savings<br>per Vehicle | Total Cost<br>Savings |
|----------------------------|-----------------------------|-------------------|----------------------------------------|-----------------------------|---------------------------------|-----------------------------------|-----------------------------------|-----------------------|
| Passenger<br>Vehicle       | 2023 Toyota<br>Corolla      | \$26,000.00       | \$393.36                               | 2024 Tesla Model 3          | \$46,422                        | \$176                             | \$(19,685)                        | \$(39,370)            |
| Other Light<br>Duty Trucks | 2024 Toyota<br>Tacoma SR    | \$40,599.00       | \$462.96                               | Pickman 4XR                 | \$30,050                        | \$129                             | \$12,551                          | \$401,619             |
| Pickup                     | 2024 Ford F-<br>150 XLT 2WD | \$52,500.00       | \$1,419.28                             | F-150 Lightning             | \$59,288                        | \$923                             | \$(3,807)                         | \$(121,808)           |
| SUV                        | Toyota Rav-4                | \$32,299.00       | \$4,045.08                             | 2024 Chevrolet<br>Blazer EV | \$52,133                        | \$2,364                           | \$(9,745)                         | \$(87,703)            |
| Van                        | 2024 Ford<br>Transit 350 XL | \$55,000.00       | \$1,045.87                             | Ford E-Transit 350          | \$50,953                        | \$493                             | \$7,366                           | \$66,291              |
| Total                      |                             |                   |                                        |                             |                                 |                                   |                                   | \$219,030             |

Table 4. Cost Estimations for Conversion of the ICE Passenger Fleet to EVs

<sup>[a]</sup> Using a gas price per gallon as of June 2024 of \$5.30.

<sup>[b]</sup> This price is based on U.S. automakers' manufacturer's suggested retail price (MSRP) pricing and includes \$3,792.48 cost per vehicle for shipping and \$7,500 tax rebate for EV purchase. Note that LSEVs do not qualify for rebate.

<sup>[c]</sup> Cost per kW on Guam estimated to be \$0.37 per kWh.

## 2.1.5 Roadmap for Implementation

To maintain the course to achieve Net Zero by 2050, the PAG should aim to have completed their ICE passenger vehicle conversion to EVs by 2035. This aligns to the trajectory as described in the Wedge Diagram and allows for lessons learned from passenger fleet conversion prior to the decarbonization of yard equipment.

A successful upgrade will require key steps for implementation. Consideration is needed of which types of EVs are required, their daily operational times and how transportation might need to adapt, and the location, cost, and quantity of additional charging infrastructure.

A RACI matrix has been developed to implement this transition and identify key next steps for success. The matrix is a tool for defining key tasks and associated roles and responsibilities, with the acronym, RACI, representing the following:

- Responsible (R): The person/people who do the work to complete task.
- Accountable (A): The person/people who is ultimately answerable for the correct and thorough completion of the task. There should only be one accountable person per task.
- Consulted (C): Those whose opinions are sought or required for task completion, typically subject matter experts.
- Informed (I): Those who are kept up to date on progress, often only a one-way communication.

| Task                                                                                                                                                                                                                               | Strategic<br>Planning<br>Team | O&M<br>Teams | Port<br>Leadership | Transportation<br>Teams | External<br>Consultants |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|--------------|--------------------|-------------------------|-------------------------|
| Assess Fleet Requirements and<br>Select EV Models. Evaluate types of<br>EVs needed based on daily<br>operational times, range<br>requirements and passenger<br>capacity.                                                           | R                             | С            | A                  | R                       | R                       |
| Plan Charging Infrastructure.<br>Determine the location, quantity and<br>type of charging stations required<br>based on output of previous task.                                                                                   | R                             | С            | A                  | I                       | R                       |
| Conduct Feasibility Study and Cost<br>Analysis. Analyze financial<br>implications, including initial<br>investment, operations and<br>maintenance (O&M) costs, and<br>potential savings based on outputs of<br>previous two tasks. | С                             | I            | A                  | С                       | R                       |
| Procure and Install Charging<br>Stations. Upgrade Electrical<br>infrastructure where necessary.                                                                                                                                    | С                             | R            | А                  | I                       | С                       |
| Deploy EVs and Monitor Fleet<br>Operations. Purchase EVs in batches<br>so that shifts in operations can be<br>captured in implemented with minimal<br>disruption.                                                                  | С                             | С            | A                  | R                       | С                       |

## 2.2 Energy Management and Efficiency Strategies

## 2.2.1 Description

As the Port's Scope 2 emissions (those associated with electricity consumption) are higher than Scope 1, decarbonization solutions should prioritize energy efficiency to deliver meaningful GHG reduction. This includes reducing total consumption and providing the ability to control and manage how energy is used.

A series of eight Energy Conservation Measures (ECMs) were identified for implementation. These recommended measures include best practices applicable to the Port, as well as more site-specific opportunities such as lighting upgrades based on discussions with facilities management personnel. Existing conditions of buildings and systems were also taken into consideration when forming the ECM recommendations. These measures include the following:

- Convert existing non- light-emitting diode (LED) lighting fixtures to LED system
- Retrofit or replace air-conditioning (AC) and ventilation units with higher efficiency models
- · Retrofit refrigeration systems with energy-saving controls
- Retrofit or replace AC controls
- Reduce energy use by plug loads
- Add solar energy with battery energy storage system
- Retrofit windows with solar film to reduce AC energy
- Enhance AC O&M with condenser coil cleaning and coatings

Many of these measures can be implemented early in the decarbonization journey with little to no capital investment, and/or rapid financial payback. However, they may require additional detailed analysis, calculation, and/or modeling to estimate capital cost, energy savings, and payback period. Other complex energy efficiency measures, with integrated or cascading utility system impacts, might not be individually identified as part of this initial energy reduction strategy and might require a special engineering study to confirm feasibility and approach. An important next step for the PAG is to perform a detailed onsite energy efficiency audit of all facility buildings and mechanical and electrical systems, build a comprehensive picture of energy reduction potential, and further estimate cost savings and required capital cost. Table 6 shows a list of potential ECMs identified for each building or facility area in scope.

| Building                                    | ECM 1                       | ECM 2                 | ECM 3      | ECM 4                     | ECM 5               | ECM 6                | ECM 7                 | ECM 8                    | ECM 9          | ECM 10            | ECM 11              | ECM 12              | ECM 13           | Emission Savings<br>Potential |
|---------------------------------------------|-----------------------------|-----------------------|------------|---------------------------|---------------------|----------------------|-----------------------|--------------------------|----------------|-------------------|---------------------|---------------------|------------------|-------------------------------|
| Building                                    | Air-Conditioning<br>Upgrade | Lighting<br>Upgrade 🖵 | Appliances | Refrigeration<br>Retrofit | Controls<br>Upgrade | Envelope<br>Retrofit | Plug Load<br>Retrofit | Ventilation<br>Upgrade 🖵 | O&M<br>Upgrade | Cargo<br>Handling | Solar PV<br>Array 🖵 | Waste-to-<br>Energy | Energy<br>Storag | Emission Savings<br>Potential |
| Admin                                       | Х                           | Х                     |            |                           | Х                   | Х                    | Х                     | Х                        | Х              |                   |                     |                     |                  | Medium                        |
| Annex A                                     |                             | х                     | х          |                           | х                   | х                    | х                     | х                        | х              |                   |                     |                     |                  | Low                           |
| CFS Container Freight<br>Station            | Х                           | Х                     |            | Х                         | Х                   | Х                    | х                     | Х                        | Х              |                   |                     |                     |                  | Medium                        |
| Collapsible Container                       |                             |                       |            |                           |                     |                      |                       |                          |                |                   |                     |                     |                  | TBD                           |
| Container Yard                              |                             | Х                     |            |                           |                     |                      |                       |                          |                |                   |                     |                     |                  | High                          |
| EQMR                                        | Х                           | Х                     | Х          |                           | х                   | Х                    | Х                     | Х                        | Х              |                   |                     |                     |                  | Medium                        |
| Fire Pump Bldg                              |                             | Х                     |            |                           | х                   | Х                    | Х                     | Х                        | Х              |                   |                     |                     |                  | Low                           |
| Gantry Crane office                         |                             | Х                     |            |                           | х                   | Х                    | Х                     | Х                        | Х              |                   |                     |                     |                  | Medium                        |
| Gatehouse                                   |                             | Х                     |            |                           | Х                   | Х                    | Х                     | Х                        | Х              |                   |                     |                     |                  | Low                           |
| GDP Marina office                           |                             | Х                     |            |                           | Х                   | Х                    | Х                     | Х                        | Х              |                   |                     |                     |                  | Medium                        |
| High Tower                                  | Х                           | х                     |            |                           | х                   | х                    | х                     | х                        | х              |                   |                     |                     |                  | Low                           |
| Horizon (Admin Annex,<br>Port Police)       | Х                           | х                     |            |                           | Х                   | х                    | х                     | х                        | х              |                   |                     |                     |                  | Medium                        |
| LC-1                                        |                             |                       |            |                           |                     |                      |                       |                          |                |                   |                     |                     |                  |                               |
| LC-2                                        |                             |                       |            |                           |                     |                      |                       |                          |                |                   |                     |                     |                  |                               |
| LC-3                                        |                             |                       |            |                           |                     |                      |                       |                          |                |                   |                     |                     |                  |                               |
| LC-5                                        |                             |                       |            |                           |                     |                      |                       |                          |                |                   |                     |                     |                  |                               |
| Lower Tower                                 | Х                           | Х                     | Х          | Х                         | Х                   | Х                    | Х                     | Х                        | Х              |                   |                     |                     |                  | Low                           |
| New Operations (former<br>Port Police bldg) | Х                           | Х                     |            |                           | Х                   | Х                    | х                     | Х                        | х              |                   |                     |                     |                  | Low                           |
| PCC Port Command Cente                      | er                          | Х                     | Х          | Х                         | Х                   | Х                    | х                     | Х                        | х              |                   |                     |                     |                  | Medium                        |
| Port Police Shacks                          |                             | Х                     |            |                           | Х                   | Х                    | Х                     | Х                        | Х              |                   |                     |                     |                  | Low                           |
| Street/Ext Lights                           |                             | V                     |            |                           | V                   |                      | V                     | X                        | V              |                   |                     |                     |                  | Low                           |
| Ierminal Gates Booths                       |                             | X                     | ×          |                           | X                   | X                    | X                     | X                        | X              |                   |                     |                     |                  | Low                           |
| Welding Shop                                | X                           | X                     | X          |                           | X                   | X                    | ×                     | X                        | X              |                   |                     |                     |                  | Medium                        |
| zPAG Portwide                               | ~                           | ~                     | ~          |                           | Λ                   | ~                    | ~                     | ^                        | Λ              |                   | Х                   | Х                   | Х                | Medium                        |
| LIAGIVITWIGE                                |                             |                       |            |                           |                     |                      |                       |                          |                |                   | ~                   | ~                   | ~                | meanum                        |

## Table 6. Potential ECMs Identified for each Building or Facility Area in Scope

## 2.2.1.1 Energy-efficient Lighting Upgrades (LED)

Interior lighting throughout the existing facilities includes LED and fluorescent lighting, as well as incandescent and high-intensity discharge lighting. Exterior lights include high-intensity discharge technology and LED. Along with being one of the most energy-efficient lighting choices, LED has the highest life expectancy with one of the lowest maintenance costs over the lifetime of the fixture. LED lighting also has minimal heat waste, which reduces building internal heat gains and the need for space cooling. Replacing fixtures with LED alternatives is a quick-win strategy that will result in decreased overall facility energy consumption.

PAG facilities teams have been upgrading interior lighting with LED tubes on an as-needed replacement basis. In addition, new construction and newly renovated spaces are being fitted with LED lighting systems. Table 7 summarizes the progress of the lighting upgrades to date, based on discussions with facilities, and is reflected in the energy baseline. Light green highlighted sections indicate completed LED upgrades. Estimated energy savings from the recommended remaining upgrades are incorporated into the energy reduction calculations and roadmap based on expected timeline of completion.

In addition, lighting controls upgrades can be implemented to further realize the benefits:

- Add occupancy and vacancy sensors in spaces that have only manual controls. Photosensors can be added in addition to the occupancy sensor controls where exterior glazing can provide adequate lighting levels. Exterior glazing can be in the form of exterior windows, skylights, and translucent panels. The proposed sensors should be capable of delayed reaction control, so the lights are not frequently turned on and off.
- Add photosensors in areas that could benefit from daylighting. Dimmable LED drivers are
  recommended in areas with dense lighting load, which will reduce lighting from existing fixtures
  without turning them off. This type of upgrade is recommended in areas where sunlight is available
  but may not allow lighting to be completely switched off. This reduces the overall energy consumption
  during daylighting hours for rooms with adequate sunlight from exterior glazing.
- There is currently no scheduled changeout of the remaining non-LED lighting inventory. Port facility
  maintenance staff has been evaluating container yard lighting concerns. The container yard has large
  number of metal halide fixtures, as noted in Table 7. The current lighting upgrade at the Port has
  been largely ad-hoc, involving as-needed replacement of non-LED bulbs. This may contribute to
  inconsistency in visual appearance, illumination, and color temperatures. Most often, replacement of
  commercial non-LED lamps with LED bulbs without addressing existing ballasts, fixture condition,
  rewiring, and illumination strategies results in lower efficiency gains. In many cases, a full
  replacement of the lighting fixture will achieve maximum power reduction per fixture with improved
  illumination performance.

| Port Authority of Guam<br>Lighting FY2024 Cabras, Piti; STS Carnes, Outer Areas |             |          |        |         |             |         |             |             |          |             |            |         |         |              |              |         |              |              |
|---------------------------------------------------------------------------------|-------------|----------|--------|---------|-------------|---------|-------------|-------------|----------|-------------|------------|---------|---------|--------------|--------------|---------|--------------|--------------|
| Location                                                                        | 1500W<br>MH | 1000W МН | 400WMH | 250W MH | 150W<br>HPS | 70W HPS | 450W<br>LED | 215W<br>LED | 140W LED | 104W<br>LED | 80W<br>LED | 40W LED | 15W LED | F32T8<br>(4) | F32T8<br>(2) | 32W CFL | 31W<br>Fluor | 60W<br>Incnd |
| Admin Bldg                                                                      |             |          | 3      |         |             |         |             |             |          |             |            | 48      |         | 171          | 28           |         |              | 6            |
| Port Cmnd Ctr                                                                   |             |          |        |         |             |         |             |             |          |             |            |         |         |              | 41           |         | 42           | 3            |
| Horizon Bldg.                                                                   |             |          |        |         |             |         |             |             |          |             |            |         |         | 23           | 45           |         |              |              |
| Ops Bldg.                                                                       |             |          |        |         |             |         | 3           |             |          |             |            |         |         | 40           | 18           |         |              |              |
| Welders Shop                                                                    |             |          | 6      |         |             |         |             |             |          |             |            |         |         |              | 7            |         |              |              |
| EQMR Bldg                                                                       |             |          | 23     |         |             |         |             | 6           |          |             |            | 14      |         | 22           | 38           | 2       |              |              |
| WH1                                                                             |             |          | 41     |         |             |         | 12          |             |          | 4           |            | 9       |         | 11           | 24           |         |              | 4            |
| <b>CFS Building</b>                                                             |             | 22       | 10     |         |             |         |             |             |          |             |            |         |         | 29           | 37           |         |              |              |
| High Tower                                                                      |             |          |        |         |             |         |             |             |          |             |            |         |         | 6            | 6            |         |              | 1            |
| Lower Tower                                                                     |             |          |        |         |             |         |             |             |          |             |            |         |         | 13           | 6            |         |              |              |
| Gatehouse                                                                       |             |          |        |         |             |         |             |             |          |             |            |         |         |              | 15           |         |              |              |
| Term Booths                                                                     |             |          |        |         |             |         |             |             |          | 8           |            | 6       |         |              |              |         |              |              |
| Fire Pump<br>Bldg                                                               |             |          |        |         |             |         |             |             |          |             |            |         |         |              | 9            |         |              |              |
| LC1                                                                             |             |          |        |         |             |         |             |             |          |             |            |         |         |              | 11           |         |              |              |
| LC2                                                                             |             |          |        |         |             |         |             |             |          |             |            |         |         |              | 10           |         |              |              |
| LC3                                                                             |             |          |        |         |             |         |             |             |          |             |            |         |         |              | 6            |         |              |              |
| LC4                                                                             |             |          |        |         |             |         |             |             |          |             |            | 9       |         |              |              |         |              |              |
| LC5                                                                             |             |          |        |         |             |         |             |             |          |             |            |         |         |              | 18           |         |              |              |
| <b>Guard Shacks</b>                                                             |             |          | 3      |         | 6           | 3       |             |             |          |             |            |         |         |              | 8            |         |              |              |
| Container<br>Yard                                                               | 123         | 139      |        |         |             |         | 28          |             |          |             |            |         |         |              |              |         |              |              |
| Parklot/Street                                                                  |             |          |        |         |             |         |             |             | 40       |             |            |         |         |              |              |         |              |              |
| Annex A                                                                         |             |          |        |         |             |         |             |             |          |             |            |         |         | 37           | 4            | 1       |              |              |
| Agat Marina                                                                     |             |          | 8      |         |             |         |             |             | 14       |             |            |         |         |              | 34           | 11      |              |              |
| GDP Marina                                                                      |             |          | 4      |         |             |         |             |             |          |             | 11         |         |         |              | 3            |         |              |              |
| <b>Gantry Cranes</b>                                                            |             | 42       |        |         |             |         | 2           |             |          |             |            |         | 36      |              |              |         |              |              |
| Totals                                                                          | 123         | 203      | 98     | 0       | 6           | 3       | 45          | 6           | 54       | 12          | 11         | 86      | 36      | 352          | 368          | 14      | 42           | 14           |

## Table 7. PAG Lighting Systems: Existing Conditions and Future Projects

## 2.2.1.2 Energy-efficient Air Conditioning and Ventilation Upgrades

Per discussions with facilities engineering and operations personnel, there have been some equipment repairs and replacements as equipment reaches end of life, and there are several other ongoing and planned projects to maintain operations and improve facility performance. It is recommended that these projects continue and include a review of the current capital improvements plan to identify opportunities and ensure compatibility with established decarbonization goals.

In addition to these projects, there are other opportunities for upgrades to the existing systems that can be completed in the near term that not only address basic maintenance requirements but can also improve efficiency and performance. Typically, projects have been done on an as-needed basis and not specific to addressing energy reduction or sustainability goals. To maximize the benefits of these capital improvement projects, it is important to evaluate the systems and interactive effects on facility performance more holistically and implement strategic projects that not only improve operations and system reliability but also support the Port's sustainability vision.

### 2.2.1.3 Replace and Retrofit Appliances and Refrigeration Systems

**Cooling load reduction**: American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Climate Zones 1 and 2 applicable to the Port are prone to significant night heat and moisture build up. Adding roof or wall exhaust fans or retrofitting existing exhausts with controls for night purge will reduce daytime cooling load and cooling energy if infiltration through doors and windows are kept to a minimum.

**Premium efficiency motor upgrades**: Replace existing standard fan and pump motors with higher-efficiency motor models. Reduced energy consumption, higher service factor, longer component lifetimes, and less heat output are some benefits of upgrading motors.

**Appliances ECM**: The PAG currently operates electric dryers and washing machines at six locations. It is recommended to replace washers and dryers more than 10 years old with EnergyStar-rated highefficiency units. Alternatively, to achieve higher savings, it is recommended to centralize all washing and drying in a single laundry facility that can use commercially advanced energy and water saving technologies such as ozone water savings and energy reuse.

**Refrigeration ECM**: The PAG currently operates ice machines at three locations. Retrofitting these ice machines with a heat exchange system (HX) can significantly reduce kWh consumption by lowering incoming water temperatures that reduces ice-making cycle times.

**Strategic replacement of existing split systems**: Upgrade to higher seasonal energy efficiency ratio (SEER) units with a minimum rating of SEER 14 with ventilation. Prioritize older units with greater than 10 percent coil damages due to corrosion.

## 2.2.1.4 Air Conditioning Control Upgrades

**Controls ECM**: The PAG can achieve significant savings by optimizing and upgrading building ventilation and air-conditioning control systems with energy-saving features. In the short term, quick results can be seen by replacing existing fixed thermostats to programmable thermostats with remote override as well as by interlocking AC units to lighting occupancy sensors. Several other controls-related measures should be investigated.

**Implement demand control ventilation (where appropriate)**: In occupied spaces (without prescribed pressurization or ventilation requirements), ventilation systems are typically set to provide a constant amount of outside air based on anticipated space occupancy. As an alternative, outside air flow can be adjusted based on the actual dynamic occupancy demand of the space. Carbon dioxide sensors provide a means of implementing demand control ventilation for minimum safe occupancy requirements, reducing fan energy and energy required to condition outside air. It is recommended that the feasibility of implementing demand control ventilation be investigated for applicable conditioned spaces with fluctuating occupancy density, such as dedicated office spaces.

**Replace existing heating, ventilation, and air-conditioning (HVAC) distribution with variable air volume (VAV) systems if applicable**: Replace or convert constant air perimeter induction systems with VAV systems, which reduce fan horsepower, eliminate simultaneous heating and cooling, and decrease the amount of energy needed for conditioning the spaces. These shifts in HVAC operation can significantly reduce energy consumption, as well as improve air circulation in the conditioned space(s).

**Update facility pressurization plan and rebalance facility airflow**: Workshop and laboratory type facilities have strict ventilation requirements, ensuring adequate air exchange rates and air filtration for the health and safety of building occupants. For this reason, the conditioning of makeup air is a top energy consumer in such facilities. In many cases, makeup air rates are set according to the original system design and never revisited. It is recommended that the pressurization and ventilation plan be updated for each facility, to identify potential for makeup air reductions and significant energy savings. The facility airflow can then be rebalanced, and the controls updated as needed.

**Building automation system (BAS) and controls upgrades and strategies**: Information is not available whether the PAG is implementing BAS upgrades at its facilities that replace existing pneumatic or electric relay control systems with direct digital controls (DDCs). Pneumatically actuated controls systems have a significantly lower overall system efficiency as compared to DDC because of the amount of energy necessary to produce the required compressed air, as well as their limited capabilities for system optimization and modulation that electronic systems offer. DDC systems provide expanded controls optimization capability such as scheduling, temperature setpoints and setbacks, temperature resets, variable speed operations, and ventilation controls. DDC systems also offer a centralized platform that can be expanded on as an energy management system is installed. DDC systems also require comparatively minimal O&M costs.

**Retro-commissioning and controls optimization**: Significant energy savings can be realized through optimization of existing facility systems performance. Retro-commissioning of a building considers the original design and operational strategy of the building, facility systems, equipment, and energy management system and identifies opportunities for incorporating more modern operational improvements. Retro-commissioning is especially beneficial in buildings that have been in operation for many years, as over time, the building's operations become out of sync with today's operating conditions, building documentation and historical data is lost, and equipment is replaced but not properly integrated. A detailed onsite energy audit using a whole-building approach followed by retro-commissioning can address these potential concerns. At a minimum, an ASHRAE Level 2 building energy audit will establish a plan for correcting deficiencies and moving forward with an updated facility energy and asset management strategy.

In addition to or in conjunction with building retro-commissioning, the facility systems control strategies and current setpoints will be assessed for potential to optimize energy efficiency. Major facility systems, such as ventilation, heating and cooling, and lighting, operate based on control strategies that may be linked to environmental feedback or static setpoints. Often these control strategies have not been reviewed for relevancy since initial building commissioning. The existing control strategies will be reviewed, and recommendations will be made for eliminating irrelevant control sequences, changing control setpoints, automating control sequences, installing sensors for tighter controls, and shifting operational loads relative to building occupancy schedules.

#### 2.2.1.5 Reduce Energy Use by Plug Loads

**Plug load ECM**: Internal loads in a building can contribute significantly to energy consumption, both from direct usage (that is, plug loads) as well as increased cooling requirements from added heat rejection loads. For the PAG, there are several internal load sources, including typical office equipment such as computers and printers, and refrigeration, kitchen, or small lab equipment. When combined, these loads can account for a large portion of total building electric energy consumption, not including impacts to cooling requirements. Small appliances experience standby power usage. It is recommended to retrofit computers/uninterruptible power supplies, printers, coffee machines, TVs, and other plug loads using a centralized WiFi-based plug load control software to reduce standby power loss.

### 2.2.1.6 Add Solar Energy with Battery Energy Storage System

**Solar PV with energy storage**: A pre-feasibility level assessment for onsite solar photovoltaic (PV) opportunities was conducted for the PAG's existing portfolio. The most feasible solution, and largest potential for onsite solar PV, is parking lot solar shading canopies. Some facilities also have potential for standard ground-mounted solar arrays. However, these are considered tentatively feasible as the suitability of solar PV installation on parking garages is highly dependent on the type of construction and structural integrity of the parking structure and requires an additional comprehensive study. Based on the current net metering incentive available from the Guam Power Authority (GPA) and on physical site location considerations, it is recommended to conduct a detailed feasibility study to install a 100kW pilot array (optimum size) at Load Center 1 (LC-1).

Incorporating a battery energy storage in conjunction with a PV installation could allow the PAG more flexibility with the 100kW net metering incentive limit as excess production can be stored for other uses. Under such a scenario, it is recommended to consider installing a 250kW battery energy storage system at LC-1 powered by 200kW solar PV capacity to charge the EV fleet and electric fork lifts and reduce peak demand charges.

### 2.2.1.7 Retrofit Windows with Solar Films to Reduce AC Energy

**Envelope ECM**: Window films are an energy-saving strategy for months when mechanical cooling is used. The PAG's windows are exposed to direct solar radiation during the hottest parts of the days. Even with interior blinds or curtains, the heat gain from solar radiation would be quite noticeable. Adding window films with a lower solar heat gain coefficient (SHGC) would reduce load on the AC systems. It is recommended to retrofit the existing glazed windows and glass doors with an interior-applied film. Solar films are a lower cost interim strategy compared to full window replacements, in addition more holistic envelope improvements are discussed in the following paragraphs.

A building's envelope is responsible for a significant portion of the total energy consumption, because of thermal load impacts (that is, solar gains and heat loss) and infiltration. For example, the building envelope in a typical office building can account for almost 30 percent of the total cooling loads in a cooling dominant climate. When designing a new building, it is much easier to incorporate strategies such as insulation values, window quantity and location, glazing requirements, and building orientation to optimize the cost/benefit of building envelope design and performance. When working with existing buildings, this becomes much more challenging, as significant changes to the envelope are cost prohibitive and sometimes not feasible because of disruption to occupants. The facilities included in this study range in age from original construction to newer additions and renovations within the last few years. Older facilities typically offer more savings potential, as minimum design requirements as well as available materials did not support energy performance as much as current day standards. However, a significant amount of investment is required to fully upgrade a building. Best practice strategies typically employed on existing buildings include the following:

- Weatherstripping on doors and windows (include as regular maintenance activity to check and repair)
- Window glazing upgrades such as energy-efficient window film or interior shading systems on existing windows
- Window replacements, including tinted/low-e glazing (also can significantly reduce infiltration)
- High-albedo roof coating addition or repair (incorporated with roofing replacement projects)
- Increased roof insulation (incorporated with roofing replacement projects)
- Exterior shading over windows (dependent on structural impacts)

### 2.2.1.8 Enhance AC Operations and Maintenance with Condenser Coil Cleaning and Coatings

**O&M practices ECM**: Upgrade O&M with condenser coil cleaning and coatings. The outdoor environment can be harsh on heat transfer surfaces. Weather and age can cause degradation to condensing unit coils and fins. This is especially the case at the PAG. Direct expansion (DX) condensing unit efficiency is determined by the ability of the unit to reject heat to the environment. This heat transfer

occurs most efficiently when the condenser coils and fins are in good condition and have access to freeflowing outside air. Degradation of the coils and fins in the form of oxidation on the surface can create an insulating layer that degrades the ability of the unit to transfer heat to the outside air. This degradation causes a decrease in efficiency, performance, and the overall life of the system. Cleaning condensing unit coils and applying a protective corrosion inhibiting coating can improve energy efficiency of existing units.

Applying a protective corrosion inhibitor decreases environmental damage to the condenser coils. Inorganic coatings increase the performance and lifespan of the equipment while providing consistent protection throughout the life of the system. In addition to extending the listed performance of the equipment, coatings increase the heat transfer capabilities of the system, thus increasing the overall efficiency of the systems. The USEPA and manufacturer's studies show coil coating can recover an existing units' energy efficiency ratio (EER) by an average of 9 to 12 percent, depending on the coating used.

The inhibitor can be applied on units before installation or on already installed (new or existing) units in the field. Existing DX condensing equipment should meet the following criteria to be considered for field coating:

- Equipment is not currently coated.
- Field-identified evidence is of only minor environmental damage.
- Equipment is not beyond 50 percent of its useful life.

This ECM does not apply to equipment with condenser coils deteriorated past the point of restoration. As part of this measure, it is recommended that evaporator and condensing coils be cleaned of dirt and corrosion on identified DX equipment. Condensing coils with damaged fins should be fixed and refrigerant charge corrected. Each condensing coil should receive a protective coating to maintain coil integrity and proper heat exchange properties. The key benefits to the PAG of this solution include the following:

- Reduced energy costs by restoring cooling efficiency performance
- Extended equipment life; coil refurbishment extends the life of the condensing unit

#### 2.2.1.9 General Energy Management System Implementation Process

Energy management is also a fundamental part of a successful energy reduction strategy. Without energy management tools, system performance typically degrades. An energy management program involves implementing a systematic and proactive approach to energy efficiency that is driven by energy monitoring data. Ultimately, energy management is the key to improving performance, conserving energy, and saving money through the lifetime of a facility. These practices are recommended for implementation in strategic coordination with infrastructure upgrades. Best practices include the following:

- Establish metering/submetering plan with metering equipment
- · Reduce labor associated with manual energy monitoring and management
- Develop a fault detection and alarm strategy
- Document current O&M procedures that include energy-saving maintenance practices as previously discussed
- Update procurement policies and sustainable design guidelines that prescribe minimum efficiency requirements

A nominal amount of projected savings from these strategies is incorporated into the roadmap; however, the Port will need to perform detailed energy and condition assessment to evaluate specific opportunities at each of the facilities. In addition, the Port should establish a set of sustainability design criteria that include these strategies, as well as incorporate the most current design standards for any new major renovation projects where building envelope upgrades can be incorporated more cost effectively with little to no impact to operations or occupants.

# 2.2.1.10 Submetering Strategy for Establishing and Validating Energy Conservation Measures (ECMs)

Concurrent to the implementation of the above ECMs, it would be valuable for the Port to implement submetering to understand the direct consumption of electricity.

It is common for a single revenue meter to be installed by the utility company (such as GPA) for an entire campus of buildings. This serves the purposes of the utility company well but does not provide any information about the distribution of the load among buildings within the campus. Information about the loads at individual buildings can be used to equitably allocate energy costs. Submetering would allow the PAG facility managers to track energy costs by building or tenant and an individual piece of large equipment when used with a building energy management system (BMS). The information can be used for creating an overall energy-savings plan, allocating costs and more, as follows:

- Energy Analysis: Gathering energy data to conduct building-level load profiling and benchmarking to isolate causes of load peaks to help cut costs or use energy resources more efficiently.
- Energy Efficiency Initiatives: Establishing energy usage benchmarks and trends to measure and verify the effectiveness of energy-saving programs.
- Tenant Billing: Allocation of energy usage costs to respective tenants based on actual energy usage instead of a flat rate, helping promote energy-savings measures.

A sample commercial submetering architecture is shown on Figure 1 for conceptual illustration. Locations proposed for submetering are highlighted on Figure 2 and listed in Table 8.

### Figure 1. Sample Commercial Submetering Architecture from Honeywell





## Figure 2. Proposed (Highlighted) Locations for Submetering across Port Property

Table 8. Suggested Locations for Proposed Submetering

|   | Location         | Usage Submeter Unit | Demand Submeter Unit <sup>[a]</sup> |
|---|------------------|---------------------|-------------------------------------|
| 1 | Admin Building   | kWh                 | kW 15-min                           |
| 2 | Horizon Building | kWh                 | kW 15-min                           |
| 3 | EQMR Building    | kWh                 | kW 15-min                           |
| 4 | Warehouse 1      | kWh                 | kW 15-min                           |
| 5 | CFS Building     | kWh                 | kW 15-min                           |
| 6 | GDP Marina House | kWh                 | kW 15-min                           |
| 7 | Container Yard   | kWh                 | kW 15-min                           |
| 8 | LC-2             | kWh                 | kW 15-min                           |
| 9 | LC-3             | kWh                 | kW 15-min                           |

<sup>[a]</sup> Unit refers to the interval at which the energy demand is measured and recorded. For example, for kW 15-min, the submeter would record the average KW demand over 15 min intervals.

## 2.2.2 GHG Emissions

The Port uses electricity and diesel as the primary sources of energy to support its daily operations. Electrical consumption is metered and distributed by a total of five load centers. When considering the operational control boundary for GHG emissions, LC-1 to LC-5 provide electricity for direct Port operations. The meter at LC-1 includes consumption from LC-2 and LC-3. Table 9 provides the 2023 summary for electrical consumption across these load centers.

| Table 9. Scope 2 GH | Emissions | Based on | Electrical | Consumption |
|---------------------|-----------|----------|------------|-------------|
|---------------------|-----------|----------|------------|-------------|

| Meter Location                 | Usage kWh/year (2023) | Cost (\$)   | Emissions (MT CO2e) |
|--------------------------------|-----------------------|-------------|---------------------|
| LC-1 (including LC-2 and LC-3) | 2,408,338             | \$890,161   | 1854                |
| LC-5                           | 329,610               | \$132,538   | 254                 |
| LC-4                           | 728,939               | \$324,768   | 561                 |
| Total                          | 3,466,888             | \$1,347,467 | 2670                |

Because the PAG meters electric usage only at the load center level, individual consumption for buildings in scope were estimated using square footage and typical usage of each facility. Table 10 provides baseline energy summary data for each facility. It is important to note that while a comprehensive energy summary can aid in the recognition of energy trends at a high level, understanding consumption at the individual sites helps gain further insight into how each contributes to the overall portfolio and prioritize facilities for project implementation.

## Table 10. PAG Portfolio Baseline Energy Summary Data

| Building/Facility                        | Area, SqFt | Annual Electric<br>Baseline<br>Estimate, kWh <mark>*</mark> | Annual<br>Electric \$ 🔽 | Notes                        | Comments from PAG/Baseline Summary                                                                                                                    |
|------------------------------------------|------------|-------------------------------------------------------------|-------------------------|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Admin                                    | 25,398     | 393,773                                                     | \$134,954               |                              | The PAG's administrative offices, Board Room, and leased shipping related port users' offices. <b>AC Chiller not-in-service</b>                       |
| Annex A                                  | 3,400      | 52,714                                                      | \$18,066                |                              | Engineering and Safety                                                                                                                                |
| CFS Container Freight Station            | 24,000     | 395,311                                                     | \$135,481               |                              | <b>Being renovated</b> Operations, Transportation, Dispatch, Terminal Offices,<br>Stevedoring, Safety, and breakbulk covered storage                  |
| Collapsible Container                    |            |                                                             | \$0                     |                              | N/A                                                                                                                                                   |
| Container Yard                           |            | 665,957                                                     | \$228,237               |                              | Served by LC-4 Piti                                                                                                                                   |
| EQMR                                     | 24,000     | 372,098                                                     | \$127,526               |                              | Being renovated. Facilities, Supply, and Fleet M&R Staff                                                                                              |
| Fire Pump Bldg                           | 336        | 6,253                                                       | \$2,143                 |                              |                                                                                                                                                       |
| Gantry Crane office                      | 1,088      | 16,868                                                      | \$5,781                 |                              |                                                                                                                                                       |
| Gatehouse                                | 882        | 16,415                                                      | \$5,626                 |                              |                                                                                                                                                       |
| GDP Marina office                        | 16,200     | 251,166                                                     | \$86,080                |                              |                                                                                                                                                       |
| High Tower                               | 625        | 31,279                                                      | \$10,720                |                              |                                                                                                                                                       |
| Horizon (Admin Annex, Port Police)       | 10,400     | 193,552                                                     | \$66,334                |                              | Port Police, Guam Customs & Quarantine, training/conference rooms, <b>AC</b><br><b>Chiller not-in-service,</b> break rooms and other multiuse spaces. |
| LC-1                                     |            |                                                             | \$0                     | Included in other facilities | GPA's LC1 meter reads LC1, LC2, and LC3 combined                                                                                                      |
| LC-2                                     |            |                                                             | \$0                     | Included in other facilities | Gets power from LC-1 & distributes power to: WH1, Main Gate guard shack,<br>Hi Mast Nos. 1, 2, & 3 lights, F3/F4 shore power pits                     |
| LC-3                                     |            |                                                             | \$0                     | Included in other facilities | Gets power from LC-1 & distributes power to: CFS Bldg, High Tower, Lower<br>Tower, Yard lighting, F5/F6 shore power pits                              |
| LC-4                                     |            |                                                             | \$0                     | Included in other facilities | Supplies power to: Reefer outlets, Yard lighting                                                                                                      |
| LC-5                                     |            |                                                             | \$0                     | Included in other facilities | Supplies power to: Fire Pump Bldg, Gatehouse Bldg, Truck Gate complex,<br>Guard shacks, Hi Mast Nos. 4 & 5 lights                                     |
| Lower Tower                              | 1,750      | 87,580                                                      | \$30,015                |                              |                                                                                                                                                       |
| New Operations (former Port Police bldg) | 2,025      | 37,687                                                      | \$12,916                |                              | Operations, U.S. Customs & Border Protection Agency                                                                                                   |
| PCC Port Command Center                  | 5,050      | 93,984                                                      | \$32,210                |                              | Port Police, Port's video surveillance, access control, TWIC readers,<br>communications systems                                                       |
| Port Police Shacks                       | 60         | 3,003                                                       | \$1,029                 |                              |                                                                                                                                                       |
| Street Lights                            |            |                                                             |                         |                              |                                                                                                                                                       |
| Terminal Gates Booths                    | 2,412      | 120,710                                                     | \$41,370                |                              | Secure entry into and out of the container and breakbulk terminal areas                                                                               |
| Warehouse 1                              | 55,144     | 366,872                                                     | \$125,735               |                              | Being renovated. Stevedoring, Cable Storage (Subcom), and PAG<br>electrical equipment and supply storage                                              |
| Welding Shop                             | 3,660      | 98,469                                                      | \$33,747                |                              | Welders and equipment shed                                                                                                                            |

## 2.2.3 Decarbonization Solutions

To estimate the overall savings for the implementation of the identified ECM measures and submetering, a conservative top-down approach was taken. Based on previous project experience and expert opinion, it was estimated that the Port could reduce their annual Scope 2 GHG emissions by 10 percent after implementing all measures. An additional 3 percent per year over the lifetime of potential upgrade measures was estimated if submetering was conducted based on opportunity for a more targeted approach to carbon hotspots and general awareness of electricity consumption leading to changes in behavior.

## 2.2.4 Cost Analysis

While it is recommended to integrate sustainability measures into capital improvement planning and projects wherever possible to maximize project impacts and take advantage of capital cost avoidance, additional funding is expected to be required to support implementation of projects and programs as part of the decarbonization masterplan. Therefore, it is important to explore alternative funding options to supplement capital funding. The next section provides an overview of some of the key funding mechanisms available to the PAG to support their sustainability initiatives, including the following:

- Power Purchase Agreements (PPAs)
- Revolving Loan Funds (RLFs)
- Inflation Reduction Act (IRA)
- Utility incentive programs
- Energy Savings Performance Contracts (ESPC)

## 2.2.4.1 Power Purchase Agreements

PPAs are a contract between the buyer and a renewable energy generator ensuring the electricity is generated by a specific renewable energy project. The contract itself specifies the commercial terms, including delivery, price, and payment. In many markets, these contracts secure a long-term stream of revenue for the renewable energy project. PPAs are another instrument that organizations can use to reduce or claim zero (if the PPA covers the consumers entire electricity consumption) emissions. PPAs can help minimize risk of utility tariff rate escalation by either locking in a specific rate tariff or agreed upon scheduled rate increase limits. Typically, PPA contracts last from 10 to 20 years. According to the GHG Protocol Scope 2 *A Corporate Accounting and Reporting Standard* (Greenhouse Gas Protocol 2015), for consumers to say they are buying the electricity. Typically, PPAs are more expensive than purchasing renewable energy certificates (RECs) but are a credible, precise instrument to reduce emissions and meet sustainability goals. GPA Energy is currently running a solar PV incentive program. Customers can enter a PPA with a third-party renewable energy supplier to produce energy from a solar generator located on the customer's premise. Alternately, GPA does allow independent customer-owned net metering, so any additional electricity generated can be sold back to GPA Energy up to 100kW capacity.

## 2.2.4.2 Revolving Loan Fund Programs

RLFs are capital resources made available for loans to be used for clean energy projects. As loans are repaid, the available capital is then reloaned for other projects, to provide a continuous source of capital funding to support energy projects over time. These programs often focus on financing efficiency upgrade projects, such as appliances, lighting, insulation, and heating and cooling system upgrades. These programs start with a fixed amount of funding that is then "lent out" to specific projects. Some programs require loans to be secured by additional collateral, while others create loan loss reserve funds to serve as a cushion for potential defaults. The savings resulting from those projects are then used to repay, with interest, the loan and replenish the funding pool for new projects. They can provide cheaper access to credit for building improvements with shorter paybacks (so the funds can be quickly recharged and reused); RLF loan terms are typically shorter than 10 years. RLFs provide a simple, low-interest financing option for supporting energy projects. However, some challenges are that capital must be available to start the fund, and they might be slow to revolve, depending on timeline of project implementation and realization of the savings to repay the loans. Several entities can administer revolving funds, from

government-sponsored programs to entities in the private sector. More than 30 states have established loan programs for energy efficiency and renewable energy improvements (USEPA 2024a). The National Association of State Energy Officials provides a centralized location for information on state RLF and energy financing opportunities (NASEO 2024).

#### 2.2.4.3 Inflation Reduction Act

The IRA was signed into law in August 2022 and went into effect in 2023. The Act provides several tax credits related to domestic energy production and clean energy initiatives for both public and private sectors to deepen their investments in resilience and sustainability. Some of the IRA's key provisions include the following:

- New financing approaches that include tax credits with a "direct pay" option, which would allow nonprofit agencies with no tax liability to participate. (Previously, nonprofits were not eligible for tax credits because they pay no taxes. Through the direct pay option, nonprofit entities can receive a direct payment from the federal government for the value of the credit.)
- Tax credits for energy efficiency in commercial buildings, and incentives for solar panels, battery storage, and microgrids.
- EV and alternative fuel tax credits to help transition fleet to EVs. This value is captured in Table 3 in Section 2.1.4.
- Funding for "green banks," which use public funds to lower the costs and risks for private investments in climate-friendly projects that might not otherwise attract financing. This innovative approach could be used to fund measures to reduce carbon dioxide emissions at facilities.

## 2.2.4.4 Energy Savings Performance Contracts

An ESPC is a funding vehicle to pay for today's facility upgrades with tomorrow's energy savings, without tapping into an organization such as the PAG's capital budget. An ESPC constitutes a long-term partnership between facility owner and an energy service company (ESCO). It is considered a time and cost-effective method for completing comprehensive energy-savings measures. Typical benefits of ESPCs include the following:

- Facility upgrades are paid for now with future energy and operational savings.
- Lower interest financing options often are available, including tax-free municipal leases, which are considered non-appropriated funds.
- The ESCO represents a single point of accountability, simplifying the upgrade process significantly.
- An ESCO is selected based on the best value, not necessarily the lowest bid.
- The building owner participates in equipment and subcontractor selection.
- Annual energy savings are measured and verified according to the International Performance Measurement & Verification Protocol (IPMVP). This is perhaps the most valuable benefit, as the ESPC contractor assumes this risk and is liable to pay back the client for savings shortfalls. Review of ESCO's past performance and contract language plays a crucial role to ensure optimal risk management for the life of the performance period.
- There is a guaranteed project cost, energy and financial savings, and equipment performance.

Implementing an ESPC in a large facility can be a complex process that requires careful planning and coordination. Some of the challenges that can arise during implementation include the following:

- Understanding the PAG's energy usage: Before implementing an ESPC, it is important to understand how the facility uses energy and where the biggest opportunities for energy savings are. This can be a complex process, especially in a large facility with multiple buildings and facilities.
- Developing a comprehensive energy efficiency plan: Once the PAG's energy usage has been fully analyzed using sub-metered or calibrated baselines, a comprehensive energy efficiency plan must be

developed. This plan should identify specific energy-saving measures and technologies that can be implemented to reduce energy consumption.

- Coordinating with facility staff: Implementing an ESPC in a large facility requires close coordination with facility staff. This includes ensuring that energy-saving measures do not interfere with Port operations or facility operations and that staff are trained on new systems and technologies.
- Meeting regulatory requirements: Facilities are subject to numerous regulations related to energy
  usage and emissions. Implementing an ESPC requires ensuring that all regulatory requirements are
  met, which can be a complex and time-consuming process.
- Defining maintenance requirements: ESPC programs typically require that the energy-saving measures be maintained by the ESPC firm. This can be complicated in a Port environment with variable traffic that needs to be resolved. In many cases, facilities insist on performing the maintenance themselves, which then negates any recourse if the measures are unsuccessful.
- Managing the project: Implementing an ESPC is a complex project that requires careful management. This includes coordinating with contractors and vendors, tracking progress, and ensuring that the project stays within budget and on schedule.

Overall, implementing an ESPC in a large facility requires careful planning, coordination, and management to ensure that the project is successful and delivers the desired energy savings.

#### 2.2.5 Implementation Roadmap

#### 2.2.5.1 Facility Energy Audits and Condition Assessments

Performing an onsite facility energy audit at each of the PAG's facilities will yield a more complete list and viability of potential mechanical and electrical energy efficiency measures that may be incorporated to maximize energy reduction across the PAG's portfolio of facility locations. The onsite audits will involve assessment of buildings and systems equipment, interviews with facility management and staff, and collection of specifications and historical data. These observations will be used to perform engineering calculations and/or simulate facility energy performance to estimate potential reduction in energy usage, annual energy costs, and capital investment associated with various implementation scenarios. Possible energy efficiency measures may include no- and low-cost measures, modifications to system controls, and facility automation, operational changes, capital upgrades and Port-specific technologies for energy reduction. An initial facility assessment is typically commensurate with an ASHRAE Level 2 energy audit, as access to facility historical data, equipment specifications, and facility personnel allows the PAG to do the following:

- 1. Validate low-hanging-fruit, including additional LED lighting upgrades.
- 2. Qualify, quantify, and assess feasibility of ECMs identified under ECM implementation strategies.
- 3. Identify hot spot locations and areas to focus on for quick reduction.

## 2.2.5.2 Onsite Large Scale Solar Photovoltaic with Battery Storage Feasibility Study

In contrast to small scale solar PV proposed previously, this discussion pertains to performing a feasibility analysis for large megawatt (MW) scale solar PV farm installation, including a detailed evaluation of earthwork and structural requirements and electrical infrastructure impacts. This includes a concept design in the study so the final product can be used to seek funding or partnerships for implementation such as a PPA. This activity builds on the high-level financial analysis included in the framework to provide a more comprehensive economic evaluation. This can be done in conjunction with the onsite solar PV feasibility study to support the cost/benefit analysis of onsite versus purchased RECs. This is a fundamental requirement prior to formal consideration of any PPAs, energy infrastructure installation, or green utility rate commitments. For each potential energy supply or technology option, an annual cash flow will be projected to support the cost-benefit analysis and assess the economic viability of all options. The evaluation will include a multicriteria analysis using net present value, internal rate of return, payback period and/or sensitivity analysis tools to compare the cost-benefit of all energy supply options. The outputs from this analysis will be used to identify which energy supply and technology options are economically feasible and should be further evaluated for implementation. The outputs will also serve as the economic foundation of a future renewable energy implementation plan.

## 3.0 Collaborative Actions

## 3.1 Collaboration with Guam Power Authority

## 3.1.1 Description

Electricity consumption (Scope 2 emissions) is the Port's largest source of GHGs. Targeting a reduction in these emissions is critical for achieving Net Zero. Previous strategies have provided insight for improving energy efficiency and reducing consumption. However, ultimately, the Port will need to seek renewable sources of energy to fully reduce these emissions and achieve their goal of Net Zero by 2050.

GPA is a public corporation and the leading provider of electricity on Guam. According to their website, they are aiming to achieve 50 percent energy generation through renewable sources by 2030, and 100 percent renewable by 2040. As of 2024, they are at 16 percent.

It is recommended that the Port explore partnership and collaborative opportunities with GPA to support these renewable energy initiatives and deliver against the Port's own Net Zero target. The Port has significant areas of land that could be used for renewable energy generation. The following sections identify several similar collaborative initiatives across Guam already underway that provide insight into potential opportunities.

## 3.1.1.1 Guam Green Growth (G3) Renewable Energy Project

This project will install a 100kWh solar system with a total of 255 solar frames at CHamoru Village. This project is a collaboration between the University of Guam, Department of CHamoru Affairs, Guam Energy Office (GEO), GPA, and the Office of the Governor and Lieutenant Governor.

### 3.1.1.2 Installation of Solar Panels at Layon Landfill

The Guam Solid Waste Authority (GSWA) will be installing solar panels across 300 acres at the Layon Landfill. This is a significant multi-million-dollar project that is estimated to reduce GHG emissions approximately 107,090 MT CO2e annually. This project will be primarily coordinated by GSWA with support from GPA.

## 3.1.1.3 Solar for All Guam

This project aims to make solar energy accessible to low-income households through the development of a loan program with advantageous rates to install solar PV systems. This project will be led by GEO with technical insight from GPA. The Guam Economic Development Authority (GEDA) will oversee and manage the loan program, with outreach support conducted by the University of Guam.

#### 3.1.1.4 Solar Virtual Power Plant Program – GDOE School Focus

This project will see GPA implement a solar PV virtual power plan that will support Guam Department of Education (GDOE) Schools for installing solar systems and standalone plug and play microgrid controllers. GDOE will be paid a fixed fee for use of their rooftops and ground level properties. They will also be charged the lesser of the solar PPA rate and the Levelized Energy Adjustment Clause (LEAC) rate in place of the LEAC tariff for electricity consumed by the school.

## 3.1.2 GHG Emissions

The current GHG baseline indicates that emissions from electrical consumption contribute 54 percent of total emissions. As the Port trends towards decarbonization solutions, the energy demand of the Port will change. For example, if the Port were to electrify all yard equipment and passenger fleets, it is estimated that the consumption of the Port will increase from 3,466,888 kWh per year to 4,514,060 kWh per year. At

the current energy mix, that would deliver emissions increasing from 2,670 MT CO2e per year to 3,476 MT CO2e per year for Scope 2.

### 3.1.3 Decarbonization Solutions

Understanding the impact of decarbonization solutions upon Scope 1 and 2 emissions is critical for developing an effective strategy. As shown in Section 2.1, the electrification of yard equipment and passenger fleets may deliver a decrease in Scope 1 emissions but, unless the electricity grid is decarbonized, Scope 2 emissions will increase and the desired outcome will not be achieved. That is why identifying solutions to collaborate and support GPA are the most critical and most effective measures for reducing the GHG emissions of the Port.

For example, if GPA were to achieve their goal of 100 percent renewable energy generation by 2040, the Port could see a reduction of over 60 percent of yearly emissions (depending on electrification measures implemented).

## 3.1.4 Implementation Roadmap

It is suggested that the Port review the multiple initiatives on Guam for renewable energy generated as identified in Section 3.1.1. A meeting should then be conducted between GPA, the PAG, and energy and carbon subject matter experts to review plans and discuss potential partnerships and collaborative approaches moving forward.

## 4.0 Nature-based Solutions

## 4.1 Description

Nature-based carbon projects are an effective long-term solution for sequestering carbon. They provide additional benefits such as coastal resilience and biodiversity enhancement, delivering a multi-benefit carbon solution that can be realized by both the PAG and the surrounding communities.

Identifying and implementing these solutions requires systems-level thinking, as often environments and ecosystems are not confined to the same ownership boundaries as commercial entities. Therefore, to simplify the implementation roadmap for the PAG, these solutions have been categorized into two approaches based on geographic extent:

- 1. Restoration and enhancement of natural systems within the PAG's boundary and in the neighboring Apra Harbor region.
- 2. Restoration and enhancement of natural systems within the wider watershed region of Piti, as well as other habitats across Guam.

Considering nature-based solutions for the PAG with the approach listed above allows for manageable steps needed for implementation. These solutions are based upon the principles of protection, promotion, and collaboration. Each of these opportunities will provide greater potential for carbon sequestration with increase in the land cover.

Ultimately, an adaptable approach to implementing nature-based solutions is core to providing successful strategies that have multi-layered benefits. Nature-based solutions have the potential to provide additional value beyond carbon sequestration, including ecosystem restoration, floodplain reconnection, recreation and tourism, community collaboration, improved air and water quality, and other economic benefits. Aligning approaches to these wider benefits (such as identifying funding opportunities within community engagement) will allow for solutions to achieve their full potential.

The following sections expand on the two identified approaches and provide additional insight and next steps for delivery of nature-based solutions. As this is the first step in the PAG's journey, the intention is to provide inspiration and insight into how these solutions could be developed further. For reference, Figure 3, the Port Authority Guam Land Use Designations Map, displays the different locations and land use of the PAG's property.

#### Figure 3. Port Authority Guam Land Use Designations Map



Source: Google Earth and WSP Analysis of PAG Data

# 4.1.1 Restoration and Enhancement of Natural Systems within the PAG's Boundary and in Neighboring Apra Harbor Region

The Port, Apra Harbor, and surrounding areas under the PAG are home to a number of different vegetation types, including the following:

- Corals, seagrasses, and mudflats
- Estuarine
  - Forested Wetland
  - Scrub/Shrub Wetland
  - Emergent Wetland
- Palustrine
  - Forested Wetland
  - Scrub/Shrub Wetland
  - Emergent Wetland
- Evergreen Forest

These vegetation types create significant ecosystem value and are a source of carbon sequestration and storage if protected and maintained. For example, mangrove forests and other coastal wetland ecosystems such as salt marshes and seagrass beds have the capacity to store large quantities of carbon by doing the following (NOAA 2022):

- Capturing (or sequestering) carbon as they grow each year
- Storing carbon in their soil due to the anaerobic conditions that can allow the carbon to decompose slowly over hundreds to thousands of years.

Mangroves sequester high rates of carbon and are important habitats to a variety of species critical to the island's biodiversity (Choudhary et al. 2024). They are adapted to living in deltaic, estuarine, lagoonal, and open coast environments with varying levels of salinity. Table 11 identified the types of mangroves and associated species occurring in Guam.

| Table 11. List of Mangrove species identified of Guar | Table 1 <sup>-</sup> | 1. List of | Mangrove s | pecies | identified | on | Guam |
|-------------------------------------------------------|----------------------|------------|------------|--------|------------|----|------|
|-------------------------------------------------------|----------------------|------------|------------|--------|------------|----|------|

| Species                   | Common name                  |
|---------------------------|------------------------------|
| Rhizophora mucronata      | Red mangrove                 |
| Rhizophora apiculata      | Red mangrove                 |
| Bruguiera gymnorrhiza     | Large-leafed orange mangrove |
| Avicenna marina var. alba | Grey mangrove                |
| Lumnitzera littoral       | Black mangrove               |
| Nypa fruticans            | Mangrove palm                |
| Xylocarpus moluccensis    | Cannonball mangrove          |
| Heritiera littoralis      | Native hibiscus tree         |
| Hibiscus tiliaceus        | Native hibiscus tree         |
| Acrostichum aurem         | Golden-leather fern          |

There are several nature preservation areas in and around the Port that can serve as useful examples of conservation for the PAG. These include the Orote Point Ecological Reserve Area, the Sasa Bay Marine Preserve, and the Piti Bomb Holes Marine Preserve, as well as several national parks. The Sasa Bay Marine Reserve provides an important space for the preservation of mangrove forests in Guam. These mangrove forests hold much ecological importance including protecting coastlines from erosion and storm

damage, serving as a nursery for a variety of fish and sea life, and providing nutrients for the marine environment (Bindiya et al. 2023).

For the PAG to claim carbon sequestration benefits from these habitats, suitable areas for establishment and enhancement need to be identified.

Initially, based on the available information, the north-west bar (around the Dog Leg Pier, Outhouse Beach, including the western boundary of the fuel and cement area [Area A] on the Philippine Sea) provides opportunities to promote regrowth of native seagrass, corals, and other emergent vegetation. Opportunities are primarily on the south side of the north-west bar, due to assumed rough conditions on the north shore. Mangrove restoration may be possible in certain areas along the northwest bar. However, further research is needed to confirm such opportunities. This area may be susceptible to degradation if water quality is poor due to pollution. To further understand possible sources of degradation, a study of water quality and possible sources of contamination including leaking tanks and pollution from stormwater runoff should be conducted.

In addition, much of the coast surrounding Apra Harbor and the land owned by the PAG is classified as artificial, indicating that the coastline has been modified from the original natural coastline. This might provide an opportunity to restore some of these areas to their natural state and reestablish the native vegetation based on their suitability. The Guam Coast Type Map on Figure 4 shows the areas owned by the PAG and the surrounding areas, with their corresponding coastline types. The coastline classification will aid in further research into finding areas suitable for establishing vegetation and new plantings. Stormwater runoff water quality (from paved areas, pier, energy plant, the marina of sunken boats, abandoned facilities) could also impact the reestablishment of native species. Therefore, a water quality analysis may be beneficial to determine the effects of stormwater on biological communities and their promotion of growth (including in marsh, littoral forest, mangrove, seagrasses, benthic, and coral)

Another area to promote revegetation of native species is by recovering hydrology regimes on the east side of PAG land, which are currently interrupted by roads. Further studies could investigate ways to reestablish watershed connectivity and explore its impact on native species.

## Figure 4. Guam Coast Type Map



## 4.1.2 Community Collaboration

The largest and most significant opportunities for carbon sequestration will depend on PAG leadership establishing partnerships with organizations across the Piti watershed or even the whole island to apply a watershed approach associated with Apra Harbor. A watershed approach can be considered a systems-thinking approach, whereby the boundaries for a targeted area are defined by the watershed, rather than ownership of land. To effectively work towards achieving a healthy watershed, the PAG will need to collaborate with surrounding organizations, businesses, government agencies, and similar. Relevant organizations may include the following:

- The University of Guam and other universities in the United States
- The Guam Naval Base
- GPA
- Tourist guides (for diving, fishing, snorkeling, and similar)
- Organizations across Marine Corps Drive (Route 1)
- Tristar Terminals Facility
- Guam Environmental Protection Agency (EPA)
- Guam Department of Agriculture's Division of Aquatic and Wildlife Resources
- Pacific Islands Fish and Wildlife Office of the U.S. Fish and Wildlife Service
- U.S. Forest Service
- Natural Resources Conservation Service
- Local farmers
- Community members

The Port and PAG facilities are located within the Atantano River-Frontal Apra Harbor sub-watershed. This watershed encompasses all the area surrounding Apra Harbor and contains several stream discharge points into the bay. The Apra Harbor Surrounding Water Features Map (Figure 5) also indicates all facilities that discharge to the water. To preserve and protect the existing ecosystems (especially the wetland environments that surround much of Apra Harbor), it is necessary to understand the health of the entire watershed. Three of the main catchments in the surrounding area include the Sasa River, the Aguanda River, and the Atantano River. Both the Aguanda and Atantano rivers run through or adjacent to the Guam Naval Base and therefore may present an opportunity to partner with the Base to work towards restoration of the watershed.

The goal of this approach will be to promote and recover carbon capture and ecosystem services through the restoration of vegetation and ecosystems across the watershed. This will provide multiple benefits including restoring biological communities, improving water quality, reducing erosion, and reconnecting floodplains.
# Figure 5. Apra Harbor Surrounding Water Features Map



US Environment Protection Agency Esri, TomTom, Garmin, Foursquare, SafeGraph, METUNASA, USGS, USFWS | Esri, NASA, NGA, USGS | US EPA |

### Implementation Roadmap

## 4.1.3 Summary

Additional information is required to further develop these identified strategies. Relevant information includes but is not limited to the following:

- Most recent land cover analysis (aquatic and terrestrial)
- Carbon sequestration and storage rates for each community
- Bathymetry of the area
- Habitat suitability
- Land-use history and future planning
- Influence of power plant effluent
- Active vs. abandoned areas
- Areas that have a stormwater management plan
- Sasa River effluent
- Soil analysis in potential mangrove forest restoration areas
- Sediment stability in potential seagrass restoration areas

# 4.2 Carbon Reduction Solutions

Considering the approaches in Section 4.1, the PAG may be able to use carbon sequestration as a means of offsetting their residual emissions. To quantify this potential, the sequestration values as provided in Table 12 were used against potential land available within the Port and surrounding regions.

For the purposes of this activity, it was estimated that approximately 44 hectares (ha) of additional land could be used for nature-based solutions strategies by establishing or restoring forested land and mangroves. Although this is a rough estimate, it provides valuable insight into the potential carbon sequestration benefits for the Port. For instance, planting and restoring 18 ha of mangroves and 26 ha of forest cover could result in a carbon reduction of approximately 407 MT CO2e per year, which would provide a significant and long-term contribution to the PAG achieving Net Zero by 2050.

#### 4.2.1 Avoided Emissions and the GHG Inventory

There is currently a significant area of mangrove and forested land within the PAG's geographic boundary that is providing carbon sequestration benefits. Table 12 provides a summary of the area and the associated total carbon sequestration rates of these habitats.

| Habitat Type  | Within Port Area (ha) | Sequestration Rate (MT<br>CO2e/ha/year) | Total Sequestration (MT<br>CO2e/year) |
|---------------|-----------------------|-----------------------------------------|---------------------------------------|
| Mangroves     | 10.59                 | 6.74 <sup>[a]</sup>                     | 71                                    |
| Forested Land | 44.93                 | 11 <sup>[b]</sup>                       | 494                                   |
| Total         |                       |                                         | 567                                   |

Table 12. Carbon Dioxide Equivalent sequestration values for Mangroves and Forested Land habitat types within the PAGs property.

<sup>[a]</sup> Alongi 2012

<sup>[b]</sup> MIT 2024

MT CO2e = metric tons of carbon dioxide equivalent

These mangrove vegetated areas and forested land are currently sequestering 567 MT CO2e per year and are accounted for in the PAG's GHG inventory. However, if these areas were to be disturbed or removed in any way, the resulting yearly net emissions value will increase; as a result, this sequestration is referred to as avoided emissions in our calculations. A graphical representation of how these avoided emissions would affect the GHG inventory baseline, if the natural systems were removed, is provided on Figure 6. As is evidenced, without these natural systems, additional measures will need to be actioned by the PAG to achieve Net Zero by 2050.



#### Figure 6. Increase to GHG Baseline due to Removal of Natural Vegetation within Port Property

Currently, the GHG Protocol for Land Sector and Removals Guidance is under development and due to be published in early 2025. It is anticipated that this guidance will inform entities on how to incorporate carbon removal through land-use change into their mitigation strategies. Therefore, the above insights may change post publication of this guidance document.

# 5.0 References

Alongi, D.M. 2012. "Carbon sequestration in mangrove forests." *Carbon Management*, 3(3), 313-322. https://doi.org/10.4155/cmt.12.20.

Choudhary, Bhavesh, Venerability Dhar, and Anil S. Pawase. 2024. "Blue carbon and the role of mangroves in carbon sequestration: Its mechanisms, estimation, human impacts and conservation strategies for economic incentives." *Journal of Sea Research*, Volume 199. <u>https://doi.org/10.1016/j.seares.2024.102504</u>. <u>https://www.sciencedirect.com/science/article/pii/S1385110124000376</u>.

Greenhouse Gas Protocol. 2015 A Corporate Accounting and Reporting Standard. Revised Edition. https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf.

IEA. 2024. "Global EV Outlook 2024." https://www.iea.org/reports/global-ev-outlook-2024.

Bindiya, E.S., P.M. Sreekanth, S.G. Bhat. 2023. "Conservation and Management of Mangrove Ecosystem in Diverse Perspectives." In *Conservation and Sustainable Utilization of Bioresources*. Sukumaran, S.T., T R, K. (eds). *Sustainable Development and Biodiversity*, vol 30. Springer, Singapore. https://doi.org/10.1007/978-981-19-5841-0\_13.

MIT Center for Energy and Environmental Policy Research (MIT). 2024. "A Supply Curve for Forest-Based CO2 Removal." Climate Portal. April 1. Accessed October 31, 2024. <u>https://climate.mit.edu/posts/supply-curve-forest-based-co2-removal</u>.

National Association of State Energy Officials (NASEO). 2024. "State Revolving Loan Funds and Credit Enhancement Mechanisms." Accessed October 31. <u>https://www.naseo.org/issues/energy-financing/revolving-loan-funds</u>.

National Oceanic and Atmospheric Administration (NOAA). 2022. "Blue Carbon." https://coast.noaa.gov/states/fast-facts/blue-carbon.html.

statista. 2024. Electric Vehicles - United States. <u>https://www.statista.com/outlook/mmo/electric-vehicles/united-states</u>.

U.S. Department of Energy. 2021. "FOTW #1190, June 14, 2021: Battery-Electric Vehicles Have Lower Scheduled Maintenance Costs than Other Light-Duty Vehicles." June 14. Accessed October 31, 2024. https://www.energy.gov/eere/vehicles/articles/fotw-1190-june-14-2021-battery-electric-vehicles-have-lower-scheduled.

U.S. Environmental Protection Agency (USEPA). 2024a. "Revolving Loan Funds." April 22. https://www.epa.gov/statelocalenergy/revolving-loan-funds.

U.S. Environmental Protection Agency (USEPA). 2024b. "Fuel Economy and EV Range Testing." August 5. <u>https://www.epa.gov/greenvehicles/fuel-economy-and-ev-range-testing</u>.

U.S. Environmental Protection Agency (USEPA). 2024c. Emission Standards Reference Guide for Onroad and Nonroad Vehicles and Engines. Accessed October 31, 2024. <u>https://www.epa.gov/emissionstandards-reference-guide</u>.

University of Guam. 2024. *Guam's Priority Climate Action Plan*. March 31. <u>https://www.epa.gov/system/files/documents/2024-04/guam-pcap.pdf</u>.



Appendix L Greenhouse Gas Inventory

PORT AUTHORITY OF GUAM | Sustainability and Resiliency Plan

## Port Authority of Guam GHG Inventory - Scope 1 & 2 Emissions

| Scope 1 Emissions | Voar 2021 | Vear 2022 | Average   | Unit        |
|-------------------|-----------|-----------|-----------|-------------|
|                   |           |           | Average   | Onit        |
| Mobile: off road  | 1,644,559 | 1,853,691 | 1,749,125 | kgCO2e / yr |
| Mobile: fleet     | 211,717   | 186,583   | 199,150   | kgCO2e / yr |
| Stationary        | 26,735    | 77,840    | 52,288    | kgCO2e / yr |
| Total             | 1,883,011 | 2,118,114 | 2,000,563 | kgCO2e / yr |
| GRAND TOTAL       | 1883      | 2118      | 2001      | tCO2e / yr  |

| Scope 2 Emissions                            | Usage kWh/yr<br>(2023) | EF<br>(kgCO2e/<br>kWh) | Emissions    | Unit       |
|----------------------------------------------|------------------------|------------------------|--------------|------------|
| LC1 Port Authority Substation, Piti          | 2,408,338.23           | 0.77                   | 1,854,420.44 | kgCO2e/yr  |
| LC5 East Side of Port Gate, Piti             | 329,610.40             | 0.77                   | 253,800.01   | kgCO2e/yr  |
| LC4 (&LC4-2) Port Authority Substation, Piti | 728,939.40             | 0.77                   | 561,283.34   | kgCO2e/yr  |
| Total                                        | 3,466,888              | kWh/yr                 | 2,669,504    | kgCO2e/yr  |
| GRAND TOTAL                                  | 3467                   | MWh                    | 2670         | tCO2e / yr |

| S1 Equipment (Off Road and          |            |              |              |             |
|-------------------------------------|------------|--------------|--------------|-------------|
| Stationary)                         | Year 2021  | Year 2022    | Average      | Unit        |
| Gantry                              | 949,544.90 | 1,079,992.22 | 1,014,768.56 | kgCO2e / yr |
| Top Loaders                         | 366,453.35 | 405,949.38   | 386,201.36   | kgCO2e / yr |
| Tractor                             | 279,631.09 | 309,186.70   | 294,408.90   | kgCO2e / yr |
| Load Centre                         | 18,426.58  | 65,061.50    | 41,744.04    | kgCO2e / yr |
| Forklift                            | 39,465.61  | 47,173.10    | 43,319.35    | kgCO2e / yr |
| Air Compressor                      | 6,978.34   | 10,808.08    | 8,893.21     | kgCO2e / yr |
| Manlift                             | 4,842.22   | 5,803.95     | 5,323.09     | kgCO2e / yr |
| Dump Truck                          | 1,770.68   | 3,970.94     | 2,870.81     | kgCO2e / yr |
| Backhoe                             | 1,909.83   | 1,366.56     | 1,638.20     | kgCO2e / yr |
| Welding Machine                     | 791.76     | 1,331.55     | 1,061.65     | kgCO2e / yr |
| Flatbed Truck                       | 732.37     | 248.31       | 490.34       | kgCO2e / yr |
| Others (Auxilary Tank, Light Plant, |            |              |              |             |
| Generator, Genset, Gas Container)   | 538.60     | 639.14       | 588.87       | kgCO2e / yr |
| Mule                                | 208.71     | 0.00         | 104.35       | kgCO2e / yr |
| Total                               | 1,671,294  | 1,931,531    | 1,801,413    | kgCO2e / yr |
| GRAND Total                         | 1671       | 1932         | 1801         | tCO2e / yr  |

| Funitive Emission Sources      | 2024      | 2022      | A         | 40000 |
|--------------------------------|-----------|-----------|-----------|-------|
| Fugitive Emission Sources      | 2021      | 2022      | Average   | tCO2e |
| Total Installed Kgs Leaked     | 989.05    | 1,186.56  | 1,087.81  |       |
| Total Operated kgs leaked      | 53,588.68 | 51,300.54 | 52,444.61 |       |
| Total Decommisioned kgs leaked | 17,845.84 | 20,686.52 | 19,266.18 |       |
| Total Fugitive Emissions (kg)  | 72,424    | 73,174    | 72,799    | 73    |

| S1 Fleet data           | kgCO2e      | kgCO2e     | Average     |
|-------------------------|-------------|------------|-------------|
| Vehicle Type            | 2021        | 2022       | 2021.5      |
| Passenger Vehicle       | 1,494.48    | 2,140.67   | 1,817.58    |
| Other Light Duty Trucks | 15,316.97   | 15,432.54  | 15,374.75   |
| Pickup Truck            | 76,309.78   | 102,837.09 | 89,573.44   |
| SUV                     | 110,837.42  | 44,630.36  | 77,733.89   |
|                         |             |            |             |
| Van                     | 7,758.29    | 21,542.16  | 14,650.22   |
| Total                   | 211717.1349 | 186582.822 | 199149.8828 |
| Grand Total             | 199         | tCO2e      |             |

| Total GHG<br>emissions<br>per year | Baseline | Unit       |
|------------------------------------|----------|------------|
| Scope 1                            | 2073     | tCO2e / yr |
| Scope 2                            | 2670     | tCO2e / yr |
| Total                              | 4743     | tCO2e / yr |

| .58 |  |
|-----|--|
| .75 |  |
| .44 |  |
| .89 |  |
|     |  |
| .22 |  |
| 328 |  |
|     |  |