ENVIRONMENTAL MANAGEMENT PLAN (EMP):
SOUTH ABACO: HOTEL, MARINA AND RESIDENCES
PHASE 1

Submitted to:
Department of Environmental Planning and Protection
Charlotte House, 1st Floor
Charlotte & Shirley Street
Nassau, The Bahamas

Submitted by:
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Lot 57 Raphia Close East
Airport Industrial Park
Nassau, The Bahamas

On behalf of:
Tyrsoz Family Holdings Limited.

Date Submitted:
16 November 2021

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1. EXECUTIVE SUMMARY

Caribbean Coastal Services Ltd. (CCS) was engaged by Tyrsoz Family Holdings Limited (Client or Developer). to develop an Environmental Management Plan for Phase 1 of the South Abaco Hotel, Marina and Residences West Point and Lantern Head development (the Development) following the approval of the Environmental Impact Assessment (EIA) by the Department of Environmental Planning and Protection (DEPP). The EIA remains available online and describes the full scope of the Southwest Point (SWP) and Lantern Head (LH) Project. The scope of the current Environmental Management Plan (EMP) focuses on Phase 1 of the SWP and LH development. Phase 1 itself is broken down to two sub phases, includes Phase 1A and Phase 1B (together Phase 1). Phase 1 includes amongst other things the construction of a marina, residences, hotels, a clinic, yacht club, amenities, small water park, an artist's village, a marina village, Sandy Point airport renovations, roads, botanical nursery and, utility systems to service the Development including water reservoirs and water well plant.

The EMP is meant to be a living document, adapted as needed throughout the life of the Project. Under the direction of DEPP, the Developer and its Project Manager, in collaboration with the Environmental Manager will oversee the implementation and adaptation of the EMP. Mitigation measures for potentially adverse environmental impacts during the construction and operation phase of the Project were discussed in the EIA. These are further described in this EMP, and the relevant monitoring plan is included. Also included in the EMP are recommendations to limit negative impacts to the surrounding environment including use of turbidity monitoring during the dredge and construction activities, watering the site to limit dust propagation off site, limitations of emissions which affect air quality, the removal of invasive plant species of the site to limit further spread, as well as other biological resource management that focuses on marine resources, marine mammals, avian species, and the use of public communication means to lessen the negative impacts of the project on the environment. Furthermore, significant efforts are proposed by the Developer to further mitigate any environmental impact by way of mitigation projects described in this EMP.

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2. INTRODUCTION

2.1. PURPOSE

Caribbean Coastal Services Ltd. (CCS) was engaged by Client to provide an Environmental Management Plan (EMP) for Phase 1 of the Development which is located in South West Point (SWP) and Lantern Head (LH) on the island of Great Abaco, The Bahamas.

Phase 1 includes:

- the construction of all of the SWP features described in the approved Environmental Impact Assessment (EIA)EIA.
- all the improvements to the Sandy Point Airstrip described in the EIA
- the access road to LH and SWP as described in the EIA
- Some Back of House (BOH) facilities relating to the Development to be constructed at LH component of the Development. The LH BOH part of Phase 1 will include water well plant s, water reservoir, and botanical nursery.

Phase 1 will be referred to herein after as “the Project” and will be carried out in two sub-phases: Phase 1 A, a necessary introductory phase to be carried out upon approval of this EMP report and will include the following elements required to allow for necessary pre-construction activities:

- road grading/filling to allow better access to the sites.
- minimal clearance on site to allow for pre-construction testing and other activities
- clear staging areas on site to prepare for construction.
- construction of some of the BOH elements in LH required in order to facilitate major construction activities in Phase 1 B

Phase 1 B includes the remainder of Phase 1 and will commence as soon as the pre-construction activities described in Phase 1A are finalized.

2.2. SCOPE AND CONTENT

The scope of this EMP includes a summary of the Project’s environmental impacts, management plans and mitigation strategies designed to reduce and prevent environmental impacts and plans to reduce health and safety risks of staff and guests on-site during construction and operation. The results of this EMP will provide the Client, Contractor(s), and Operations Management with details to help prevent and/or mitigate detrimental environmental impacts and safety risks and assist with successful project execution.

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3. PROJECT DESCRIPTION

3.1. GEOGRAPHIC LOCATION

Abaco Island is the second largest island in Commonwealth of The Bahamas with approximately 2,300 square miles of land. It is located in the Northern Bahamas and is one of the four (4) 'Pine Islands' in the country. Abaco is comprised of various islands and cays, which include the main island of Great Abaco, Little Abaco, Moore's Island, Elbow Cay, Castaway Cay, Green Turtle Cay, Great Guana Cay, Walker's Cay, etc. These islands and cays cover approximately 130 square miles of Bahamian waters. Known for its crystal-clear waters and bountiful fishing opportunities, travelers make the Abaco islands their yearly vacation destination.

The SWP and LH sites are located in the southern district of the island of Great Abaco, known as South Abaco. LH lies to the northeast of SWP, which lies at the southernmost point of Great Abaco. The nearest inhabited settlements and communities to these properties are Sands Cove, Sandy Point and Crossing Rocks.

LH (25° 52' 59" N, 77° 11' 30" W) is a 654-acre site that is located 45 miles south of the capital city of Great Abaco, Marsh Harbour, and borders the Abaco National Park. The site contains approximately 12,000 feet of shoreline with elevations that top 100 feet. The town of Sandy Point is approximately 20 miles to the northwest of Lantern Head.

A functional 4,500- foot airstrip is located near the Sandy Point settlement, where it is able to support incoming and outgoing travel of small aircrafts. The Marsh Harbour International Airport is located approximately 49 miles north of the site.

The SWP (25° 50' 56" N, 77° 12' 48" W) site includes 505 acres, 7,000 feet of shoreline and has an elevation of 80 ft. It is situated approximately 4 miles to the southwest of the LH site.

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FIGURE 1. LANTERN HEAD AND SOUTH WEST POINT LOCATION RELATIVE TO OTHER ISLANDS IN THE BAHAMAS.

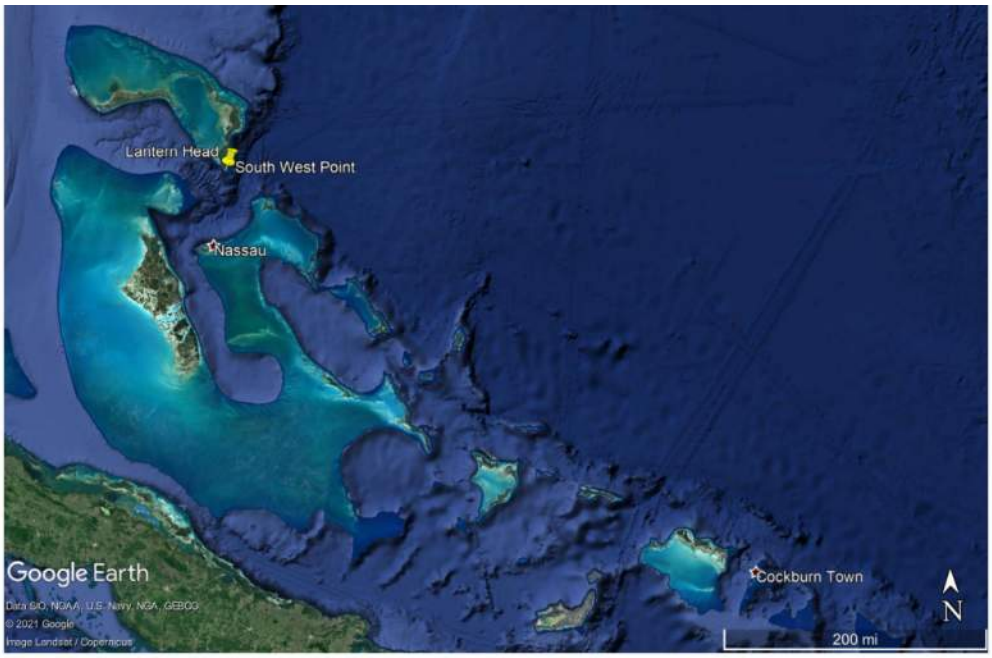

FIGURE 2. LANTERN HEAD AND SOUTH WEST POINT LOCATION ON ABACO ISLAND.

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FIGURE 3. LANTERN HEAD AND SOUTH WEST POINT LOCATION ON SOUTH ABACO.

3.2. PROJECT DETAILS

South West Point

Phase 1 features of SWP as shown on the Master Plan in section 3.3 include:

- The development of an approximately 100-acre marina with 136-slips ranging from 150 ft. to 700 ft., inclusive of a 1-mile flushing canal, with protective jetty structures extending approximately 300ft.,
- A yacht club,
- Marina village inclusive of facilities such as a club for yacht's crew (with amenities such as a lounge, gym, and laundry services), retail stores, yacht charter office, fishing charter office, fishing guide office, restaurants, bars and a small casino and nightclub.
- Dock Master building, including The Bahamas Customs and Immigration Office to facilitate the necessary Bahamian border control,
- 100-room limited-service hotel,
- 20-room wellness lodge,
- Approximately seventy-five (76) 1-acre+ residential lots, including:
    - Approximately 43 canal lots, each with 100 ft. boat slip,
    - Approximately 16 ocean front residential home lots,

  Approximately 17 hill top residences.
- "Life-style" village, consisting of 113 single family homes on 0.3 acre each.
- 35 condominiums.

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- Artist village, approximately 20 small units rented out to local Bahamian artists at zero rent which aims to cultivate authentic Bahamian art and cultural expression for local artists to exhibit and sell locally made products,
- First responders' facility including basic triage medical facility designed to facilitate guests of the project as well as employees, while providing an alternative source for medical aid in the South Abaco community. Fire station, security, and police. Helicopter pad.
- Small water park inclusive of various pools including a 'Lay-Z River' styled pool,
- Back of House Facilities,
- Employee housing,
- Utility systems including pipelines,

Additional Phase 1 features are as follows:

- Sandy Point Airport (runway extension and the development of a fixed based operation facility).
  Road construction (inclusive of the 15.5-mile access road to the development from the Queen's Highway and Y-shaped road).

Lantern Head

Phase 1 also includes some elements of Lantern Head BOH which is shown on the LH Master Plan in section 3.3. The BOH elements include:
- Water reservoir
- Water well plant
- Botanical nursery
- Diesel generators to provide power for the above

Phase 1 Utility Distribution

The utility services for the Project, described in detail in section 7 of this report, will be developed to be independent of the existing island infrastructure. All services will be developed to provide maximum practical sustainably with the latest advanced renewable technologies. The LH and SWP sites will each have utility supply infrastructure with limited interconnection. This approach provides reduced component sizing while producing effective redundancy. This will also allow the infrastructure for each site to evolve as the needs of each site develops, given the prime uses of the two sites are quite different.

The utility services will be comprised of electricity, cable provided TV/internet/phone, propane gas, potable water, central sewer, irrigation water, and rainwater collection. All utility distribution and collection will be advanced designs and underground to promote a clean high-end aesthetic and a storm tolerant infrastructure. Piping and distribution systems will be smartly designed with the roadway circulation system to provide access for maintenance without impacting lifestyle for

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residents. All central plants for utility generation will be located at the back of house area so that they are out of site but highly accessible for maintenance and continuous operation.

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3.3. MASTER PLAN

FIGURE 4. SOUTH WEST POINT MASTER PLAN FOR PHASE 1 UTILITIES

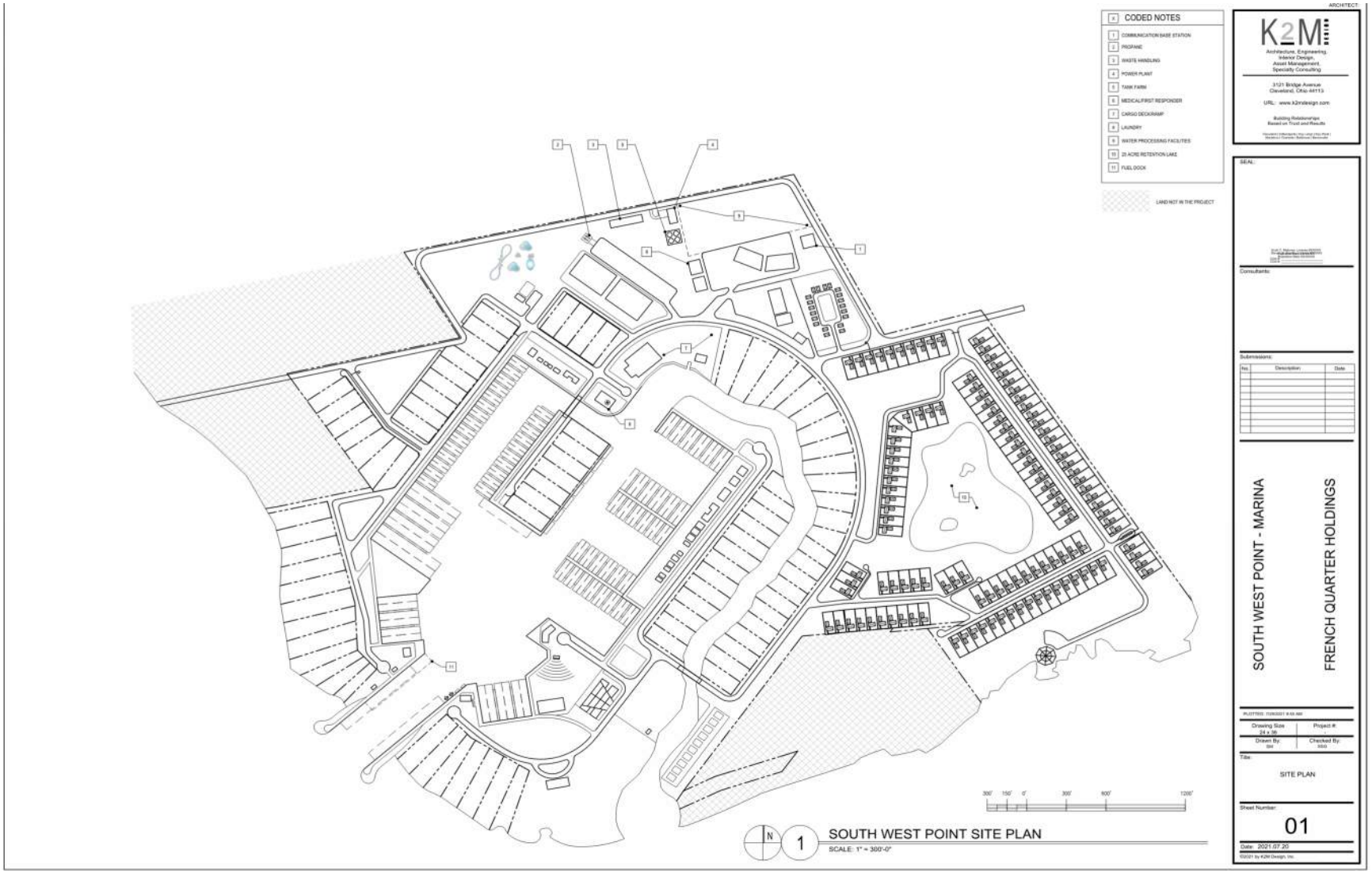

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FIGURE 5. LANTERN HEAD PROPOSED MASTER PLAN FOR PHASE 1 (GOLF COURSE, RESIDENCES AND OTHER AMENITIES ARE NOT INCLUDED IN PHASE 1)

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4. ENVIRONMENTAL REGULATORY BODIES AND LAWS

4.1. RELEVANT REGULATORY BODIES

Office of the Prime Minister - Office of the Prime Minister coordinates ministries, government, and parliamentary business. Specific related departments and agencies are listed below.

Department of Lands and Surveys - This department is responsible for planning, mapping, and monitoring of crown land (i.e. where beaches begin and end, high water marks, etc.).

Antiquities Monuments and Museum Corporation (AMMC) - The mission of AMMC is "to protect, preserve, and promote the Historic Cultural Resources of The Bahamas, and to be the number one conservation Agency in the world. We will do this while protecting our environment, encouraging research and archaeology, and by protecting, preserving, and promoting our Historical Sites."

Ministry of Agriculture, Marine Resources and Local Government - The Ministry of Agriculture Marine Resources and Local Government is responsible for the implementation, monitoring and evaluation of policies related to agricultural lands and marine resources. The Ministry serves as the Management and Scientific Authority for the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in The Bahamas.

Department of Marine Resources (DMR) - DMR is primarily responsible for the administration, management, and development of fisheries in The Bahamas. The department was created to administer, manage, and develop the fisheries sector as stipulated by the Fisheries Resources (Jurisdiction and Conservation) Act. The department is also tasked with enforcement of Fisheries Regulations, Marine Mammal Regulations and the Seafood Processing and Inspection Regulations.

Ministry of Public Works - The Ministry of Public Works maintains the physical infrastructure and natural environment of The Bahamas by providing quality services to its client agencies.

Department of Physical Planning - The Department of Physical Planning manages town, physical, country and land use planning, zoning, private roads and subdivisions for New Providence and the Family Islands.

Water and Sewerage Corporation - The Water and Sewerage Corporation is entrusted with managing, maintaining, distributing, and developing the water resources of The Bahamas.

Ministry of Environment & Housing – The Ministry of Environment and Housing serves to protect, conserve, and manage the environment of The Bahamas. This ministry focuses on environmental control, solid waste management, public sanitation, and the beautification of public areas such as parks and beaches.

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Department of Environmental Planning & Protection (DEPP) – The functions of the Department are to provide for and ensure the integrated protection of the environment of The Bahamas and ensure the sustainable management of its natural resources." DEPP is responsible for the evaluation of Environmental Impact Assessments (EIAs) and Environmental Management Plans (EMPs) and managing international environmental conventions.

Department of Environmental Health Services (DEHS) - DEHS manages the disposal of all wastes and management of environmental pollution (on land or in water). This department also promotes planning and approves various measures designed to ensure wise use of the environment.

The Forestry Unit - The Forestry Unit's mandate is "to develop the forest resources of The Bahamas to their maximum potential by applying sound, scientific and sustained yield forest management principles and concepts."

Bahamas National Trust (BNT) - The mission of the BNT is "Conserving and protecting the natural resources of The Bahamas, through stewardship and education, for present and future generations."

Ministry of Labour - The Ministry of Labour oversees and regulates labour relations within The Bahamas.

4.2. NATIONAL LAWS AND REGULATIONS

Antiquities, Monuments and Museum Act, 1998 (Ch. 51) - "An Act to provide for the preservation, conservation, restoration, documentation, study and presentation of sites and objects of historical, anthropological, archaeological and paleontological interest, to establish a National Museum, and for matters ancillary thereto or connected therewith", where, section 3 speaks to the declaration of a monument by reason of its historical, anthropological, archaeological or paleontological significance.

Agriculture and Fisheries Act, 1964 - "An Act to provide for the supervision and development of agriculture and fisheries in The Bahamas," where Section 4 explains that "The Minister may make rules for all or any of the following purposes, (a) to define areas hereinafter called 'protected areas' within which it shall be unlawful for any person except a licensee especially licensed in that behalf to plant, propagate, take, uproot or destroy any species of plant…".

Fisheries Resources (Jurisdiction and Conservation) Act – "An Act to make provision with respect to the conservation and management of the fishery resources of The Bahamas and to extend the limits of the jurisdiction of The Bahamas over such fishery resources and for matters connected therewith or incidental thereto."

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Marine Mammal Protection Act, 2005 (Ch. 244A) – "An Act to make provision for the protection of marine mammals".

Town Planning Act, 1961 (Ch. 255) - "An Act relating to town planning", where section 7 speaks to committee sanctioned development activities.

Buildings Regulation, 1971 (Ch. 200) - "An Act to regulate the construction, alteration and repair of buildings, to provide for the re-instatement or removal of dangerous or dilapidated buildings, to authorize the publication of a building code and for purposes connected therewith." Where, Section 2. (c) speaks to the interpretation of 'building' including "any dock, bulkhead, pier and any works for the protection of land against encroachment by, or for the recovery of land from, fresh or salt water;" and Section 17 speaks to the Building Code.

Water and Sewerage Corporation Act, 1976 - "An Act to establish a Water and Sewerage Corporation for the grant and control of water rights, the protection of water resources, regulating the extraction, use and supply of water, the disposal of sewage and for connected purposes." where, section 3 speaks to government control of the production, extraction and use of water in the public interest.

Environmental Planning and Protection, 2019 – An Act to establish the department of environmental planning and protection; to provide for the prevention or control of pollution, the regulation of activities, and the administration, conservation, and sustainable use of the environment; and for connected purposes.

Environmental Impact Assessment Regulations, 2020 and Environmental Planning and Protection (Extension of Application) Order, 2020 –An extension of the Environmental Planning and Protection Act that outlines the Environmental Impact Assessment Regulations which apply throughout the territory of The Bahamas including every island and cay; "The Minister, in exercise of the powers conferred by section 12 of the Environmental Planning and Protection Act, 2019 (No. 40 of 2019)".

Environmental Health Service Act, 1987 (Ch. 232)- "An Act to promote the conservation and maintenance of the environment in the interest of health, for proper sanitation in matters of food and drinks and generally, for the provision and control of services, activities and other matters connected therewith or incidental thereto", where, section 5 speaks to functions of the Department of Environmental Health.

Coast Protection Act, 1968 (Ch. 204) - "An Act to make provision for the protection of the coast against erosion and encroachment by the sea and for purposes connected therewith", where,

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section 8 speaks to approval for coastal protection work and section 9 speaks to the excavation of materials that compose of the seashore.

Conservation and Protection of the Physical Landscape of The Bahamas Act, 1997 (Ch. 260) - "An Act to make provision for the conservation and protection of the physical landscape of The Bahamas. The Act contains parts regarding administration, regulation of excavation and landfill operations, provisions governing dangerous excavations, landfill operations, quarries or mines, zoning of The Bahamas for the purposes of quarrying and mining operations, protected trees, and general entries.

Bahamas National Wetlands Policy[1] – see Ramsar Convention.
Forestry Act, 2010 and Forestry (Amendment) Act, 2010 & 2014[2] – An Act to provide the conservation and control of forests and for matter related thereto.

Forestry Regulations, 2014 and Forestry (Amendment) Regulations, 2021 – "5. Application for Permit to harvest protected tree. An application for the grant of a permit under section 12 of the Act to harvest a protected tree, shall be made to the Director and shall contain all the relevant particulars set out in Form No. 3 (A) in the First Schedule including the payment of the prescribed fee as set out in the Second Schedule."

The Bahamas National Trust Act, 1959 - "An Act to incorporate and confer powers upon The Bahamas National Trust for Places of Historic Interest or Natural Beauty."

Health and Safety Work Act, 2002 (Ch. 321C) - "An Act to make provisions relating to health and safety at work and for connected purposes." where, Section 4 speaks to general duties of employers to their employees and where, Section 7 speaks to general duties of employees at work.

4.3. INTERNATIONAL CONVENTIONS AND AGREEMENTS

Commission on Sustainable Development – "The United Nations Commission on Sustainable Development (CSD) was established by the UN General Assembly in December 1992 to ensure effective follow-up of United Nations Conference on Environment and Development (UNCED), also known as the Earth Summit[3]."

[1] The BEST Commission Bahamas National Wetlands Committee. The Bahamas National Wetlands Policy. http://www.best.gov.bs/Documents/Bahamas_national_wetlands_policy.pdf
[2] The Government of The Bahamas Ministry of the Environmental & Housing- Forestry Unit. 2011. Accessed May 20, 2021. https://bit.ly/3haGHmO
[3] https://sustainabledevelopment.un.org/intergovernmental/csd

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Convention on Wetlands of International Importance (Ramsar Convention on Wetlands)[4] – "The Convention on Wetlands provides the framework for international cooperation and national action for the conservation and wise use of wetlands. It is also known as the Ramsar Convention, after the Iranian city in which it was adopted in 1971. Almost 90% of UN member states are Ramsar "Contracting Parties". The Convention is an intergovernmental treaty with three pillars. Under the three pillars of the Convention, the Contracting Parties commit to a) work towards the wise use of all their wetlands through national plans, policies and legislation, management actions and public education; b) designate suitable wetlands for the list of Wetlands of International Importance (the "Ramsar List") and ensure their effective management; and c) cooperate internationally on transboundary wetlands, shared wetland systems, shared species, and development projects that may affect wetlands.

The Mauritius Strategy[5] – The Mauritius Strategy is the 2005 commitment made in Port Louis, Mauritius to continue with the implementation of the 'Barbados Programme of Action for the Sustainable Development of Small Island Developing States' (BPOA) and add five additional priority areas to the BPOA. These additions include but are not limited to themes aligned with culture and sustainable production and consumption. The original BPOA addresses 14 priority areas which include climate change and sea- level rise, natural and environmental disasters, management of wastes, coastal and marine resources, freshwater resources, resources, energy resources, tourism resources, biodiversity resources, national institutions and administrative capacity, regional institutions and technical cooperation, transport and communication, science and technology, and human resource development.

[4] The Ramsar Convention Secretariat. 2014. The Convention on Wetlands and Its Mission. Accessed on May 20, 2021. https://www.ramsar.org/

[5] Sustainable Development Goals Knowledge Platfrom. MSI (2005): Mauritius Strategy of Implementation; and BPOA (1994) – Barbados Programme of Action. Accessed May 5, 2020. https://sustainabledevelopment.un.org/conferences/msi2005

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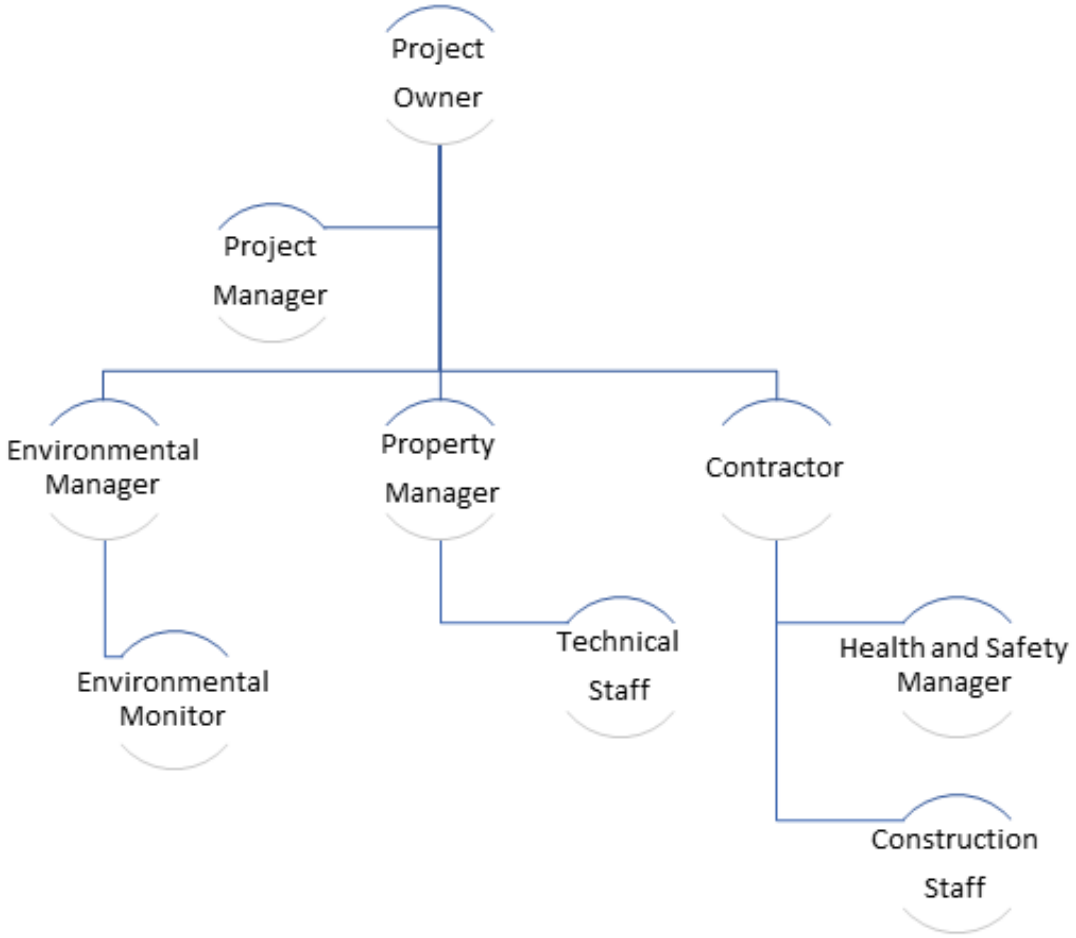
5. ENVIRONMENTAL MANAGEMENT ORGANIZATION STRUCTURE

The organization chart below clearly defines the roles and responsibilities of the Developer, management, and staff of the Project with regards to EMP compliance.

5.1. ORGANIZATION CHART



Project Owner / Developer - The Project Owner is responsible ultimately for the environmental compliance of the Project. The Project Owner, via the Project Manager will liaise directly with DEPP, the Environmental Manger and/or Environmental Monitor as needed to ensure the Project remains in compliance with the EMP.

Project Manager - The Project Manager reports to the Project Owner and liaises regularly with the Contractor and the Environmental Manager to ensure all site activities are coordinated to follow the EMP and the Project Schedule, which is available in Appendix A. The Project Manager is also responsible for the Grievance Response Mechanism (GRM). If a grievance should be escalated to the Developer, the Project Manager will inform the Developer as soon as possible. See Grievance Response Mechanism (GRM) for a more detailed description of the GRM. Other responsibilities

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include ensuring adequate resources are available to implement and maintain the EMP and addressing concerns raised by the Environmental Manager.

Contractors - The Contractors report to the Project Manager and will observe construction activities to ensure activities follow the various permit conditions, maintain site records pertaining to construction equipment, supply inventory, and personnel on site. An additional Contractor responsibility is to adhere to existing plans and procedures described in the EMP or prepare their own to meet the environmental requirements of the EMP.

Environmental Manager (EM)- The Environmental Manager reports to the Project Manager and oversees the Environmental Monitor. The Environmental Manager will liaise with the Project Manager and the submit environmental reports to DEPP. Mr. Mark Daniels will serve in this capacity. Please see the attached CV in Appendix B. Additional responsibilities include the following:

- To ensure compliance and reporting relative to the approved EMP and the conditions associated with the Certificate of Environmental Clearance.
- To provide daily oversight of all environmental matters associated with construction activities.
- The engagement of the Environmental Monitor, which is subject to review by DEPP. The resume of the person to be engaged is provided to ensure qualification and experience commensurate with the works.
- Schedule training sessions with the Environmental Monitor and staff on the Project site about the conditions and strategies described in the EMP and policies.
- Respond to concerns and queries raised by DEPP, the Construction Manager, and the Environmental Monitor as soon as possible.
- Investigate environmental incidents and develop action plans in collaboration with Environmental Monitor and Construction Manager.
- Oversee the implementation of the EMP including the monitoring, inspection, documentation, submission of turbidity logs, and all associated forms as needed.
- Adjust the EMP as required under the direction of DEPP.
- Implement the EMP in collaboration with the Environmental Monitor.
- Integrate environmental requirements and mitigation efforts into project planning, execution, and operation.
- Ensure project personnel are aware of environmental requirements.
- Provide monitoring form with provided guidelines outlined in the EMP.
- Submit reports and associated documentation to the DEPP based on reporting schedule.

Environmental Monitor - The Environmental Monitor reports to the Environmental Manager and liaises with the Contractors at the management level to ensure day to day activities follow

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mitigation strategies described in the EMP. The appointed Environmental Monitor's CV will be submitted to DEPP for approval. Based on the scope of Phase 1, CCS proposes a series of Environmental Monitors will be required at various stages of the construction phase. Additional responsibilities include:

- The implementation the EMP in collaboration with the Environmental Manager.
- Accompany the Project Owner, site safety officer and government agency inspectors (e.g. DEPP or Forestry Unit Officers) during site visits.
- Full-time presence on-site to observe and/or inspect all environmental risks and/or conditions and to ensure that during daily operations all environmental requirements are achieved.
- Submit daily reports to the Environmental Manager no later than 24 hours after the end of the work day.
- Stay updated with environmental legislations and trends in the industry.
- Provide job training and assistance (as directed by the Environmental Manager) to team members when needed.
- Assist team in ensuring the site is safe, and correct protocols are followed in the EMP within 48 hours of an approaching hurricane or severe weather event.
- Assist the Health and Safety Manager in Hazard and Risk Identification.
- Monitor and provide reporting based on the EMP criteria and liaise with all parties on any matters arising from non- compliance. Appendix C shows the daily EMC which will be submitted to the Environmental Manager.

Health and Safety Manager - The Health and Safety Manager will report to the Project Manager and liaise with all other managers on the project for environmental compliance. Additional responsibilities include:

- Ensure that the safety measures explained in the EMP and by company standards are applied and followed by construction staff.
- Providing review and reporting of construction activities on site for safe operations based on environmental compliance.
- Monitor and liaise with all parties on any matters of non-compliance based on the site safety policy and procedures.

Property /Construction Manager - The Property/Construction Manager will report to the Project Manager and ensure that staff follows best management practices outlined in the EMP as it relates to the operations phase of the Project.

Construction Staff - The construction staff will adhere to the requirements of the EMP as it relates to the construction phases of the Project, as instructed by the Construction Manager.

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Technical/Operational Staff - The Technical Staff will adhere to the requirements of the best management practices outlined in the EMP as instructed by their respective manager(s).

5.2. ENVIRONMENTAL, HEALTH AND SAFETY TRAINING FOR CONSTRUCTION AND OPERATIONAL STAFF

Staff will be provided a copy of the EMP and the Health and Safety Plan (Appendix D). Training will include protected species and invasive species identification, invasive species removal protocol, spill response training, COVID-19 awareness and prevention, and best practices for the various forms of waste management for the site. All employees will be required to participate in site induction training, which will inform employees of emergency procedures.

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6. ENVIRONMENTAL IMPACTS SUMMARY

The current section provides a summary of the impacts discussed in the EIA. For more detailed description of the Project's impacts, the EIA remains available online.

6.1. SUMMARY OF POSITIVE IMPACTS

The Developer's commitment to supporting the environmental management agencies in South Abaco and the various socioeconomic benefits of the Project are the positive impacts of the SWP and LH development. Overall, all as detailed in the agreement between the Developer and the Government of the Bahamas, between investment in public infrastructure (such as the airport expansion, and the road), support for The Bahamas National Park development plan and more and the Entrepreneurial Fund (dedicated to support local businesses) the Project (in its two phases) will invest over $60,000,000 on these elements. The total economic benefit to Abaco was estimated by CBRE at over $2,000,000,000 over 10 years. The Project projects over 600 permanent jobs once operational. Construction will provide direct economic benefits to local construction workers and other Bahamians involves with the Project. The Project committed to generate at least 30% of its power from renewable sources (solar) and has commissioned a feasibility study to examine the possibility of replacing all traditional power generation in the Project with hydrogen power. In addition, subject to Project approval, the Developer has committed, voluntarily, to spend $10,000,000 during the Project construction period (in its two phases) on a number of environmental mitigation projects related to Abaco but extraneous to the project itself. As can be seen below about $4,000,000 of that has already been committed. Developer expects to engage with relevant environmental groups and agencies to find appropriate environmental enhancing projects to commit the remaining $6,000,000 as soon as the Projects receives its Certificate of Environmental Clearance.

6.1.1 SUMMARY ENVIRONMENTAL MITIGATION PROJECTS

The Developer has entered into an agreement with the Perry Institute for Marine Sciences (PIMS) (see Appendix E-1) to fund a Stony Coral Tissue Loss Disease (SCTLD) facility for South Abaco. The funding for construction and 5 year operational costs for this facility is an estimated $3,000,000.00. The facility will be constructed to accommodate a minimum of 20 colonies for each of the high priority coral species. The facility will also serve as an education and training center for Bahamian students to build capacity for coral preservation. First observed off the coast of Florida, SCTLD has spread throughout the entire Florida Reef Tract. A pilot program in Florida rescues coral from SCTLD by incubating corals in land-based facilities, preventing them from becoming infected and breeding them to restore the affected reef. To date, this program has success fully rescued close to 2,000 corals of 19 different species from 71 reef sites.

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Also, the Developer has entered into an agreement with K1 DIRECT – Disaster Relief & Crisis Team (see Appendix E-2) to support their hurricane response teams (such as their lauded effort after hurricane Dorian in Grand Bahama) in an amount of $1,000,000 over 4 years.

Moreover, the Developer will undertake the restoration efforts of the ~12-acre freshwater habitat within the Crossing Rocks community which is occupied by invasive Cattails (*Typha domingensis*). This restoration effort will provide an essential habitat for nearby and migratory avian species known to inhabit South It is estimated that this initiative will cost approximately $750,000.

In addition and as already committed in the agreement with the Government, Developer will convey about 180 acres of the original site to the Bahamas National Trust (BNT) and develop it in collaboration with the BNT into a coppice tree habitat for the endangered Abaco Parrot within the expanded Abaco National Forest. Allowing resident and migratory birds to continue to inhabit the property and surrounding ecosystems. That on top of $1,000,000 grant provided to the BNT to support and activate their Forest Development Plan.

Furthermore, the establishment of a plant nursey in LH will focus on harvesting native species with high transplant survival rates. This will aid in the maintenance of the genetic resources of the local plant population. Also, wild sourced seeds from the Project site and surrounding areas of South Abaco would be used as propagative material for the establishment of native plant stocks. Plants harvested prior to the land clearing exercise on the site will be potted and cultivated to be incorporated in the landscaping design of the Project site and distributed to local establishments and made available for sale. The funds received from sale of the nursery plants will be donated to local non-government organizations (NGOs) to assist with Abaco National Park conservation efforts.

6.2. SUMMARY OF NEGATIVE IMPACTS

Land clearing, dredging and excavation associated with the SWP, and LH BOH construction is a negative impact of the Project. The Developer will implement the Management Plans and Mitigation Strategies described in Section 7 to reduce the negative impact of the Project. For example, the Project's impact will be mitigated by incorporating native plants in the landscape design of the site wherever possible, conducting preclearance surveys, removing invasive species from the Project site and the Crossing Rocks wetland, relocating endangered corals, and installing appropriate turbidity controls.

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7. MANAGEMENT PLANS & MITIGATION STRATEGIES

7.1. GEOLOGY

Due to the unstable land formations/karst formation (sink holes) it is recommended that geotechnical investigations occur prior to construction phase of the Project to prevent injury and loss or damage of vehicles and machines. Geological material removed during excavation such as boulders will be used to create the jetty structures associated with the marina creation.

During dredging activity, the removal of the seabed will result in the creation of a stockpile of geological material. Spoils will be used on site for upland development. This stockpile will be placed on-site for use during construction of buildings and other activities. The spoils from the marina creation will be temporarily stockpiled as described in the South West Point Marina Construction Management Plan.

7.1.1 SOUTH WEST POINT MARINA CONSTRUCTION MANAGEMENT PLAN

This section covers the management of construction related activities for the marina, and marina protection structures. The proposed marina construction works includes the following:

- Entrance channel dredging
- Construction of breakwaters at the marina entrance
- Excavation of the 100-acre marina basin
- Construction of >15,000 linear feet of vertical bulkhead walls
- Installation of >20,000 linear feet of floating docks
- Flushing channel excavation

Excavation and Dredging

The construction of the marina basin, entrance channel and flushing channel will require excavation (land-based) and dredging (barge-based). The proposed depths are as follows:

TABLE 1. PROPOSED DEPTH OF MARINA CREATION.

Element	Depth – ft (m)
Entrance Channel	26.5 (8.1)
Turning Circle	21.3 (6.5)
Basin	18 (5.5)
Flushing Channel	14.8 (4.5)

Material will be removed from within the footprint of the proposed marina through the use of mechanical equipment. The equipment includes but is not limited to:

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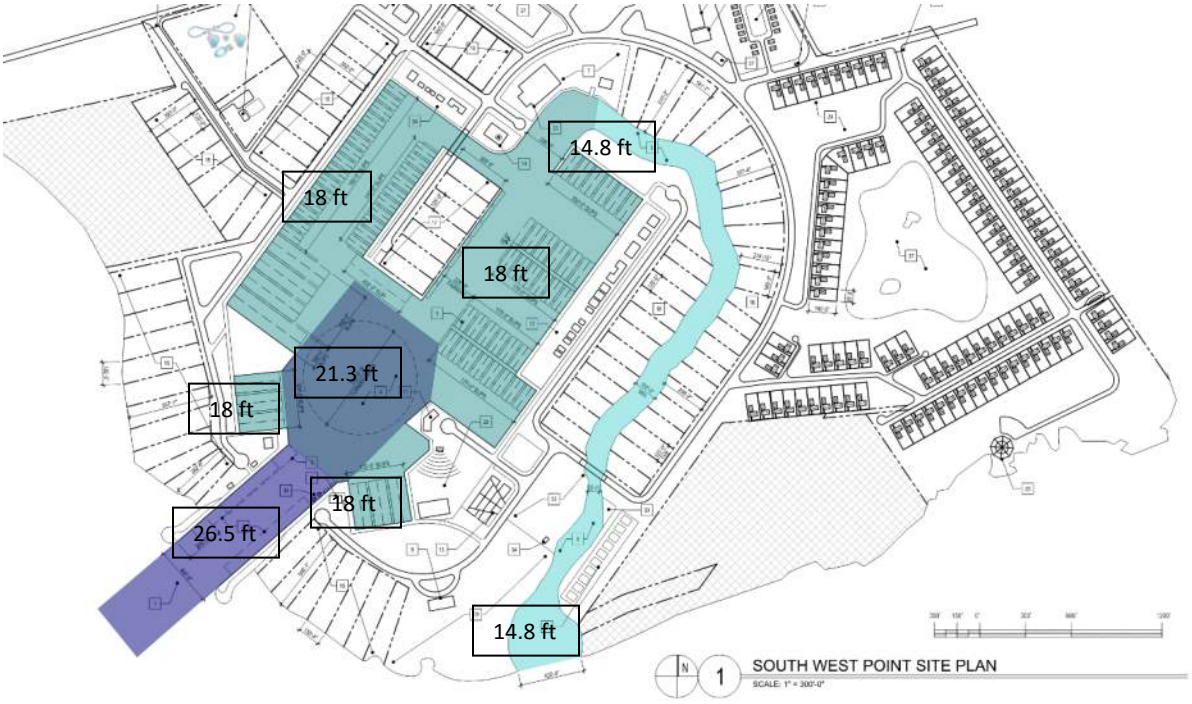
- Excavators
- Pay Loaders
- Dump Trucks
- Spud Barges
- Tugs

FIGURE 6. ILLUSTRATION OF THE LOCATION AND EXTENTS OF THE



The following best management practices will be adopted for all dredging and excavation works:

- Equipment used in and around water will be kept clean and in good working condition (i.e., free of leaks, excess oil, and grease).
- Where possible, any hydraulic machinery used in water should use environmentally-friendly hydraulic fluids (i.e., non-toxic to aquatic life, and biodegradable).
- Materials to be used in and around water, should be clean (i.e., they will not present risk of introducing contaminants to the environment or affecting water/sediment chemistry).
- Deleterious materials shall be contained, including fuel/ oil/ grease, chlorinated water, cleaning products, coatings, or any other potentially deleterious materials.
- Barges or other vessels will not ground on the foreshore or seabed, or otherwise disturb the foreshore or seabed outside of the predetermined landing site at the location of the proposed entrance channel, with the exception of such disturbance as is reasonably required resulting from the use of barge spuds.

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- No equipment will operate in the coastal zone and/or disturb the seabed outside the project site.
- Appropriate measures will be implemented to prevent to the extent practicable sediment, sediment-laden waters, or other deleterious substances entering the water during the project.
- All physical activities will be carried out in a manner that will minimize induced turbidity of local waters, to the extent practicable. Turbidity should be managed in compliance with the criteria outlined in the Turbidity Control Plan section.

Dewatering

The interior basin and flushing channel will be excavated under dry conditions by way of dewatering. Dewatering improves the safety and productivity of works. Dewatering is achieved by using pumps to draw the natural water table within the extent of works down to a level beneath that of on-going works. The following best management practices will be implemented for dewatering:

- Water removed from the excavation zone shall be discharged into a sediment trap or through a manufactured dewatering device, like a sediment bag, to retain any suspended sediments.
    - A sediment trap is a temporary basin formed by excavation or by construction of an earthen embankment with a controlled release structure.
    - The trap inlet shall be located as far away as practicable from the trap outlet to give sufficient distance for energy to be reduced, allowing suspended sediment to settle out.
    - The length of the trap shall be more than three times the width
- All flow paths should be lined or protected so as to prevent erosion and mobilization of additional sediment.
- Effluent water will be allowed to evaporate or drain into the underlying substrate.

Dredge Spoil Storage

All dredge spoils will be stored on land. Saturated spoils will be placed in designated sediment traps/retention ponds for drying.

Dried soils will be stockpiled at the site for further project use. It is expected that all of the spoils will be suitable for project grading uses.

Stockpiles will be created at the site for the storage of bulk material. Bulk material includes but is not limited to:

- Dredge spoils (finer grain size suitable for backfilling of upland areas and breakwater core construction)

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- Limestone armor boulders
- Limestone under layer/filter layer
- Coarse aggregate for concrete
- Fine aggregate for concrete
- Top soil

The following best management practices will be followed:

- Stockpiles of dried materials may exceed 15ft. in elevation. However, the appropriateness of higher stockpiles needs to be determined on a case-by-case basis.
- Stockpiles of fine-grained materials not to be stored closer than 100ft from open waterways.
- Stockpiles of fine-grained materials will be treated with water sprinkling or covered to control dust.
- Fiber rolls will be used as a filter to remove sediment from stockpile runoff.
    - Fiber rolls will be placed on a level contour in a shallow trench with a maximum depth of 2-4 in. The fiber roll shall be staked at each end and at a maximum distance of 4 ft along its length. The ends of the adjoining rolls should be tightly abutted together.
- Stockpiles and erosion control elements will be inspected prior to and after rain events, and at least daily during prolonged rainfall.
    - Slumping or otherwise damaged rolls shall be replaced, and accumulated sediment shall be removed.

Blasting

Large boulders are needed to build the breakwater structures at the entrance of the marina. In order to minimize the need to import those from Grand Bahamas or other locations, the Project will endeavor to generate those in the process of the excavation of the marina. Much of the marina excavation is expected to be the removal of coral rock. The Project will use, in limited circumstances, highly controlled, low charge, blasting techniques to break rock into boulders with minimum noise and environmental disturbance. In addition, the use of this type of highly controlled, low noise blasting, will result in the ability to use smaller earth moving machinery than would otherwise be necessary to excavate rock with much larger and less environmentally friendly earth moving equipment. When blasting will be utilized, the following best management practices will be implemented:

- A fully trained explosives specialist will be appointed.
- A set of rules will be drawn up and agreed with all relevant authorities prior to any blasting. The rules will outline the detailed operating procedures that will be followed to ensure that shot firing operations on site take place without endangering the workforce or public.

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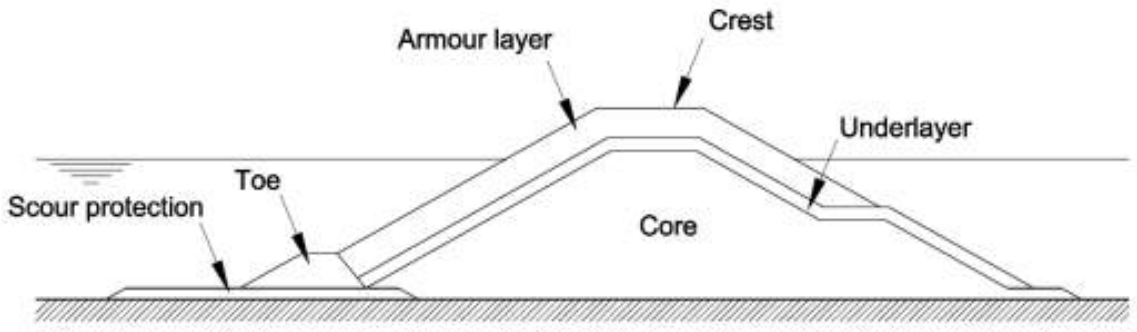
- Sufficient materials will be placed above the explosive within each hole to confine the explosive force and minimize environmental disturbance caused by venting.
- Detonators will be connected in a predetermined sequence to ensure that only one charge is detonated at any one time.
- The detonation delay sequence shall be designed so as to ensure that firing of the holes is in the direction of free faces so as to minimize vibration effects.
- Appropriate blasting techniques shall be adopted at all times and instantaneous charge levels selected such that the predicted maximum particle velocity shall not exceed the acceptable limits.
- Blast areas will be accurately surveyed, drilled, and recorded to maintain the designed blast pattern.
- The burden, spacing, hole diameter and size of the maximum instantaneous charge will be designed to minimize environmental effects.
- All surface detonators will be covered.
- Blasting will not take place during hours of darkness
- Currently there are no neighboring properties in the vicinity of the Project, and it is highly unlikely to be any such properties during the construction period. Should that change, proper procedures will be enacted to give them notice and explanation.
- Red flags, to give a visual warning, will be placed around the site boundary at locations as agreed with the relevant authorities before any blasting commences.
- Any charges that misfire or blasts which cannot be detonated within the prescribed period for safety reasons may be detonated as soon as possible after the specified period if required for safety purposes.

Breakwater Construction

Breakwater structures are required at the entrance of the marina to provide a calm, safe and comfortable basin environment. The proposed type of breakwaters is a rubble-mound breakwater.

FIGURE 7. CROSS-SECTION OF A TYPICAL RUBBLE-MOUND BREAKWATER (CIRIA, CUR, CETMEF, (2007), THE ROCK MANUAL). ENTRANCE CHANNEL TO RIGHT OF IMAGE.



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The typical methodology to create this type of structure is as follows:

- Turbidity control measures to be put in place prior to commencement of works in accordance with the turbidity management plan.
- Geotextile fabric will be placed in the area of the proposed structure and weighed down as required.
- The breakwater core is created by backfilling quarry-run material to the design grades and profiles.
    - Quarry-run material consists of well graded limestone aggregate ranging from 2 – 12 inches in diameter. This material may be sourced from the basin excavation if possible.
- Geotextile fabric will be placed atop the core.
- The under layer or filter layer will be placed on top of the geotextile fabric and core through the use of mechanical excavators.
- The armor layers will be placed on top of the filter layer through the use of mechanical excavators, cranes, or both.
    - Boulders for the filter and armor layers will be sourced as much as possible from the basin excavation. If required, additional boulders will be sourced from a quarry on the island of Grand Bahama.

Pile Driving

Vertical bulkhead walls will be constructed at the site to retain soils at the perimeter of the basin. The proposed method of construction is through the use of sheet piles. The following best management practices will be implemented during the installation of the steel sheet piles:

- Piles shall be driven with a vibratory hammer.
- The energy required to drive the pile to the final point of installation will not result in shock waves in excess of acceptable limits, therefore, protective measures to reduce shock waves are not expected to be required.
- If distressed, injured, or dead fish or marine mammals are observed following the initiation of pile driving, work will be halted immediately and measures to reduce the sound pressure waves will be implemented prior to recommencement of works.

If, despite the introduction of preventive measures, further visual/hydrophone monitoring reveals unacceptable conditions, then works will be halted, and the methods will be reviewed and rectified.

Concrete Waste Management

Concrete will be required for critical marina elements such as capping beams and aprons. Concrete will be transported around the site in concrete trucks and placed with the assistance of hoppers and pumps. Concrete equipment must be washed to avoid premature failure. The following best management practices for the washing of concrete equipment shall be followed:

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- Concrete wash down to be conducted in designated zones.
- Wash down zones must be a minimum of 50ft from open waterways.
- The facility shall have a pit or berm to provide sufficient volume to contain all concrete waste resulting from washout (minimum 10ft x 10ft x 1ft deep).
- The pit or berm shall be lined with a minimum of 10-mil polyethylene sheeting, free of holes or other defects.
- Hardened concrete will be removed from the pit or berm and disposed of accordingly.

Docks

The docks will be supplied by a prefabricated dock manufacturer. The prefabricated docks will be shipped to the site and placed through the use of crane equipment. The docks will be anchored using a mooring system.

7.1.1.1 Turbidity Assessment

1. Dredging and breakwater construction shall be conducted in a manner to minimize turbidity and shall conform to all water quality standards as may be prescribed in the Government permits.

2. It is required that background turbidity levels be established twice per week, for two weeks (minimum of 4 separate readings) prior to the commencement of any construction within the marine and intertidal zones. These results must be sent to DEPP one week prior to the start of construction.

3. Once Construction has started there should be Type III turbidity curtains required in the areas of active construction along the coastline to minimize adverse impacts to the marine ecosystems adjacent to the project site. The turbidity curtains will remain in place after construction until which point it is observed that the turbidity within the curtained area has returned to levels similar to ambient conditions observed outside the construction area.

7.1.1.2 Turbidity Control Plan

The construction of the marina basin and entrance channel will require excavation (land-based) and dredging (barge-based). The SWP Marina Construction Management Plan in Section 7.1.1 describes this process in detail. Turbidity is expected due to fine-grain particles becoming suspended in the water column during construction activities. These suspended particles can negatively affect water clarity, as well as the ability of marine flora and fauna to respire. These adverse effects are proposed to be reduced through containment and monitoring.

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Containment

Turbidity containment will be performed in different manners for the marina basin and flushing channel, and the entrance channel and flushing channel entrance.

Marina Basin and Flushing Channel

Turbidity within the marina basin will be controlled via 2 methods:

1. The first method is by dewatering the specific working zones - Dewatering increases work rate by creating a dry working environment. This allows for standard equipment and procedures to be used. Working in a dry environment also reduces turbidity as there is no water column in which fine-grain particles can become suspended. The specific dewatering methodology will be provided by the marina contractor.

2. The second method of turbidity control is through excavation staging - Excavation will commence farthest away from the respective openings to the sea, and a strip of land will be left in place to prevent the connection of the inland excavations to the sea (Primary Excavation Zone as illustrated in Figure 8). As mentioned above, the interior basin and flushing channel areas will be dewatered to allow for excavation. Upon completion of interior excavation works, dewatering will cease, and the interior basin and flushing channel areas will be allowed to flood. This flooding will suspend fine-grained particles, i.e. create turbidity. The strips of land left in place between the completed basin and flushing channel excavations and the sea will prevent turbidity from entering the marine environment. The turbidity within the flooded areas will be allowed to subside before removing the remaining strips of land, connecting the interior basin and flushing channel with the sea.

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FIGURE 8. CONCEPTUAL BASIN EXCAVATION PHASING PLAN

Entrance Channel and Flushing Channel Entrance

Turbidity due to excavation/dredging works to create the entrance channel and at the entrance to the flushing channel will be controlled using turbidity curtains.

A turbidity curtain consists of a floating boom, which is held in position using anchors/ballasts and tethers. A flexible skirt or curtain is attached to the underside of the floating boom. A ballast chain at the bottom of the skirt keeps it vertical in the water column. Note that the skirt length is selected so as not to drag on seafloor, potentially damaging benthic habitat.

The turbidity curtain acts to contain suspended sediments, allowing them to lose energy within the containment zone, and fall out of suspension. Due to the expected currents and waves at the site, Type III silt curtains with filter cloth skirts are required. The filter cloth is semi-permeable to reduce the loads on the curtains and anchor system, while containing suspended sediments.

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A typical turbidity curtain can be seen in Figure 9 below. A typical containment orientation/configuration can be seen in Figure 10 below.

FIGURE 9. A TYPICAL TURBIDITY CURTAIN.

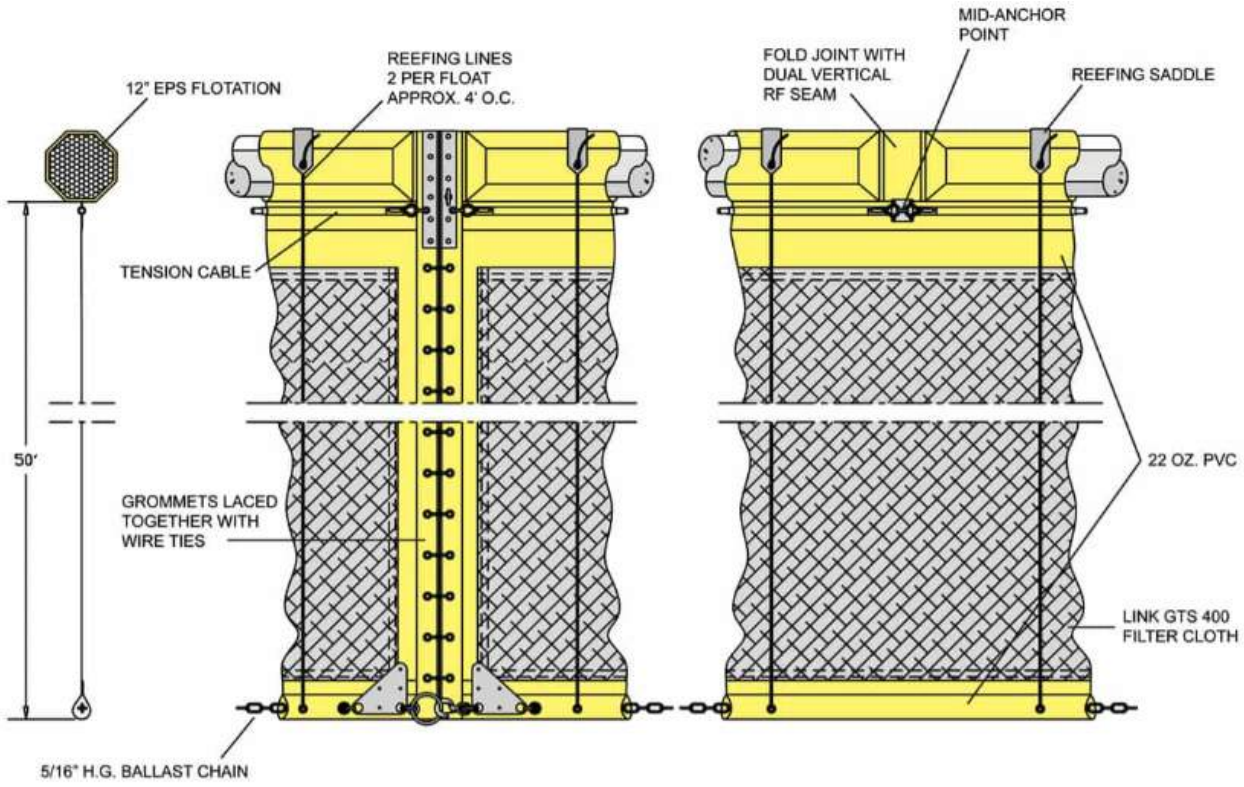
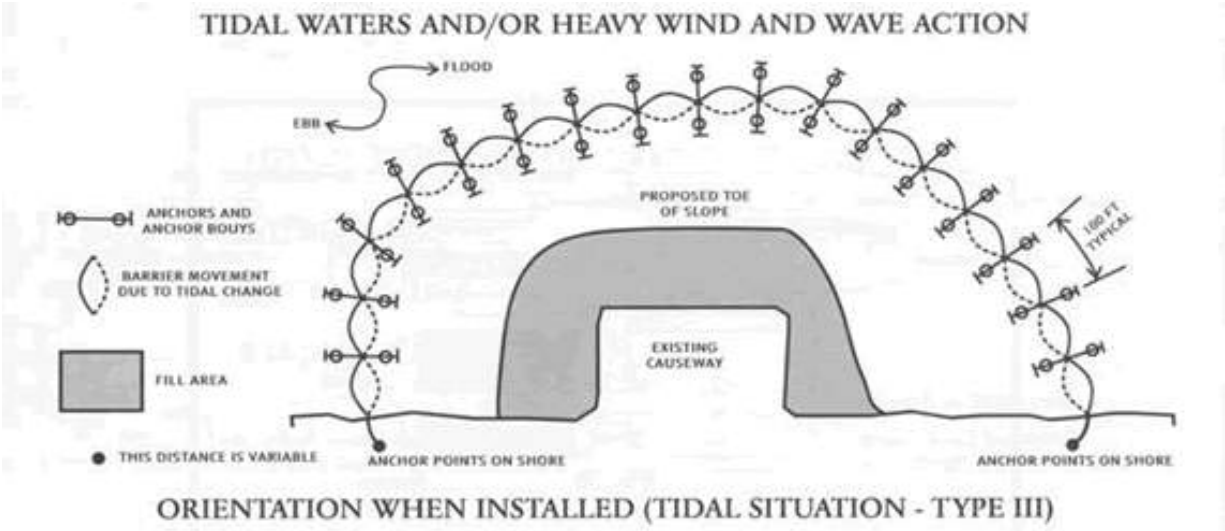


FIGURE 10. A TYPICAL CONTAINMENT ORIENTATION/CONFIGURATION.



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Monitoring

In addition to turbidity containment, monitoring will also take place to ensure that unacceptable levels of turbidity are not realized outside of the works zones. If acceptable levels are exceeded, works must cease, and the source of turbidity must be identified and rectified.

The maximum acceptable turbidity level is 29 NTUs above the baseline measurement.
Turbidity measurements shall be conducted for the duration of coastal construction operations according to the following specifications:

- Initially, turbidity samples shall be taken three times daily, for the first six days. Thereafter, the turbidity monitoring will be two times a day, four days a week.
- The turbidity samples will be analyzed in the field using a portable turbidimeter, calibrated daily. This instrument is used in the field to analyze water samples on site for turbidity with reliable accuracy and must meet GLI Method 2 or equivalent standards. Turbidity levels will be recorded in NTUs.
- Sample locations:
  Background – upcurrent of the construction activity (at least 300 ft. upcurrent of the work area) AND outside of any visible turbidity plume where applicable.
  Compliance – within the densest portion of any visible turbidity plume where applicable.
  Stations chosen for monitoring shall be marked by the EM for future use if applicable.
- Two samples shall be obtained at both the background and compliance stations. The average of the two readings will be used for comparison.
- Turbidity in NTUs shall be measured at least two times daily, at both the background (control) and compliance (work) areas.
- Compliance and background samples shall be collected 2ft below the water surface at each location.
- Samples shall be analyzed within 30 minutes of collection.
- A log shall be kept including date, time, and location of sampling, coordinates or a map/sketch of the location, water depth, sample depth, turbidity value, weather, wind, currents, and approximate tide. The monitoring schedule is shown in the following table.

TABLE 2. TURBIDITY MONITORING SCHEDULE.

2 Weeks Before Construction	Check background turbidity levels
1 Week Before Construction	Re-check background turbidity levels
1 Week Before Construction	Submit background turbidity results to DEPP
During Construction (Twice Daily During Operation Hours)	Conduct turbidity testing twice daily to confirm levels are less than 29 NTUs above background levels

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During Construction (Daily)	Inspect turbidity curtains, moorings, etc.
During Construction (Weekly)	Submit weekly turbidity monitoring reports to DEPP.
Post Construction (Weekly for 1 Month)	Continue turbidity testing once a week for 1 month after completion of construction activities.

7.2. CULTURAL RESOURCE MANAGEMENT

No negative impacts to cultural resources are expected during construction and operations of the proposed project..

7.3. BIOLOGICAL RESOURCE MANAGEMENT

7.3.1 TERRESTRIAL FLORA

Preclearance surveys will allow for identification and quantification of protected trees to be impacted during land clearing activities on the site. Protected tree data obtained from preclearance surveys will be submitted to The Forestry Unit (TFU) as a component of the Protected Tree Removal Permit application. Mitigation strategies and costs are to be outlined in the permit application for review and approval by TFU.

Mitigation strategies for the removal of protected trees will include establishing a native plant nursery at LH, transplanting/relocation of protected flora, collection of propagative material for ex-situ conservation, the conversion of 180 acres to land conservation area as discussed in Section 6.1.1 and establishing an invasive species management program.

Plant Nursery

The use of native plant material in development projects provides numerous benefits to both the project and the environment. Sourcing viable native material is crucial to success of native tree planting programs. Maintenance of the genetic resources of the local plant population relies on the use of plant material sourced from the local population impacted. Achieving this environmental goal will require transplanting and relocating viable plants to the nursery until replanting exercises commence.

Native species of Palms, Bromeliads, Orchids, and other epiphytes have high transplant survival rates when handled properly. Wild sourced seeds from the Project site and surrounding areas of South Abaco should be utilized as propagative material for establishment of native plant stocks. Plant nursery staff will be trained to identify protected species, how to properly collect propagative material, and cultivate each species in the native plant nursery. To maximize effectiveness of this

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mitigation strategy, the native plant nursery is to be established prior to major land clearing activity on the SWP property. Plants harvested prior to the land clearing exercise on the site will be potted and cultivated until they can be transplanted to the site. In the event that more plants are cultivated in the botanical nursery than can be incorporated in the landscaping design of the site, the Developer proposes two options. The first is the native plants will be distributed to local establishments, and the second is the native plants will be made available for sale and the funds received from the purchase of nursery plants will be donated to local non-government organizations (NGOs) to assist with Abaco National Park conservation efforts.

The removal of the broadleaf forest during the marina creation will introduce a marine habitat in an area previously utilized by terrestrial fauna and flora. Efforts will be made to maintain some native vegetation where practicable in areas of the property surrounding the marina. Plants grown in the botanical nursery will be used for landscaping suitable areas of the Project site.

Stony Coral Tissue Loss Disease Mitigation

Although, not confirmed to be present within the Abaco marine environment, SCTLD has been identified in Grand Bahama within the Lucayan National Park and Peterson Cay National Park. The importance of research and identifying mitigation efforts to combat this coral disease is focused on preventing its spread throughout The Bahamas. Funded by the Developer, The Perry Institute for Marine Science will build a bio-secure coral rescues facility in South Abaco to preserves 15 coral species locally. The facility will be constructed to accommodate a minimum of 20 colonies for each of the high priority coral species. The facility will also serve as an education and training center for Bahamian students to build capacity for coral preservation, as well as a visitor center to highlight ongoing works. The long-term goal of the facility is to become an important asset for coral conservation for the country (see Exhibit E-1 for more details).

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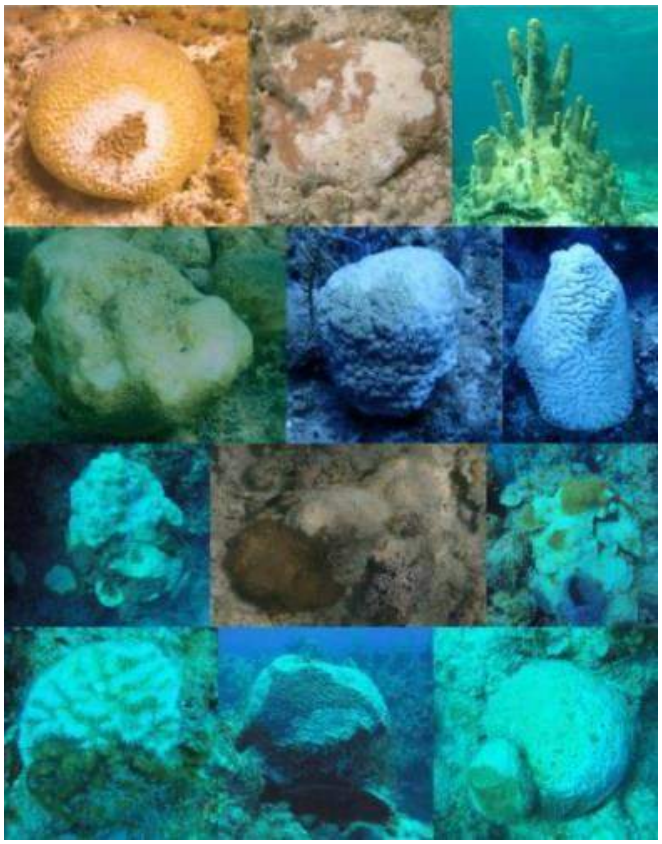
FIGURE 11. SCTLD-INFECTED GRAND BAHAMA CORALS.[6]



[6] https://bnt.bs/news/stony-coral-tissue-loss-disease-sctld-an-environmental-epidemic-ravaging-grand-bahama-marine-protected-areas/

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TABLE 3. EXAMPLE OF DATA COLLECTION SHEET (AGGRA SCTLD- BLEACHING SURVEY DATASHEET)[7]

AGRRA SCTLD-Bleaching Survey Datasheet

Surveyor Name:	Date: Time:	Latitude: (or Location): Longitude:	Reef Name *(if known)*:
Detailed Surveys: AGRRA Site Code if any:	*Detailed Surveys:* MPA Status: Yes? No? Unsure?	*Detailed Surveys:* If a Restoration Site: Outplant? Nursery?	Reef Type: Backreef? Reef Crest? Patch Reef? Fore Reef? Other *(Describe)*:
Average Depth: m? or ft?	Bottom Temp.: °C or °F?	Site Comments *(e.g.*, major organisms):	

Tally all corals (including clumps) of species known to be susceptible to SCTLD.

Species	# Healthy Corals	# SCTLD Corals	# Corals with SCTLD &/or Fully Bleached (BL), Partially Bleached (PB), or Pale (P)			# Corals Fully Bleached (BL), Partially Bleached (PB), or Pale (P)			# Corals with other Diseases(s)	# Recently Fully Dead Corals	Notes; any Photos?
			BL	PB	P	BL	PB	P			
OFTEN SEEN *Colpophyllia natans:* CNAT (Boulder Brain)***											
Dendrogyra cylindrus: DCYL (Pillar)***											
Dichocoenia stokesii: DSTO (Elliptical Star)***											
Diploria labyrinthiformis: DLAB (Grooved Brain)***											
Eusmilia fastigiata: EFAS (Smooth Flower)***											
Meandrina jacksoni: MJAC (White-valley Maze)***											
Meandrina meandrites: MMEA (Maze)***											
Montastraea cavernosa: MCAV (Great Star)**											
Orbicella annularis: OANN (Lobed Star)**											
Orbicella faveolata: OFAV (Mountainous Star)**											
Orbicella franksi: OFRA (Boulder Star)**											
Pseudodiploria clivosa: PCLI (Knobby Brain)***											
Pseudodiploria strigosa: PSTR (Symmetrical Brain)***											
Siderastrea siderea: SSID (Massive Starlet)**											
Stephanocoenia intersepta: SINT (Blushing Star)**											
SEEN LESS OFTEN *Agaricia agaricites:* AAGA (Lettuce)*											
Agaricia lamarcki: ALAM (Whitestar Sheet)											
Agaricia tenuifolia: ATEN (Thin Leaf Lettuce)											
Space for other species, e.g., *Porites astreoides?:* PAST (Mustard Hill)?											

Describe the survey protocol used:	*Detailed Surveys:* What % of all corals at the site have each kind of partial mortality? New? Trans? Old?	*Detailed Surveys:* How were the data collected? Qualitatively? Quantitatively?	Other Comments

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* numbers represent **usual** order of contracting SCTLD, from first (***) to last (*), if known.

Revision 2021-02-16

[7] https://www.agrra.org/wp-content/uploads/2021/02/COMBINED-AGRRA-SCTLD-Bleaching-Survey-Datasheet.pdf

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Crossing Rocks Mitigation

To offset the environmental impacts associated with the development of the SWP marina, a proposed mitigation plan to restore the existing wetland within the Crossing Rocks community was developed. This wetland ecosystem is located approximately 18.93 miles northeast of the SWP site.

The approximately 0.12-acre wetland habitat located within the marina footprint at SWP will be directly impacted during creation of the marina. Mitigation efforts for this impact includes the restoration of an extensive ~12 acre freshwater habitat within the Crossing Rocks community.

The existing freshwater wetland within Crossing Rocks is occupied by invasive Cattails (*Typha domingensis*). Anecdotal evidence indicates that prior to the growth of this invasive species, this area was populated with various bird species. Restoration efforts of this habitat would provide an essential habitat for nearby and migratory avian species known to inhabit South Abaco

FIGURE 12. LOCATION OF THE EXISTING WETLAND WITHIN THE CROSSING ROCKS COMMUNITY SEPARATED BY ROAD.

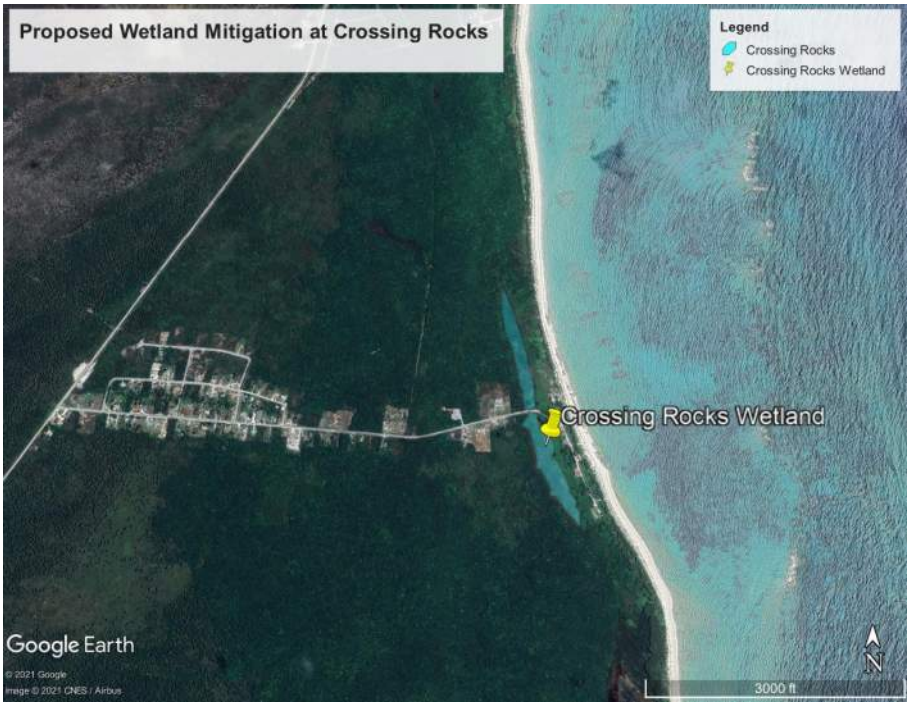

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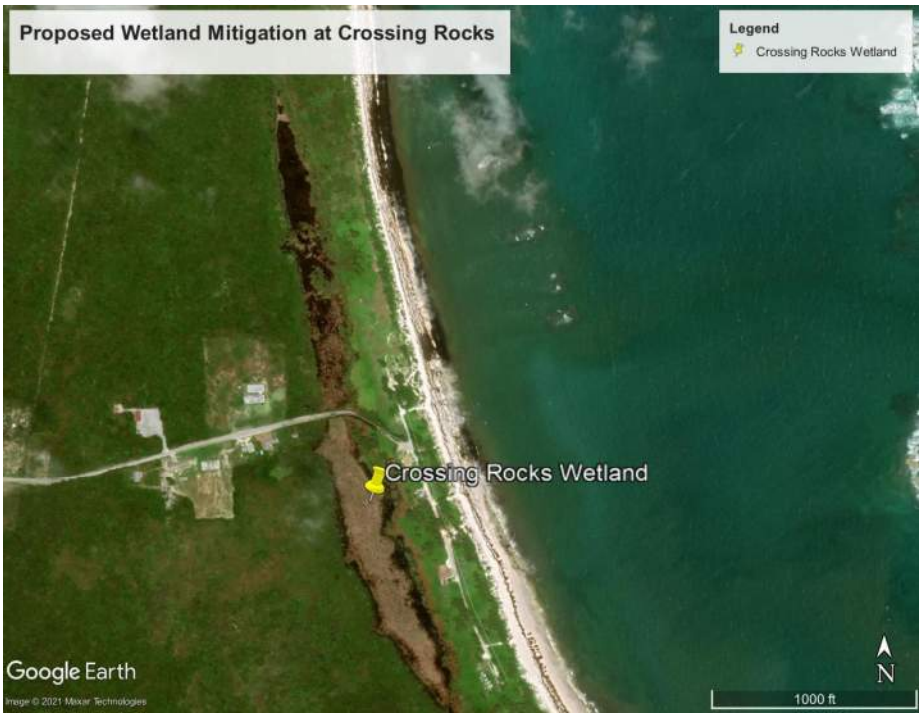
FIGURE 13. RECENT GOOGLE IMAGE (2021) OF THE WETLAND OCCUPIED BY INVASIVE CATTAILS (*TYPHA DOMINGENSIS*).



The Crossing Rocks Wetland Management Plan consists of:

- The Environmental Manager will facilitate the Crossing Rocks Wetland Management.
- TFU will be consulted as it relates to the wetland plan, as there may be protected species present within this ecosystem.
- Assess the area for possible anthropogenic hindrances such as easy access to the site and pollution.
- Assess the area and record all observed species(flora and fauna) inclusive of avian species.
- Conduct hydrological studies which include water quality testing (determine if the area has suitable water quality parameters to support the intended restoration efforts).
- Test soil sediment to determine if there are any pollutants present.
- Assess the depth of the wetland to prevent unexpected injury of persons working within the area.
- The invasive Cattail *(Typha domingensis)* species will be removed physically and void of chemicals (Herbicides).
- Cattails can be mechanically or physically removed by digging up the rhizomes and removing them from the wetland area. Removal tools consists of land based or

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aquatic machinery, as well as hand held tools. These include an excavator, aquatic harvester, shovel, or manual removal (see Figure 14 below).

- Persons involved in the restoration efforts must wear PPE which consists of waders, safety googles, and pond gloves. If operating heavy machinery, PPE gear consists of safety vest, hard hat, and safety glasses (see Figure 16 below).

FIGURE 14. EXAMPLES OF AQUATIC HARVESTERS.

FIGURE 15. EXAMPLE OF AN UPLAND EXCAVATOR FOR CATTAIL REMOVAL WITH AN ILLUSTRATION OF PROPER INVASIVE REMOVAL STRATEGY.

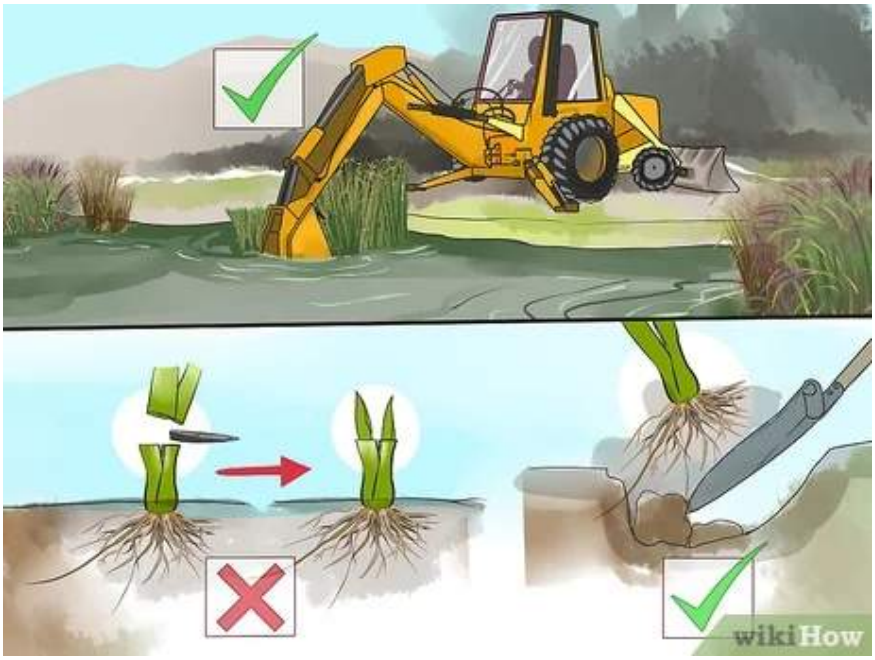

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FIGURE 16. PPE ASSOCIATED WITH WETLAND RESTORATION EFFORTS (LEFT: EYE GOGGLES, MIDDLE: POND GLOVES , RIGHT: WADERS).

7.3.2 TERRESTRIAL FAUNA

Mitigation practices would involve training workers to identify, capture, and relocate wildlife to the extent practicable to comparable habitat well outside of the construction zone.

Noise Management Relative to Avian Species

The sound of heavy machinery in an important bird area will disrupt natural bird behavior. The most up-to-date available studies on Bahama Parrot nesting sites in South Abaco have indicated that the vast majority of nests were located north of the Lantern Head and SW Point properties, with little to no nesting reported in the vicinity of the sites. The locations of recorded nests suggest a lower likelihood of encountering active nests on the two properties during construction activities.

Research also shows that Bahama Parrots nest in close proximity to logging roads in Abaco National Park and the main logging road heading to the LH site.

To minimize major disturbance, it is recommended:

- Developer will aim to commence land clearing activities for each separate activity of the Project outside of the avian breeding season to avoid major disturbances in their behavior and breeding activities. However, due to the extent of the breeding season (1st October to 31st March) it is recognized that that may not be practicable. Therefore, breeding bird surveys will take place during construction, to inform construction workers on how works can best be achieved while aiming to minimize disturbance in avian ecology.
- Where possible, activity will be done outside of high bird activity (6-10 am).
- Assessments in and around the project site, including Abaco National Park needs to be conducted during the duration of the project to monitor the effects vehicular traffic, disturbance and noise will have on pineland and coppice species. Priority should be placed on conducting wildlife assessments in Abaco National Park to monitor endemic and specialty species, especially along the road from Queen's Highway. Developer is committed

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to the use of electrical vehicles in the vast majority of vehicles owned and operated by the Project.

7.3.3 Marine Resources

Biological marine resources discussed in the EIA are fishery resources (Nassau Grouper, *Epinephelus striatus,* and Bonefish, *Albula vulpes*), various marine mammals, turtles, and corals inclusive of an endangered species (Elkhorn coral, *Acropora palmata*). The Project features identified in the South West Point Proposed Site Plan in Section 3.3 that are likely to impact these resources are as follows.

1. Marina Entry Canal
2. Breakwaters

Fishery Resources (Nassau Grouper & Bonefish)

While the spawning aggregations were identified for both of these species by various research groups near the Project site, the development of the South West Point marina will not have a direct impact on these species. In order to reduce the chances of impacting the species, major dredging activities will be concentrated between the months of May through September. The Nassau Grouper closed season, which coincides with its spawning season, is November through February. The Bonefish spawning season in October through April.

During operation increased fishing pressure can be expected. To mitigate this impact, the Developer will support education and enforcement initiatives of the Department of Marine Resources (DMR) that will help the DMR manage the fishing pressure in the area. Specific initiatives that will be supported will be discussed in meetings with the Developer and DMR.

Marine Mammals

During dredging of the entry canal and construction of the breakwaters, marine mammal spotters will be positioned on land near the dredging location to monitor marine mammal activity and reduce potential impacts. If an animal is sighted works shall cease immediately, The EM will be notified, and works will remain suspended until the animals have left the area of impact at which time works can recommence. If at any point a marine animal is found to be entangled or otherwise impaired by the presence of the turbidity curtain, all activities will cease immediately, and the EM will be notified. The EM will contact DEPP and Department of Marine Resources (DMR) immediately and log the incident into the BESTPROTECT242 APP. The EM will assess the scenario and determine the best course of action to assist the animal based on consultation with DMR and DEPP. Efforts to assist the animal may involve contractors and resources present on site. Once the animal has been released, the turbidity curtain will be inspected for damage, and repairs or replacement made prior to recommencement of works. The EM will provide a detailed incident report to DEPP and DMR within 48 hours of the incident outlining the details and actions taken to address the matter.

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The possible presence of marine organisms in work zones will be included in the site induction. Protocol for marine organism sightings will be administered as a toolbox talk prior to commencement of dredging works. Signage will be installed indicating the possible presence of marine organisms in the work zone.

During operation, the impact to marine mammals will be related to vessel strikes. To help prevent vessel strikes, the Developer will incorporate signage in the design of the marina informing mariners of the presence of marine mammals. No wake zones will be established to help reduce the speed of marine traffic near to and within the marina. The Developer will support the DMR education initiatives to encourage responsible boating near the marina.

Noise Quality Relative to Marine Mammals

Marine mammals rely heavily on acoustics to hunt, communicate, and navigate. For the purpose of this EMP, marine mammal noise management is focused on odontocetes (toothed whales, dolphins, and porpoises) and Mysticetes (baleen whales such as the blue whale and the humpback whale). Noise management associated with this development will focus on the prevention of permanent threshold shifts (PTS) that may cause auditory injury and acoustic masking which can alter the duration, frequency, or sound level of their acoustic signals. The figure on the following page illustrates the noise levels and frequencies of various marine mammals and marine organisms. Marine mammal noise level sounds vary from approximately 50 db. - 200+ db. For example, Sperm Whale clicks may reach an estimated 230 db. and a Blue Whale's call may reach and estimated 188 db.

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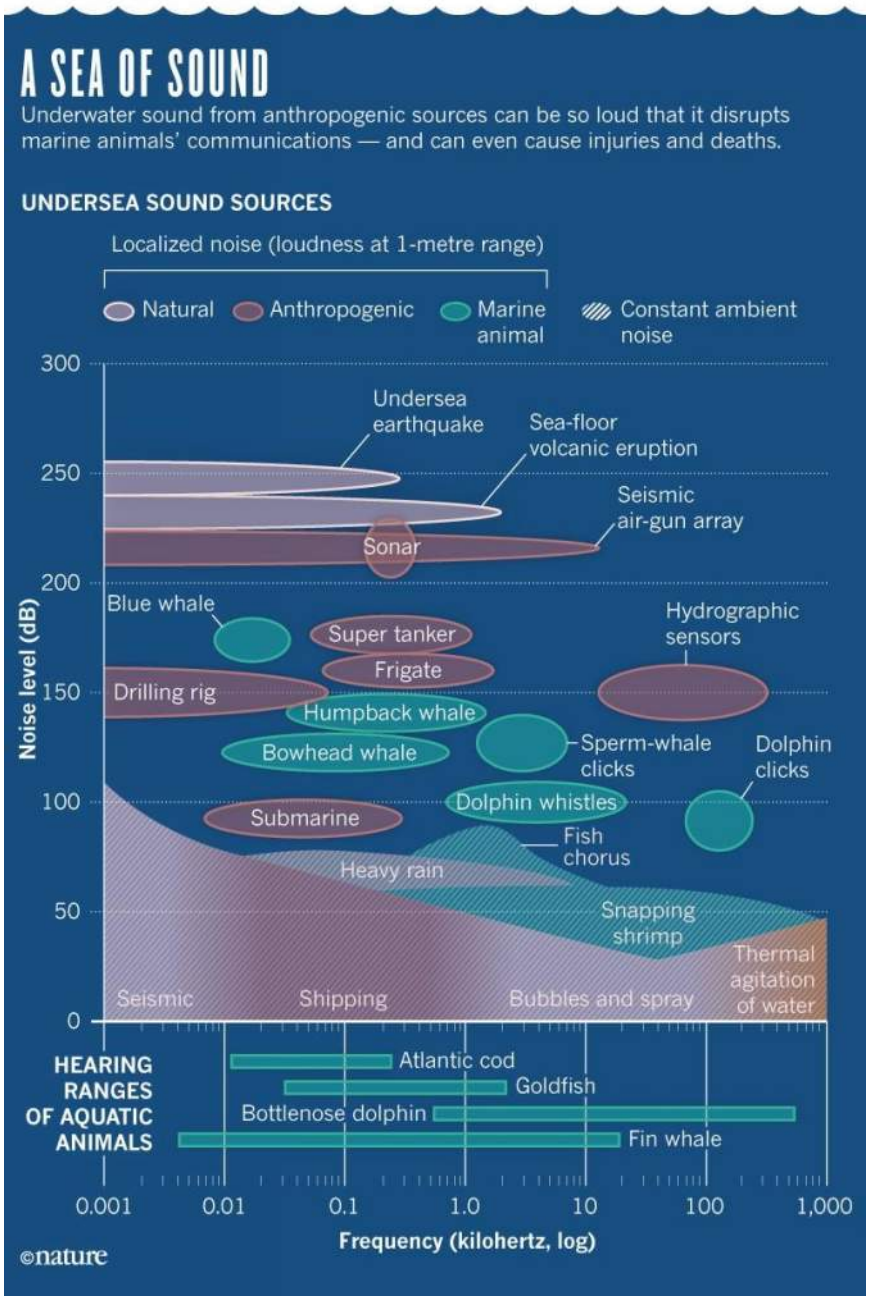
FIGURE 17. UNDERSEA SOUND SOURCES WHICH ILLUSTRATE NOISE LEVELS AND FREQUENCY (NATURE.COM[8]).



The Marine Mammal Noise Management Plan for the Project will consist of the following:

1. Identify various (at least 3) monitoring locations within a 10-mile radius of the dredging site. Store these locations with GPS.

[8] https://www.nature.com/articles/d41586-019-01098-6

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2. These locations are to be visited every day for the duration of the dredge activities for approximately 2 ½ hours each (if dredging consists of 8 hours).
3. Deploy a hydrophone array (preferably a model used for cetacean research) that is capable of monitoring loud noise and ambient sounds. This device should be in use before arrival at the first GPS location to detect noise levels prior to marker location to detect any nearby marine mammals.
4. A marine mammal spotter should be present.
5. Noise levels should be recorded. This includes dredge, ambient, marine mammal, and marine traffic noise.
6. If noise levels exceed 150 db. at a frequency of 10khz., the dredge team must be contacted via radio to stop work and reduce sound frequency.
7. Record marine mammals spotted or heard via hydrophone and record the location of their depth.

If marine mammals are located outside of the 10-mile radius, dredge activities will have less effect on their auditory sensors, communication, foraging and other behavioral characteristics. Therefore, causing fewer negative effects on the animal, which should allow for dredging activities to continue until otherwise informed by the environmental monitor. For example, Figure 18 is a model that illustrates the source of noise in relation to the probable locations of the marine animals, the amount of sound energy to which the animals might be exposed can be estimated. Due to the current shipping route within the nearby Northwest Providence Channel, marine traffic noise should be recorded for comparative data analysis between dredge activity and marine traffic noise pollution.

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FIGURE 18. MODEL ILLUSTRATES THE SOURCE OF NOISE IN RELATION TO THE MARINE ANIMAL'S LOCATION, THE AMOUNT OF SOUND ENERGY TO WHICH THE ANIMALS MIGHT BE EXPOSED [9]

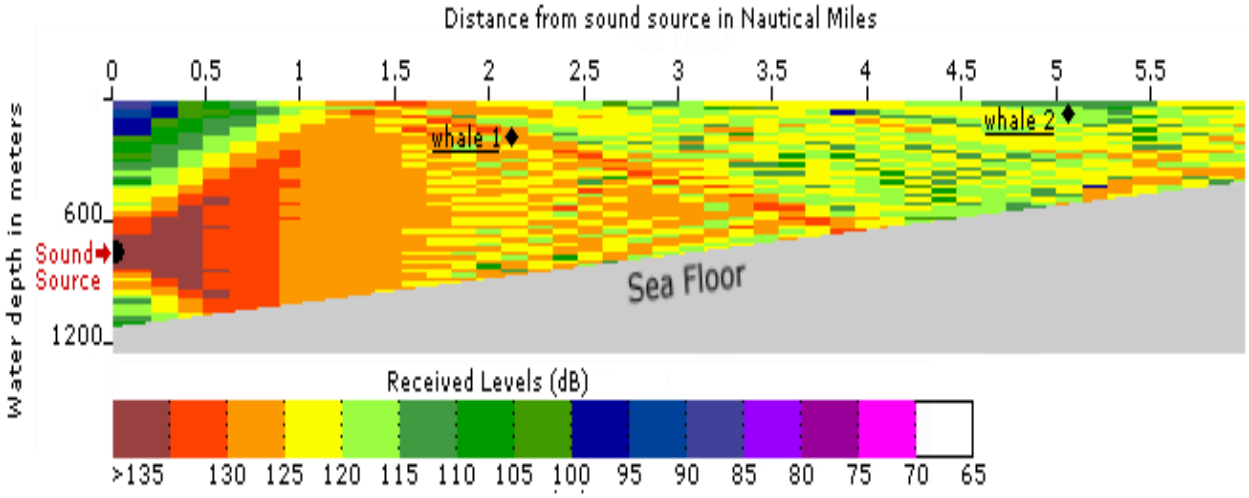
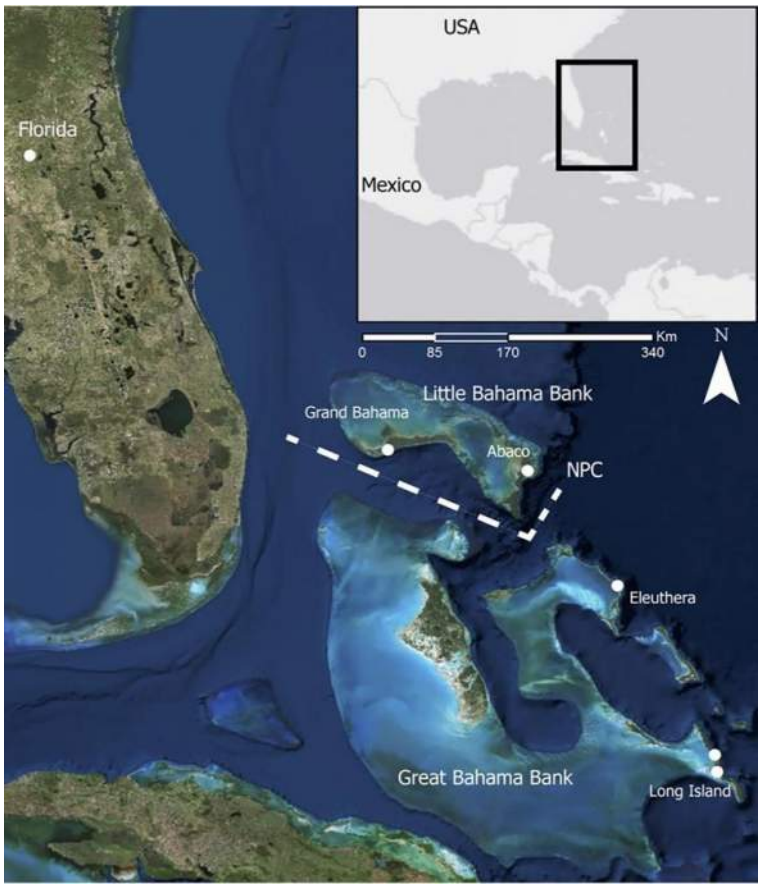


FIGURE 19. MAP DEPICTING THE NPC IN RELATION TO THE AREA OF MARINA CREATION FOR SWP[10].



[9] https://dosits.org/animals/effects-of-sound/determine-if-a-sound-affects-a-marine-animal/

[10] https://phys.org/news/2017-08-ocean-channel-bahamas-genetic-brazilian.html

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FIGURE 20. EXAMPLE OF A MARINE MAMMAL NOISE MANAGEMENT FORM.

Marine Mammal Noise Management Form					
Date:		Time:		GPS Location	
Monitor:					
Weather Conditions:					
Marine Mammal Sound Detected		Dredge Noise	Depth	Distance from Dredge Site	

Turtles

There are no sandy beaches within the Project area of impact, which means the Project will not impact nesting beaches. To prevent impacting turtles swimming near the Project site, during dredging and other construction activities in proximity to the coast, the marine mammal spotter will also monitor for turtles in the area. The observers will scan the waters for before and during dredging activities. If turtles enter or are observed within the area of impact before dredging begins, the observer(s) will immediately notify the on-site supervisor or inspector and require that dredging either not be initiated or temporarily cease until the animals have moved outside of the area of impact.

Corals [Patch reef system and endangered coral]

Prior to dredging corals will be relocated from the area of impact by the Perry Institute for Marine Science (PIMS) following the coral relocation plan developed by Craig Dahlgren, PhD, the lead scientist for the coral relocation team.

Coral Relocation Plan
Perry Institute for Marine Science (PIMS)"

Overview

Corals are critical components to tropical marine ecosystems. As ecosystem engineers, they build reef structure that supports high biodiversity and provides invaluable ecosystem services. Nevertheless, corals are among the most endangered species in tropical marine ecosystems, suffering from various natural and human threats that not only jeopardize coral species, but threaten the structure, function and integrity of an entire ecosystem and puts species that depend on this ecosystem at risk. As such, there is a need to reduce loss of corals in areas impacted by coastal development and other human activities. Here we describe a specific plan of action and

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timeline for removing corals from the shoreline and nearshore area adjacent to the proposed marine entrance prior to construction activities and relocating them to an area where they will have a chance to grow and survive. Based on a preliminary look at the area it is estimated that up to 200 scleractinian reef building corals will be moved depending on the size of the buffer zone around the construction site for removing corals and which species are required to be moved. Of primary importance to the area is the critically endangered *Acropora palmata* (10 colonies depending on whether a buffer zone around construction activities is required and how big it is) and other species observed within 60m of the proposed marina entrance included:

- *Pseudiploria clivosa*
- *P. strigosa*
- *Montastraea cavernosa*
- *Meandrina meandrites*
- *Orbicella faveolate*
- *O. annularis*
- *Agaricia agaricites*
- *Sidersatrea sidereal*
- *Madracis sp.*
- *Dichocoenis stokesi*
- *Porites porites*
- *Favia fragum*

They range in size from <10 cm to 1.5 m. In addition, fire corals, soft corals, sponges were observed, as were important mobile invertebrates like the sea urchin *Diadema antillarum*.

Coral Removal and Translocation

All reef-building stony corals larger than 10 cm will be removed from the seafloor and shoreline (diagram outlining exact area to be provided by developer designee based on EIA and government requirements). Removal will be conducted by up to 5 PIMS staff members.

Corals will be removed from natural rock surfaces using hand tools (e.g., hammer and chisel) and/or underwater power tools (e.g., angle grinder, hammer drill) to remove as much of the colony as possible. Care will be taken to keep colonies intact or fragmented into as few pieces as possible. Once dislodged from the substrate, colonies will be held underwater at the removal site until they are ready to be translocated. At that time, they will be brought to the surface carefully, minimizing contact with living tissue and brought on board a boat where they will be immediately placed in holding tanks with seawater from the collection site. For colonies too large to place in holding tanks, exposed areas will be covered with a cloth soaked in seawater and kept wet at all times.

The proposed site for translocation is 5-6 nautical miles to the northwest in Cross Harbour National Park, with the exact location to be selected based on:

1) environmental requirements of the coral,

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2) absence of anthropogenic stressors
3) condition of corals at outplant site.

For this last point, we are particularly concerned with disease transmission to and/or from translocated corals, particularly Stony Coral Tissue Loss disease, which as of April 2021 was not detected in the area. Final site selection will be confirmed with DEPP.

Re-attaching corals will consist of removing vegetation (i.e., algae) and sediment from hard ground at the translocation site to allow for the outplanting of corals removed from the construction site. Corals will be outplanted using Portland Type 2 cement and/or 2-part underwater epoxy, depending on the size of the coral. To minimize stress to corals, corals will be removed and outplanted daily without the need for holding them extensively. Corals will be outplanted to several distinct plots to facilitate monitoring. Following translocation, Photographs will be taken of outplanted corals to determine number and species of corals outplanted as well as to provide a baseline for monitoring the success of the translocation efforts by fate tracking individual corals.

Timeline

Coral removal and translocation will be conducted when water temperatures are below 30°C and expected to remain that way for a minimum of 2 weeks. This is to minimize stress to corals and increasing their chance of survival. Thus, we expect the work to take place no sooner than October 2022. It is expected that the work will be completed over a 5-day window.

Monitoring & Reporting

Coral monitoring of relocated area will occur at the time intervals – 1 month, 3 months, 6 months, 9 months, and 12 months. From years 2-3 post-translocation monitoring will be conducted semi-annually. Assessment will include – health observation of reattached coral colonies, colonization of relocation site, number of surviving colonies, difference in live tissue cover, rate of disease, and any bleaching, and boring sponges or other invading organisms. All coral monitoring will use photogrammetry to track individual coral colonies within outplant plots and to maintain a permanent record of those corals. If algae or other fouling organisms (e.g., tunicates, sponges and hyrdoids) are found invading the coral, these organisms will be removed. Wire brushes and hand tools will be used to clean areas surrounding the corals so that algae do not outcompete them. A Coral Relocation Monitoring Report will be submitted to DEPP upon completion of the translocation exercise. Reports will also be submitted to DEPP after each monitoring exercise."

7.4 AIR QUALITY MANAGEMENT

It is likely that the ambient air quality of the site will be impacted by increased dust particles in the air due to the use of motor vehicles, heavy equipment during land clearing, and construction of the Project. In addition to dust, the use of machinery will generate fumes and some fine particles

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(particulate matter). The vast majority of construction activities will take place at such a distance from local communities as to ensure no effect on them.

Construction activity air quality control measures include:

- Dust suppression - A water truck will frequent the site as needed to lightly spray the ground and stockpiles to prevent sand or dust transport by wind.

Operation air quality control measures include:

- Regularly scheduled equipment maintenance for all facilities and machinery at to prevent fuel emissions (Example: generators, HVAC system).
- Regularly scheduled maintenance of on-site vehicles.

7.5 NOISE QUALITY MANAGEMENT

During construction, noise pollution can be managed by ensuring that construction vehicles and machinery are properly maintained prior to the commencement of construction works. Routine maintenance of machinery and vehicles should prevent excessive noise on-site. The Environmental Monitor will measure the noise level to determine when construction staff should expand their Personal Protective Equipment (PPE) to include earmuffs. A sound meter will be used to measure the noise on site.

During operation, noise quality management should consist of on-site vehicle maintenance to prevent unnecessary noise pollution within the area.

7.6 WATER QUALITY MANAGEMENT

7.6.1 Preliminary Design Plan for Water and Wastewater

A. INTRODUCTION

LightPoint Engineering, LLC (LPE) has prepared this preliminary design for the water and wastewater systems in the SWP development for the purposes of including it in the overall Environmental Management Plan (EMP) for Southwest Point development (SWP) on behalf of Developer. This design has gone through initial review by Hydrologist John Bowleg, PE. CV for LPE in Exhibit B. This document will better refine the water service for SWP. The water service for the development will consist of a potable water system, and a non-potable grey water system for irrigation. This report will examine sources and treatment for this water infrastructure. Furthermore, the document was reviewed by John Bowleg, Civil and Environmental Engineer (CV included in Appendix B).

SWP is a proposed 500-acre (+/-) development on the southern portion of the island of Great Abaco in the Bahamas. SWP at full development, will consist of a marina for approximately

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136 yachts, high end residential homes, condos, hotel(s) and various commercial and supporting facilities.

B. POPULATION AND DEMAND PROJECTIONS

According to information received from the developer, the number of people in SWP during anaverage day will consists of:

Guests/Residents	1,000
Employees	600
Yacht Crews	500
Total	2,100

During periods of time when SWP is full, the maximum number of people in SWP will consist of:

Homeowners	400
Lifestyle Village/Condo	590
Yacht Guests	1150
Hotel	360
Yacht Crews	750
Employees	1000
Total	4,250

LPE typically sees a potable water demand of 250 gallons per day (gpd) for a 3,000 square foot housewith an average of 3.5 people per house. Based on this, the per capita potable water demand was calculated to be 71.4 gpd/person. This number does not include irrigation demands as those will be met from sources that are not potable. Based on the above population projections for SWP, the average daily demand would be 150,000 gpd, and the demand when SWP is full will be 303,450 gpd. LPE will design the water production infrastructure to provide 360,000 gpd during a 24-hour period. The peak hourly demand was calculated to be 27,739 gallons per hour (gph) or 463 gallons per minute (gpm). The development will use water saving devices in installation of water appliances in the commercial buildings and will encourage residential owners to do the same in their own residences.

C. WATER SOURCES

SWP will provide potable and non-potable water to their residents and guests. The potable water willprimarily be sourced from surface water impoundments, with a back-up water well field only for extreme drought conditions. This water will be treated to United States drinking water standards and will be used exclusively for human consumption. The source of the non-potable water will be the grey water affluent from the wastewater treatment plant (WWTP) and supplemented (if needed) by the surface water impoundment. This water will not be treated for human consumption and will be used strictly for irrigation.

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D. POTABLE WATER SOURCES

The Developer is planning to use rainwater harvesting for the primary source of potable water for the residents and guests of SWP. Based on current climatological data, SWP receives, on average, approximately 48 inches of rain per year. Approximately 80% of the normal rainfall, or 37.8-inches, occur during the months of May to October. The remainder of the year sees slightly cooler temperatures and significantly reduced rainfall.

The primary surface water impoundment will be located on the eastern side of the development, in the proposed Lifestyle Village. The proposed lake will have a surface area of 24-acres and will be approximately 10 feet deep. The top 4 feet of lake will be used for water storage prior to treatment and distribution into the potable water system. These 4 feet will provide an estimated storage volume of 27 million gallons for potable water, plus an additional 3 acre-feet of volume that will be used for irrigation purposes as described later in this report.

LPE estimates that stormwater runoff from approximately 100 acres of the proposed SWP development will be able to flow into the 24-acre lake. During the dry season, the amount of runoff to the lake is estimated to be as low as 2.1 million gallons per month and as much as 19 million gallons per month during the peak of the wet season. LPE based the runoff volumes on 80% of the average rainfall throughout the year, and included water lost to permeable surfaces (soils) and evaporation. Assuming the lake is full at the beginning of the dry season (November), the water level should not drop below the 4-foot mark. During the wet months, the stormwater will bring the lake back to full pool elevation. Any excess stormwater will be passed out of the lake, through a series of pipes, and into the ocean. No water will pass from the lake into the ocean, until the lake is back to the full pool.

For a second surface water impoundment, as a back-up supply source in case of significantly lower annual rainfall the Developer will construct a 30-acre surface water impoundment on a 650-acre tract owned by the development at Lantern head, located approximately 2.5 miles north of SWP. As an additional, last resort, type redundancy to the surface water system, the Developer will also construct water wells that can be used to meet the average daily demand of 150,000 gpd. The water wells will be used as the initial source of potable water for SWP while construction is taking place but once the surface water system is installed, the water wells will be held in reserve, as a third potable water source for SWP needed only in extreme drought times.

LPE researched the available information on the aquifer in the south of Great Abaco. Based on available information the aquifer does not extend down to the SWP area. In addition, the depth and productivity rate in the aquifer varies greatly and could result in a wide range of well production rates across the development. LPE estimates that, should the aquifer be accessible, SWP can pump approximately 1 million gallons per day out of it, based on a 3% recharge rate.

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To make the water well system is redundant to the surface water, LPE is recommending that 7 water wells, with a minimum capacity of 40 gpm be drilled in LH. These wells will be able to produce 24,000 gpd (168,000 gpd total) each, during periods of average usage, and 57,600 gpd during peak usage (well running 24 hours per day). Should the capacity of the water wells come in higher than 40 gpm, then the number of wells can be reduced. These wells will also be used for construction until the surface water system can be constructed and ready to be utilized.

E. POTABLE WATER TREATMENT

LPE is recommending the design of a water purification plant that will treat both groundwater and surface water to potable standards equal to those of the United States. The water purification plant will have a redundant system of treatment units, tanks, filters, and pumps. The plant will have four treatment "trains" that will be capable of treating 150,000 gpd each. The plant will be able to treat up to 450,000 gallons per day of surface water and/or groundwater, with one unit on standby/backup. The water plant will be designed to provide water to the residents and guests of SWP under pressure, and with the ability to meet a fire flow demand of 1000 gpm for a minimum of 45 minutes.

The water well system will be monitoring the quality of the aquifer as the water comes through the water wells. Should the water in the water wells start to have a Total Dissolved Solids (TDS) of above 1000 mg/l, the water plant will then blend the high TDS water with a lower TDS surface water. If the TDS in the well water gets too high, then additional treatment units will be installed to bring the level down (a very low-capacity packaged RO system).

LPE estimates that 5 acres should be set aside in SWP for the potable water treatment plant.

F. WASTEWATER AND WASTEWATER TREATMENT

Since the irrigation demands at SWP will be met with grey water, LPE assumes that all the potable water that goes out into the system will be returned to the wastewater treatment plant. In addition, LPE anticipates that the wastewater treatment plant will experience some storm water intrusion during storm events. This intrusion will happen when storm water passes over a sanitary manhole or if a sanitary clean out for a structure is missing a cap. LPE estimates that the flow to the wastewater treatment plant will increase by about 10% during these rain events.

The potable water demand for SWP is 150,000 gpd on average and 360,000 gpd during peak times. Including the storm water intrusion, the amount of sewer flowing to the wastewater treatment plant should be 165,000 gallons per day for average flow and 396,000 gpd for peak flow. The overall capacity of the plant be increased to provide a buffer for any future changes to the development. The wastewater treatment plant will consist for four "trains," each with a capacity of 120,000 gpd. This would give a total wastewater treatment capacity

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of 480,000 gpd.

To reduce the odor from the WWTP to an absolute minimum, the Developer will install a cover over the plant. Depending on the footprint of the final design for the plant, this cover may be a dome type or a hurricane proof building to house the plant. In addition, odor scrubbers will be installed on the vents for the cover tofurther reduce any odors from the plant.

LPE estimates that 2.5 acres be set aside for the wastewater treatment facilities. Sludge generated by the WWTP will need to be hauled off and disposed of in a landfill.

G. IRRIGATION DEMANDS

The Developer is planning to use the grey water from the WWTP to provide irrigation water to SWP. The grey water will be non-potable and will be used to irrigate public landscaped areas and will provide irrigation water to individual homes and businesses. During average daily flows, with no rainfall, the WWTP should produce an estimated 150,000 gpd or 1,050,000 gallons per week of grey water. This grey water should be stored in a ground storage tank and pumped into a separate, non- potable, distribution system.

Based on information provided by the Developer, LPE has estimated the following landscaping waterdemands:

600,000 SF Roadway Median Grass (drought tolerant)		187,000 gallons per week
871,000 SF Medium Lush Landscaping		847,000 gallons per week
653,000 SF Lush Landscaping		830,000 gallons per week
Private Landscaping (about 190 Units)		350,000 gallons per week
	Total	2,214,000 gallons per week

During the wet season, it is likely that the amount of water needed by the landscaping will be less. The system will include a of 600,000 gallons of storage to hold excess effluent for irrigation. Any additional water needed for irrigation will be pumped directly out of the existing lake that is used for potable water. LPE has calculated that size ofthe proposed lake will need to 24-acres to account for the extra 3 acres needed for irrigation volume.

LPE estimates that 1 acre of land needs to be set aside for the grey water irrigation system distributionplant.

H. STORM WATER RUNOFF

During rain events, stormwater will be routed into conduits and away from buildings and structures. In most portions of SWP, the stormwater will be directed into the canal, marina, or ocean. Portions of SWP will be directed towards the 24-acre lake on the eastern side of the development. Once thatlake is full, a series of underground conduits will take the excess rainwater to the ocean. SWP will also be designed so that during extreme events no structures are flooded and that the extreme event runoff flows into the ocean.

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All structures in SWP will have rainwater catchment system. These systems will collect rainwater from roofs, driveways, etc. and direct that flow to the 24-acre lake. These flows will be used for irrigation throughout the SWP development.

7.7 INVASIVE SPECIES REMOVAL, PREVENTION AND MANAGEMENT

Invasive species management during operations will incorporate recommendations from the 2013 Bahamas National Invasive Species Strategy (NISS)[11], which focuses on eradication of invasive species where possible, and preventing re-establishment and introduction of invasive species. The following sections describe the removal, prevention, and management of the four (4) invasive species discussed in the Environmental Impact Assessment (EIA). Botanical invasive species identified on the Project site were the Australian pine, (*Casuarina equisetifolia),* White inkberry *(Scaevola taccada),* and Jumbey *(Leuceana leucocephala).* Evidence of the invasive wild hog was observed at both the Lantern Head and South West Point sites.

7.7.1 REMOVAL

Australian pine (*Casuarina equisetifolia*)

Removal of this species will be adapted from the method described in Hayes et. al. (2016)[12]. The smaller trees or saplings will be removed by hand saw or tree saw. The root ball will be removed to prevent regrowth of the tree. The large trees will be cut down using chain saws or pushed down using heavy equipment. Stumps remaining will be cut to ground level. Dirt and sawdust should be brushed from the surface of the stump prior to the application of Garlon 4®. The Garlon 4® should be applied to the cambium layer of the stump. Once the stump is dead, it will be removed by hand or heavy equipment based on the stump size. An application to import the herbicide Garlon 4® will be submitted to DEPP upon approval of the EMP. The plants will be stockpiled on site as green waste and transported to the landfill or mulched on site to incorporate in the Jumbey species management.

White inkberry (*Scaevola taccada*)

The removal method described by CABI (2021)[13] will be used to remove this species. In areas near the coast or wetland, mechanical or physical removal will be used. Smaller plants and seedlings will be removed by hand. Larger plants can also be removed by hand and digging around the root to loosen the root ball. To avoid regrowth of the plant, branches and underground stems and the

[11] Moultrie, S. (2013). The Bahamas National Invasive Species Strategy 2013. Nassau: Department of Marine Resources. http://extwprlegs1.fao.org/docs/pdf/bha175843.pdf

[12] Hayes, William K., Ricardo A. Escobar III, Shawn K. Fry, Edgar M. Fortune, Joseph A. Wasilewski, Donald M. Tuttle, Kathryn S. West, John B. Iverson, Sandra D. Buckner, and Ronald L. Carter. 2016. Conservation of the endangered Sandy Cay Rock Iguanas (Cyclura rileyi cristata): invasive species control, population response, pirates, poaching, and translocation. Pp. 106–120 In Iguanas: Biology, Systematics, and Conservation. Iverson, J.B., T.D. Grant, C.R. Knapp, and S.A. Pasachnik (Eds.). Herpetological Conservation and Biology 11(Monograph 6).

[13] Invasive Species Compendium (ISC) https://www.cabi.org/isc/datasheet/48817

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root ball will be removed. The CABI site recommends chemical control in some instances where the plant is growing in dry dune habitat, which can also apply to some area of the Project site where the invasive plant was observed. The Environmental Manager will determine if mechanical or chemical removal is suitable. Chemical control as described by CABI 2021 is "basal application with 10% Garlon 4 (3,5,6-trichloro-2-pyridinyloxyacetic acid butoxyethyl ester) or stump application with 50% Garlon 3A (3,5,6-trichloro-2-pyridinyloxyacetic acid triethylamine salt)[14]. Monitoring and re-treatment are necessary for at least two to three years after removal[15]." The plants will be stockpiled on site as green waste and transported to the landfill.

Jumbey (*Leuceana leucocephala*)

CABI (2021) discusses several methods of control, but the most applicable methods are the mechanical and chemical method. Seedlings or young plants can be removed by hand and digging around the root to ensure the entire root ball is removed. This is suitable for younger trees as they have not developed seeds to date. Mechanical removal of mature plants can lead to the dispersal of seeds as the plant is pulled, which will lead to disbursing the invasive plant to other areas. Duquesnel (2007)[16] recommend chemical control of the more mature trees. Trees and branches can be cut with a tree saw or hand saw. The herbicide Garlon 4® at rates of 30% mix in mineral oil or vegetable oil diluent can be applied to the cut surface and to the top and sides of the stem. The Australian pine can be mulched and used to create a 4-inch-deep layer of wood chip mulch over the site to help reduce survival of the Jumbey seedlings that will sprout once the larger more mature trees are removed.

Garlon 4 ® is recommended for both the Australian pine and Jumbey species. Duquesnel (2007) recommends the following guidelines to follow while applying Garlon 4®.

- "Apply the product at low spray pressures to avoid spatter onto nearby non-target plants and avoid runoff onto the soil.
- Airborne vapors can have an impact on some species if they are within a meter or two of the treated trees, and if there is little air movement.
- Use of a spray colorant (usually red or blue) is very helpful, making it easier to see where the spray is going, whether or not there is overspray or spatter, and it helps to detect spray on clothing or skin, or coming from leaky equipment, sooner than would otherwise be possible.
- Be cautious not to exceed the maximum rate of herbicide per acre."

[14] ISSG, 2012. Global Invasive Species Database (GISD). Invasive Species Specialist Group of the IUCN Species Survival Commission. http://193.206.192.138/gisd/speciesname/Scaevola+sericea

[15] Lockhart, Chris. 2012. Weed alert Beach Naupaka (Scaevola taccada) Florida Fish and Wildlife Conservation Commission. https://plants.ifas.ufl.edu/media/plantsifasufledu/manage/research-and-outreach/publications/fwc-weed-alerts/invasiveplants_beachnaupaka.pdf

[16] Ask the Experts. 2007. https://www.se-eppc.org/wildlandweeds/pdf/Summer2007-Duquesnel-pp4-5.pdf

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The following guidelines will be followed during invasive species removal.

- The removal of these species will not occur while the plant is fruiting to help prevent the spread of these plants during excavation. The Australian pine blooms during February and March. The Jumbey flowers year-round and peaks during the summer. The White inkberry flowers year-round.
- The Jumbey located in the areas near sensitive areas will be removed by hand to avoid damaging the sensitive areas with heavy equipment.
- The roots will be removed physically to ensure the plant does not regrow. Herbicides will not be applied to the plants in close proximity to the coast to prevent runoff and pollution of the water.
- Once the plants have been removed, they will be stockpiled away from the coast. The stockpile of invasive species will be transported to the landfill.

Wild Hogs

The site boundary fence will be inspected daily to ensure it is secure. In the event that a breach is identified, it will be repaired as soon as possible.

7.7.2 Prevention

The native plants and other landscape plantings will reduce the amount of available space for invasive species to re-establish on the site. Ongoing maintenance by operational staff is required to remove germinated seeds or newly established invasive species on site. The landscaping team will be trained to identify invasive species and informed to remove the seedlings should they sprout on site during operation. The seedlings will be transported to the landfill with the other debris and solid waste from the site.

Other invasive terrestrial species such as cane toads, rats and corn snakes are established on Abaco. Because all stages of a cane-toads life cycle are poisonous, care should be taken when removing them.

Further, the prevalence of domestic pets of all nature in the Project will be minimal and discouraged. In the very few cases where domestic pets will exist within the Project, the Developer is committed to ensuring that they are very restricted in their movements. All pets on site should have proper identification tags or bands.

7.7.3 Management

Management of the invasive species on site will require long term monitoring of the site as re-introductions of the invasive species is possible as birds and wind are common transport mechanisms for the botanical invasive species identified on site. Removing the seeds before they can disburse will help reduce the number of years of follow-up treatments required to keep the

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invasive species at bay. Additional management initiatives include maintaining native vegetation on site by the landscaping team to prevent the return of invasive species and training the landscaping team to identify and remove invasive species.

7.8 SPILL MANAGEMENT

Spill Management will primarily focus on spill prevention measures and secondarily focus on clean up and mitigation. To prevent spills during construction the Environmental Monitor will ensure the guidelines described in the table below are followed. In the event of a spill, the spill will be monitored and reported using a form similar to the one shown in Appendix F.

TABLE 4. SPILL PREVENTION GUIDELINES.

Spill Prevention	Required Equipment
Place drip trays beneath taps and valves and use overflow and drop containment measures at connection points or at other possible overflow points.	Drip trays
Secure the fuel and chemical storage area to prevent vandalism and damage of storage containers. An impermeable liner will be placed under storage containers in the back of house area and a secondary spill containment will be used.	Impermeable liner Spill berm
Use caution during hand transfer of fuel from storage containers to refuel equipment. Use a funnel to reduce chances of leaks or spills.	Fuel storage containers Funnels
Fuel will be stored and transported in designated fuel storage containers. The containers will be covered until the fuel is needed for refueling.	Fuel storage containers Funnels
Do not store fuel or oil in damaged, unsealed containers. If a container is damaged, place the damaged container in an overdrum to prevent spills or leaks.	Overdum
Use spill pallets and safety storage platforms when fuel / chemicals are transported around the site.	Spill pallets Safety Storage platform
Equipment will be maintained and serviced regularly by a local contractor to prevent leaks.	N/A
Equipment and vehicles will be repaired at a designated location on the construction site. The site will be lined with an impermeable liner to prevent oil, gas, diesel, etc. from percolating through the surface. If equipment repairs must be made on-the-spot, mechanics will use an impermeable liner during repairs to prevent contamination of the ground.	Impermeable liner Spill berm

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Safety Data Sheets (SDS) will be available on site in two locations. SDS will be available in the site office and near the respective storage areas for the fuel and chemicals.	Relevant Safety Data Sheets

Subcontractors will typically develop additional spill prevention measures during construction based on the Project activities and as construction progresses. In the event of a spill, the spill should be reported to the Site Manager and contained immediately. If the spill cannot be contained, this information should be communicated to the Site Manager who will contact the relevant emergency personnel on the island.

Spill Protection and Cleanup Plan

The Spill Prevention, Control and Countermeasures (SPCC) Guide for Marinas and Boat Owners and the Marina Spill Prevention by the Florida Department of Environmental Protection was used to develop the following measures.

Spill Protection

Adequate signage will be installed at the sewerage pump out station and the fueling station to inform boaters of the designated locations. Figure 21 on the following page show examples of the signs that will be installed on site.

- Only authorized fuel storage containers will be allowed. The image on the following page shows an example of the sign that will be installed on site. Fuel storage containers will not be overfilled.
- Emergency shut off valves will be installed and made accessible in the event fuel supplies need to be shutdown. Marina managers will be trained to use the emergency mechanism.
- The fuel dock and storage sites will be inspected regularly to identify areas in need of repair to prevent the development of leaks.
- After storms, the fuel dock, storage tank, and sewerage pump out station will be inspected before the marina reopens to repair damaged areas to prevent leaks in the marina.
- A site diagram identifying the location of the fuel storage tanks will be available on site. The diagram will identify locations of valves, vents, and lines. During spill reporting, the site diagram will be used to identify the origin of the spill.
- Secondary containment will be provided around fuel, oil, or chemical storage containers. Examples are shown in Figure 22.
    - Secondary containment will consider the total possible size of the spill. If a container stores 55 gallons of fuel, the secondary containment used will be capable of storing 55 gallons of fuel.
- Secondary containment areas for outdoor locations should be covered and dry. For example, a roof or waterproof tarpaulin could be used.

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FIGURE 21. EXAMPLE OF SIGNAGE TO BE INSTALLED ON SITE. [17] [18] [19] [20]

[17] Aceboater.com. 2021. Marine Sanitation Devices. Accessed May 27, 2021. https://aceboater.com/usa/en/marine-sanitation-devices

[18] MySafetySign. 2021. MUTCD Guide Signs for Campground: Gas (X-RM-060). Accessed May 27, 2021. https://www.mysafetysign.com/fos/Camping-Signs/Gas-Symbol-Sign/SKU-X-RM-060.aspx

[19] MySafetySign. 2021. Gas Station Sign: Gas Only. Accessed May 27, 2021. https://www.mysafetysign.com/gas-only-sign/sku-s2-2754?rv=1

[20] MySafetySign. 2021. as Station Sign: No Gasoline Or Fuel In Unauthorized Containers (S-0498). Accessed May 27, 2021. https://www.mysafetysign.com/Safety-Signs/No-Gasoline-Unauthorized-Containers-Sign/SAF-SKU-S-0498.aspx?rv=1

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FIGURE 22. SECONDARY SPILL CONTAINMENT EXAMPLES[21] [22]

Cleanup Plan

Mobile spill kits will be available on-site to expedite clean-up activities in the event of an accidental spill. These spill kits are to be located in the site office and or in an easily accessible location. During site induction training, employees will be made aware of the location and type of the spill kits.

Appropriate signage, similar to the poster shown in the figure on the following page with instructions will be installed near the spill kits to identify the various types of kits.

FIGURE 23. AN EXAMPLE OF THE TYPE OF SIGN THAT WILL BE INSTALLED NEAR THE SPILL KITS.[23]

[21] Fisher scientific. (2021) Secondary Containment. Accessed online June 1, 2021. https://www.fishersci.com/us/en/browse/90150292/secondary-containment

[22] Fisher scientific. (2021) CEP Drums-Up Spill Pans. Accessed June 1, 2021. https://www.fishersci.com/shop/products/cep-drums-up-spill-pans-2/p-3801964

[23] Spill Kit Chart. Stratex Protecting Our Greatest Assets. Accessed April 20, 2021. https://stratex.com.au/faqs-do-i-need-a-spill-kit/

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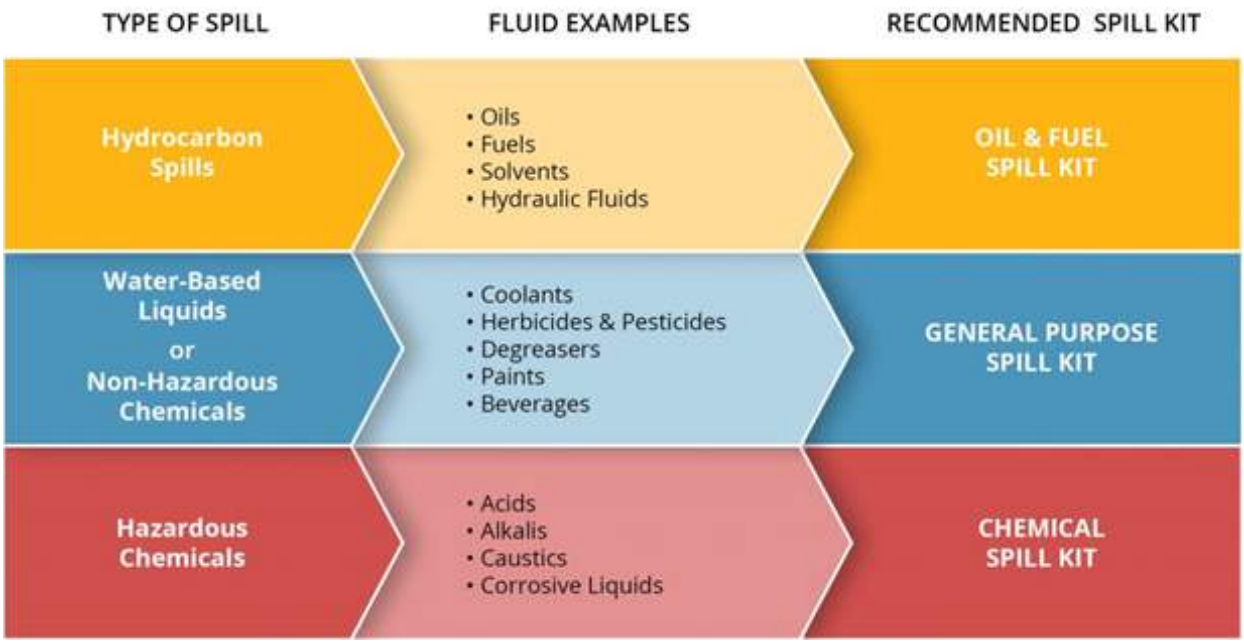

Sources of spills that could negatively impact the environment during operation would be spills that may occur during fueling, sewerage pump out, or a leak from the fueling facility. The Spill Protection and Cleanup Plan below describes the strategy to prevent and cleanup spills during operation.

- Universal, Hazardous Material (Hazmat) and Oil spill kits will remain on-site during operation in the BOH and near the marina to clean up accidental oil or fuel spills. Employees will be trained on the proper use of spill kits and reporting requirements.
- Boaters will be encouraged to report spills to the marina office or other marina staff as soon as possible. All marina staff will be trained to clean up spills.
- In the event of a spill of over 5 gallons, the Marina manager will notify the Department of Environmental Health Services (DEHS) office of the spill at 1 (242) 322-8037. If the spill is located in the marine environment, the manager will also notify the Department of Marine Resources at 1 (242) 393-1777.
- Once the spill is cleaned, the impact of the spill will be assessed by taking photos and listing the species and habitat impacted by the spill. Once the impact is measured, the mitigation plan will be developed with DEHS and the Department of Environmental Planning and Protection. The Environmental Monitor and Site Manager will oversee the cleanup and implementation of the remediation strategy on site.

Once a spill is identified the following steps will be taken:

1. The source of the spill will be identified and stopped immediately. All personnel shall wear suitable safety gear before approaching fuel or other hazardous waste material.

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2. On site spills will be classified as either marine or terrestrial based on the location of the spill. Staff will be trained on the identification and removal of spills on site (both marine and terrestrial).
3. The type of fluid will also be identified to determine which spill kit should be used to clean up the spill. Construction staff training will include identification of the various spill kits on site, and which is appropriate for each type of spill. This training will also include the donning of proper Personal Protective Gear (PPE) prior to clean-up activities to avoid health and safety issues associated with fuel, oil, or hazardous waste substances. A Spill report Form will be used to record the incident and identify staff on duty. The Spill Report Form can be found in Appendix F.
4. Once identified, proper containment practices and materials will be used to remove the spill within the affected area as quickly as possible. All personnel will be trained to use the different type of spill kits on site.
5. Photos will be taken to document the spill extent and type.
6. Photos will be taken after the spill is cleaned.
7. In the event of a spill of over 5 gallons report will be submitted to DEPP and DEHS. The report will estimate the volume of oil, fuel etc., spilled on site.
8. The used spill kit will be disposed of according to the directive of the local Department of Environmental Health Services office.
9. Remediation efforts should be made within the impacted environment.
10. Regular inspections within the impacted area should be made and documented to give an account for the existing environment after the clean-up.
11.

FIGURE 24. (LEFT) EXAMPLE OF SIGNAGE FOR SPILL STATION. (RIGHT) EXAMPLE OF A SPILL KIT

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7.9 WATER AND WASTEWATER MANAGEMENT

During construction, mobile toilets will be available on site and located away from the immediate coastline or water bodies to avoid pollution run off to the nearest marine environment. These mobile sanitation units will be regularly and properly disposed of based on a set schedule.

LightPoint Engineering LLC prepared a preliminary design plan for Water and Wastewater for SWP based on the potable water demand of 150,000 gpd on average and 360,000 gpd during peak times. (Section 7.6.1). The Plan discusses water sources inclusive of potable water sources, irrigation demands, storm water runoff and wastewater treatment.

Wastewater Collection

The Wastewater Collection system will be comprised of a gravity collection and pumping stations. For the gravity system, the manholes will be reinforced concrete manholes of minimum 4' diameter and 5' depth. Manholes to have a solid Heavy Duty Traffic rated cover. Gravity sewer pipes to be SDR 35 PVC pipe, 8 inches sewer mains and 6 to 4-inch sewer services to the buildings. Grinder packaged pump stations with fiber glass or HDPE wet well chambers will be used for smaller flows. Large waste water flows will be handled by large pumps stations, which are to be duplex stations with non-clog submersible waste water pumps. Pump station control panels to be NEMA 4X enclosures. The pump stations will pump into force main pipes. Force main pipe and fittings will be HDPE DR 11 pipe.

Disposal Wells

For the disposal of treated effluent from a centralized WWTP a disposal well will be used. The well will be doubled cased at an appropriate depth to protect the fresh ground water layer. The last 100' to 200' of the well will be an open bore hole for the dispersal of treated effluent into the salt water aquifer. The disposal well will require a sewer lift station or RO brine pump to pump the effluent down the well if there is not sufficient static head.

Commercial Laundry

The residential, marina, hotel, restaurant, and retail facilities are anticipated to require a substantial amount of laundry support. Commercial laundries are heavy power and water consumers. The development has a 9,500 lb/day maximum 2-shift capacity commercial wash laundry that utilizes self-contained water recycling commercial laundry systems to minimize utility and water demand. These systems are augmented with solar electric and solar water heating capability.

This laundry facility also has 2-shift capability to process 2,000 lb/day of dry cleaning to support the needs within the overall development. The dry cleaning utilizes state of the art Firbimatic or

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equivalent dry-cleaning machines that are compatible with the four states of the art eco-friendly stable solvents used in the world today.

7.10 SOLID WASTE MANAGEMENT

Table 5 shows the solid waste generation estimates and table 5 shows how the solid waste generated from construction and operations phases will be classified.

TABLE 4. SOLID WASTE GENERATION TABLE.

Solid Waste Generation		
Total Avg People	2,100	avg/day
Waste per day	4.50	lbs/person/day
Luxury factor	1.50	
Total Solid Waste per day	14,175	lbs/day
Per Year	5,173,875	lbs/year
Per Year	7,001	cu-yds/year
Per Year	2,346,828	kg/year
Per Year	2,346.83	metric ton/year
Peak Waste Generation		
Total People	4,950	/day
Waste per day	4.50	lbs/person/day
Luxury factor	1.50	
Total Solid Waste per day	33,413	lbs/day
2 week storage period	467,775	lbs stored
2 week storage period	633	cu-yds
2 week storage period	212,179	kg
2 week storage period	212.18	metric ton

TABLE 5. TYPES OF SOLID WASTE TO GENERATED DURING PROJECT TIMELINE.

Solid Waste Type / Material	Developmental Phase
Clearing of vegetation (mostly invasive and some native)	Construction
Domestic (plastic, glass, cardboard, paper, rubber)	Operation
Construction debris (concrete, wood, roofing, appliances, tile, paint chips, rebar, sheetrock, metals, plastic, paper, , rebar, metal, wood, rubber, hazardous waste – paint & vehicle fluid)	Construction

A back of house location in SWP will be established for solid waste collection and management. The solid waste collection process will be to separate and collect organic waste, recyclable waste, and non-recyclable waste. The organic waste will be composted in a purpose designed facility. The composting byproducts will be used for fertilizer throughout landscaping around the development. Recyclable wastes will be collated at the facility and compacted for transport to

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recycling facilities on Abaco or off island. Valuable heavy solid wastes (white goods, durable goods) and paints, solvents, detergents, and the like will similarly be transported to proper facilities for disposal.

Construction waste and other solid waste will be disposed of using the existing South Abaco Landfill near Sandy Point. The project proposes to expand the landfill by opening an approximately 2 acre area in the interior of the existing landfill and adding an approximately 2 acre section on the southeast corner of the current landfill site that can be dedicated to the needs of the SWP project. The combustible construction and solid wastes will be burned similar to the practices at the landfill today. Inert solid wastes (waste concrete, metal scraps) will be located at the landfill for spreading after the primary construction Phase 1s complete. The landfill will also allow for storage and staging of solid wastes that may need to be transported off island.

The project will enhance environmental protection by installing monitoring wells south of the landfill between the landfill and the wetlands. These wells will allow the project and government authorities to monitor for any groundwater contamination that might require modification of landfill practices or mitigation of certain waste materials in the landfill.

Dried sludge cake from the WWTP will be disposed of at the South Abaco Landfill.

Construction waste bins that can hold approximately 40 cubic yards of waste will be available for use (Figure 25). Open waste bins will be covered on site. Solid waste products will be loaded onto the assigned dump truck and covered to avoid loss of solid waste products during transportation. Hazardous waste will be safely stockpiled and then transported to New Providence for proper disposal until a managed landfill is established on Abaco. A vessel will be used to transport hazardous waste generated on-site during construction and operation. The schedule for transport will be established to avoid an excessive accumulation on-site. To ensure public transparency and best management practices, each solid waste deposit will return a solid waste ticket to the site safety officer. This ensures that this waste is disposed of with The New Providence Ecological Park (managed by DEPP) on Tonique Williams Darling Highway or Bahamas Waste on Gladstone Road.

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FIGURE 25. AN EXAMPLE OF A SUITABLE CONSTRUCTION WASTE BIN FOR SOLID WASTE DISPOSAL.

Appropriate recycling practices will be followed during construction to avoid as much waste as possible. Waste handling will be discussed with the Construction Manager and Project Manager prior to the commencement of the construction phase. Furthermore, the Superintendent will present/discuss various options for efficient use of demolition waste materials, construction materials and other options to reduce construction waste.

A waste generation form is required to calculate accurate waste amounts on site during construction and operation. This helps the public landfill and the Project Manager determine the impacts of generated waste from this project.

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FIGURE 26. EXAMPLE OF ON-SITE SOLID WASTE TRANSPORTATION FORM.

SWP & LH Solid Waste Management Form		
Date:		
Truck License Plate Number:		
Name of Driver:		
Waste Truck Covered? Yes / No		
Waste Type	Origin (Construction/Demolition)	Estimated Volume of Waste (cu. Yd.)
Signed By: Site Safety Officer		

7.11 HAZARDOUS WASTE MANAGEMENT

Hazardous waste must be transported to the New Providence Ecology Park on Tonique Williams Darling Highway for proper disposal according to the DEHS Abaco office. Proper handling and disposal of hazardous waste on site will be led by properly trained staff equipped with adequate personal protective equipment (PPE). This includes protective eyewear, gloves, masks, mask filters and full body disposable suit as illustrated in the figure below. Any hazardous waste generated on property will require notification to DEPP and the DEHS approval regarding disposal. Adequate disposal will consist of properly sealing the hazardous waste, then following the DEHS guidelines. Waste tickets will be collected to ensure proper disposal of the hazardous waste materials were followed.

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FIGURE 27. EXAMPLE OF HAZARDOUS WASTE PPE.[24]

Potential hazardous waste remediation within these upland areas includes the following[25]:

- Excavation – Removal of contaminated soil from the ground, and then either treating or properly disposing of it. Tested topsoil will be distributed in the containment area to replace the contaminated soil.
- Treatment - According to the EPA, "Treatment approaches can include flushing contaminants out of the soil using water, chemical solvents, or air; destroying the contaminants by incineration; encouraging natural organisms in the soil to break them down; or adding material to the soil to encapsulate the contaminants and prevent them from spreading."
- Containment – to avoid possible contamination to the surrounding soil composites.
- Blending – The blending of contaminated soil with clean soil may reduce the contaminant concentration and reduce pollutant levels.

7.12 TRANSPORTATION MANAGEMENT

During construction and later during operation, the Sandy Point area is expected to experience some increase in visitation and in traffic volumes. To reduce any such effects, the vast majority of materials and equipment during construction and operations will be directed to arrive at the

[24] https://nueoffshore.com/

[25] https://www.hazardouswasteexperts.com/what-you-need-to-know-about-soil-contamination-2/

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marina directly. Use of the Great Abaco Highway which is the main thoroughfare for the South Abaco community for that purpose will be limited.

In the unexpected event that there may be any unavoidable temporary restriction to traffic access during construction, The Sandy Point community will be made aware of such via appropriate signage.

Traffic management on site will include:

- Designated haul routes,
- Maintenance of low speeds on site,
- Traffic control on site at all times,
- Securing the sites to prevent pedestrians from traversing the sites,
- Ensuring that all workers wear high visibility vests,
- Training all workers in traffic hazards on sites in an effort to avoid injury or loss of life.

Marina dredging activity may have an effect on nearshore marine traffic in the immediate area of work. Therefore, suggested passage routes should be outlined and communicated to boaters within the community. Furthermore, appropriate signage should be placed in visible areas for boaters to be made aware of construction activities and diverted routes. Communication can be mad via VHF radio frequency to alert boaters of construction activities.

Sandy Point Airport

Improvements at the Sandy Point airport include a new 2,500 SF. terminal building for arrivals and departures as well as facilities for customs & immigration. The airport will connect to the Abaco utility grid available at the Queen's Highway for all utilities and communications. The Project will extend the runway to 7,000 LF and improve the airport to a 24-hour, instrument capable facility.

Similar to all Project elements, solar power will be part of all airport buildings. The airport grid-connected power system will be backed up by a diesel emergency generator system for uninterrupted airport operations and communications. Service buildings will be constructed to house aircraft handling equipment, emergency vehicles, and storage. Aircraft fueling will be available by fuel trucks that will have fuel supplied through the SWP marina (see Section 7.8 for Spill Management).

At the beginning of the Project Sandy Point will continue to operate as it does today as a day-VFR airport. When instrument capability and the traffic needs of the airport grow, remote airport control systems developed by the US FAA, will be implemented with The Bahamas CAA to provide positive aircraft control at Sandy Point from Nassau or Freeport. The fixed base operations should

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follow guidelines established by the International Civil Aviation Organization (ICAO) as well as those of The Bahamas Civil Aviation Authority.

7.13 SWP & LH ROAD ACCESS AND UTILITIES MANAGEMENT

Primary Access Road

The 15.5-mile (the total distance of the combined roads Lighthouse and Soldier Roads) access road to the Development from the Great Abaco Highway will follow the existing logging trail road. The HOA provides for a right-of-way of 30ft. of which 20ft. will be an asphalt paved driving surface leaving either a 10-foot utility easement on one side or two 5-foot utility easements, one on each side of the road. Under road culverts will be spaced along the road to promote safe passage opportunities for small wildlife.

During the construction phases the road will be leveled and cleared prepared with only a sub-base and base course to provide for adequate passage of heavy trucks and equipment. When construction is completed the finish asphalt will be laid.

The majority of the access road passes through the Abaco National Park. The project will protect the unspoiled view as much as possible by minimizing signage and providing good road visibility with state-of-the-art striping. Night lighting is planned for the length of the road. The tree canopy does not make solar supported lighting feasible. Therefore, the roadway lighting will be utility supported by underground conduit that will be installed in the utility easement for lighting power supplied by the power plant. Highly reflective striping will minimize the need for lighting so subdued lighting levels, at a minimum required to promote safe driving will be used. To further limit light disturbance, the lighting along the road will sense vehicle approaching and turn on only to turn off shortly after vehicle has passed.

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FIGURE 28. PROPOSED ROAD IMPROVEMENTS OF LIGHTHOUSE AND SOLDIER ROADS FROM THE GREAT ABACO HIGHWAY TO SW POINT AND HOLE IN THE WALL.

7.14 ENERGY MANAGEMENT

The estimated electrical load for SWP features of Phase 1 is 26,000 kVA. Incorporating the use of solar will help SWP provide a minimum of 30% of the total demand (kVA),. Modern designs will emphasize the use of natural lighting, where practicable. The Bahamas National Energy Policy 2013-2033[26] (the Policy) will be acknowledged with the reduced amount of energy used by the incorporation of solar energy.

To the extent possible the following Energy Efficient Standards will be utilized:

- Optimize start-up time, and equipment sequencing during construction.
- Turn off lights when not in use or when natural daylight is sufficient.
- Conduct a nighttime audit to ensure lights and or other equipment that should be powered off is not powered on.
- Energy efficient devices will be purchased where possible.

[26] https://www.bahamas.gov.bs/wps/wcm/connect/c0934c9b-fc0e-4496-90e7-5d273c57553a/energypolicy.pdf?MOD=AJPERES

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All vertical constructed elements on the sites will be required to include application of solar electric power generation. Support for solar generated power will be provided by a conventional diesel generator-based power system. The generator facility will be storm hardened housing multiple generating units for redundancy, maintainability and provide the ability to scale up as the needs grow.

At the beginning of the project electrical power will be provided by mobile work site generators until the primary power plant can be constructed and made operational. The total electric demand for SWP when built out is estimated at 26MW. The power plant will consist of a modular design using 5-10 MW generation units with a maximum capacity of 50 MW. The primary electrical distribution network will be underground high voltage to point of use transformers where it will be converted to useable voltage levels. Conventional power metering will be utilized to charge users for the power they consume.

A tank farm will be constructed near the generating facilities and supplied via tanker deliveries at the SWP marina piped to the tanks via underground piping. Diesel tanks of 900,000 gallons for power generation is sized to supply 2 weeks of continuous power at 75% maximum capacity to provision for catastrophic storm considerations between fuel supply runs. The solar capability of the project and load management measures will ensure much longer continuous power capability after a storm event.

In addition, the tank farm will include a 300,000 gallon tank of diesel and a 100,000 gallon tank of gasoline that will supply the marina fuel dock via underground piping from this tank farm. The marina fuel dock provides refueling to vessels in the marina. The site design places all tanks in one tank farm location to efficiently construct the retention structure for spill containment according to NFPA 30. The development's First Responder Force is trained on spill management and will be equipped to respond to a tank farm spill as well as all other needs of first response.

It is estimated that at least 789,000 square feet of solar panels will be constructed at SWP when fully developed, as per the detailed table below. As such, the SWP site will provide solar power amounting to more than 13 MW of peak grid-tied power. It is estimated that the average daily power consumption of the fully developed site will be 248 MW-hr. The estimated solar capacity will yield as much as 72 MW-hr of power daily. This solar capacity will attain the goal of producing 30% of the total electrical power needed using solar energy.

Operationally the power plant will be staffed and operating 24/365. The modular design will allow the online capacity to be matched to the demand and provide for units to be down for maintenance while still providing electrical power. The planned 6 generation units will allow the nominal weekly maintenance on each generator by cycling through the 6 units for oil changes and

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other service. As is typical for this type of generation system, waste oil will be filtered and burned by the plant thereby minimizing waste & byproducts.
As described further in this document, some construction, and operational considerations for SWP will require certain utility support elements to be located at the LH site for Phase 1 already. As such, the power generation for Phase 1 in LH will be constructed to provide power to these limited elements. The size of the LH power plant for this phase will be 1MW. A 75,000 gallons diesel tank will be constructed for the LH power plant that will echo the functional design of the SWP tank farm.

Electrical Demand Reducing Requirements

HVAC Systems

The design requirement for HVAC systems in the buildings of the development are to utilize high performance advanced heat pump systems such as those manufactured by Mitsubishi, Sanyo, LG, Trane, and Carrier. These systems are mainstream high-performance systems allowing a sustainable maintenance approach. As their name implies, these systems can heat as well as cool thus eliminating the need for special systems to concentrate on the occasional space heating need. These systems will also be required to connect to hot water systems to maximize the energy capture within the host structure.

Domestic Hot Water – Commercial & Residential

The design standard for the development will be to use solar water heating as the primary hot water system. This technology is well developed and further reduces the load that water heating puts on the energy system for the development. Solar water heating is able to produce all the needs for any residence within the developments and can meet most of the commercial needs for the hotels and retail establishments planned. Connecting HVAC systems into the hot water system will augment solar capability. Any unmet water heating need will be satisfied with propane on demand systems whenever practical to reduce the peak load design requirements for the development's electrical grid.

Pool Heating

Because the development is primarily a resort development, pool performance is important. The primary method for pool heating will be solar. But because guests will want warm pools even on the occasion that they visit during a period of less than ideal weather, pool heating will be supplemented by advanced heat pump pool heating systems which are the lowest power, highest performance pool heating system available.

First Responders Station

The project will have a first responders station located at SWP. It will include medical triage facility, helicopter pad, fully equipped firefighting, and environmental pollution early response capability

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as well as security and police presence (the final element will need to be agreed on with the local authorities). This station will be connected to the power grid but some critical elements of it will be designed to be completely supported by solar technology 24/365 in addition to grid power so as to be self-sufficient on solar power to ensure these critical elements will be functional in the event of disaster.

TV/Telephone/Internet

The residents and guests of this development will demand state of the art communication systems. A primary satellite ground station is located in the back of house. Connections to the ground station will be cabled underground to all points of use around the site, or, will be point-to-point microwave linked to distribution nodes around the development. This critical communication infrastructure will be designed to be completely supported by solar technology 24/365 as a system that does not rely on the grid power generation of the site. The grid will be connected to the communication station but building it to be self-sufficient on solar power will ensure this critical system will be functional in the event of disaster. Onsite cell tower repeaters will be added to enhance site-based telecommunications through the site's satellite system. It is anticipated that wide area wi-fi will be provided for basic connectivity as an amenity of the development.

Propane Gas

Parking pads and connection points for primary liquid propane tankers will be located at the back of the house site. Propane gas can be distributed around the site via an underground piping system. Tankers will be rotated through the connection point parking pad as consumed and supplied by ocean barge through the SWP marina. The primary use for propane gas will be both commercial and residential cooking but will also be available for decorative use (fireplaces and torches) and can also be used for supplemental heating of water. Gas use will be metered at each connection point of use.

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TABLE 6. SOUTH WEST POINT ELECTRICAL DEMANDS.

Power Requirements	Count	KVA
Super Yacht Marina	136 slips	11,304
Marina POE	4,000 sf	36
Marina Village	74,000 sf	658
Limited Service Hotel	100 rooms	400
Canal/Marina Residential with Slip	44	4,400
Ocean Front Residential	18	1,900
Hilltop Residential	13	1,400
Lifestyle Village Homes	113	1,800
Fishing Lodge	20 rooms	200
Casino	12,500 sf	125
Water Park	10 acres	100
Artist Village Homes	20	300
First Responders Facility	24,000 sf	330
Office Building	10,000 sf	50
Laundry (Commercil, Self Contained)	10,000 sf	200
Fish Cleaning	10,000 sf	50
Grocery Store	20,000 sf	285
Kid Activity Center	3,000 sf	27
Dry Storage Warehouse	60,000 sf	150
Cold Storage warehouse	60,000 sf	855
Entertainment pavillion	1 stage	70
Entertainment enclosed	20,000 sf	100
Staff Housing	200,000 sf	700
Dry Boat Storage	50,000 sf	125
Boat Repair Building	5,000 sf	25
Mechanic's Building w/ parking	5,000 sf	25
Limo Service & Parking	2,500 sf	13
Fuel Dock	2 units	10
Power Plant (self needs)	7,200 sf	22
WWTP	1 unit	65
WTP	1 unit	65
Sewer System (lift stations)	10	10
Rainwater Collection System (pumps)	10	10
Communications Base Station	1 unit	50
Street Lights	250	solar
Nominal SWP Electrical Demand	**Total KVA**	**25,859**

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TABLE 7. SOLAR GENERATION CAPACITY.

Building	Area	Solar Area
SWP Mansions 44 x 10,000 sf	440,000	220,000
LSV Homes 113 x 2,500 sf	282,500	141,250
SWP Power Plant/Maintenance Building	10,000	10,000
SWP Solid Waste Processing Center	10,000	10,000
100-Room Limited Service Hotel	25,000	12,500
Office	5,000	5,000
Laundry/ Self Contained	10,000	5,000
Yacht Club	10,000	5,000
POE & Dockmaster Facility	4,000	2,000
Fish Cleaning	10,000	10,000
Grocery Store	20,000	20,000
Medical building w/ helipad	12,500	6,250
Fishing Lodge	6,250	3,125
Casino	10,000	10,000
Artist village	20,000	10,000
Marina Village	74,000	55,500
Kid Activity Center	3,000	1,500
Dry Storage Warehouse	60,000	60,000
Cold Storage warehouse	60,000	60,000
Entertainment enclosed	20,000	20,000
SWP Staff Housing	50,000	50,000
Dry Boat Storage	50,000	50,000
Boat Repair Building	5,000	5,000
Mechanic's Building w/ parking	5,000	5,000
Limo Service & Parking	2,500	2,500
SWP Solar Area (sf)	**1,204,750**	**779,625**
Watts/sf (factored)		16.65
Peak Power Generation		**12,980,756**

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8. CLIMATE CHANGE ADAPTATION PLAN

The climate change impacts relevant to the Project are changing temperatures, increase in storms and their intensity, and rising sea levels. The following sections describes how the Project will adapt to each of the three impacts.

Changing temperatures

One impact of rising temperatures is the occurrence of heat waves. The Bahamas is a tropical country, but rising temperatures can lead to unbearable heat waves. To help reduce the temperature indoors for visitors HVAC systems will be installed. As mentioned earlier in the document, the Project will utilize solar energy in the design to reduce the increased energy demand. A second impact of rising temperatures is increased wear and tear on infrastructure and therefore the Project will deploy a comprehensive inspection and maintenance program.

Increase in storms and their intensity

As temperatures increase, hurricanes are predicted to become stronger and more frequent. Abaco has frequently been impacted by hurricanes, with the latest, Hurricane Dorian, being one of the most destructive in Bahamian history. Increased frequency of storms will cause increased wear and tear of infrastructure. A strong concrete and cement foundation for the marina and lodging/residential areas will assist in withstanding the brunt forces of winds and water. Also, with the marina being constructed inland there is more protection from the coastal factors. The intact rocky shoreline, the approximately 60' high hills that will surround the marina on all sides and forests that surround the site will aid in protecting the project site.

Rising sea levels

Another factor in climate change is sea level rise. It is projected that sea level will rise by 1-3ft. by 2100[27] . Ensuring marina wall will be +6ft above mean sea level should be satisfactory in preventing a flood within the near future. As mentioned, the marina is sheltered by the surrounding environment which will once again act as a buffer as sea levels continue to rise.

[27] https://earthobservatory.nasa.gov/images/148494/anticipating-future-sea-levels#:~:text=In%20its%202019%20report%2C%20the,under%20the%20worst%2Dcase%20scenario.

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9. HEALTH AND SAFETY

This section includes information on hurricane/storm, fire/explosion, emergency, and malfunction mitigation efforts, as well as Covid-19 safety awareness. The Project's Health and Safety Plan is attached in Appendix D, which includes detailed plans for health and safety procedures.

9.1 HURRICANE AND STORM MANAGEMENT

In The Bahamas, tropical storms and hurricanes are the predominant type of storms experienced. Tropical storm systems progress to hurricanes as they intensify in wind speed. As a result, the Project site will require hurricane preparedness and action plans in the event of extreme weather events.

An employee will be assigned the role of storm tracker who will be responsible for notifying the Site Manager of the storms progress. Once a Hurricane Warning is released by the Bahamas Department of Meteorology (http://www.bahamasweather.org.bs/), the hurricane preparedness plan will be initiated.

The Site Manager will assign a person in charge who will be responsible for implementation of the Hurricane Plan. The Hurricane Plan is a series of checklists to make preparing for and recovering from the storm as straightforward as possible. There will be weekly check in meetings place during the Hurricane season (June 1 to November 20), to discuss the Hurricane Action Plan and the team members' roles and responsibilities.

Before the storm checklist:

- Make a list of names, addresses and phone numbers for vendors and contractors who can provide recovery services or supplies.
- Keep evacuation routes open for all vehicles.
- Fully charge all devices and batteries.
- Remove loose jobsite materials and debris that could become projectiles and clean the jobsite daily.
- Have garbage in dumpsters and other containers consolidated and properly disposed and remove dumpsters from the site.
- Move materials that cannot be relocated or secured otherwise to shipping containers/storage boxes. Cover all materials that cannot be relocated and elevate them to at least 4 inches above the floor to reduce water damage exposure.
- Ensure that construction trailers and shipping containers/storage boxes are properly anchored and tied down. If anchors are not available, use concrete filled drums with embedded reinforcing steel loops and tether at least at three locations for each trailer or storage container.
- Stop all material deliveries.

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- All construction equipment mats should be tied together and anchored.
- Make a video/photographic record of the jobsite and surrounding properties to document the project condition and status prior to the storm.
- Fuel all vehicles and emergency equipment (such as generators)
- Once the site is secure, instruct all persons, expect minimal necessary number of recovery, emergency /security personal, to evacuate the site and not to return until the danger has passed.
- To the extent possible provide transportation for persons who do not have their own transportation to effect evacuation
- Establish a meeting place, if possible, for key recovery members.

9.2 FIRE/EXPLOSION RISK

Project personnel will be trained in fire/explosion prevention and response.

- No smoking will be allowed on the SWP construction site.
- Fire extinguishers will be accessible at all times at designated muster stations on site.
- No burning, welding, or other source of ignition shall be applied to any enclosed tank or vessel, even if there are some openings, until it has first been determined that no possibility of explosion exists and authority for the work is obtained from the foreman or Supervisor.
- Employees should be aware of the locations of fire extinguishers that have been provided throughout the project and know- how to use them. A five-pound ABC rated fire extinguisher must be readily available while welding, burning, cutting, or using flammable gases or liquids. Smoking is not permitted around gasoline or other flammable liquids or gases.
- Equipment must be turned off before refueling.
- Gasoline must be stored and transported only in approved safety containers and gasoline must not be used for cleaning purposes. Compressed gas cylinders must be kept secured, upright, capped and separated when not in use. Empty gas cylinders should be marked and returned to the storage area for pickup.

Compressed gas cylinders must be kept secured, upright, capped and separated when not in use. Empty gas cylinders should be marked and returned to the storage area for pickup.

9.3 EMERGENCY ACTION PLAN

This Emergency Action Plan has been developed for the safe and efficient egress of employees during an emergency situation such as fire, explosion, earthquake, bomb threat, threatened release, domestic terrorism, or chemical spill/leak. This Emergency Action Plan is designed with three fundamental objectives:

1. To facilitate a safe evacuation of company employees to a pre-designated safe meeting

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point in the event of an emergency to ensure that all our employees are accounted for.
2. To minimize the potential for personal injury during an evacuation.
3. To establish methods or procedures to minimize loss of property including buildings and equipment.

It is company policy for all employees to follow the requirements set forth in this Emergency Action Plan, which will be kept in the office, job truck or crane, and available for employee review.
Responsible Person It is the responsibility of the site supervisor to ensure the overall implementation of the Emergency Action Plan and to direct the following tasks for the project site:

- Identify and evaluate potential emergencies at the project site that may require personnel evacuations;
- Establish and/or review procedures for emergencies;
- Ensure that employees receive training on this program and that the training is up to date;
- Ensure compliance with the safety and health work practices as specified in the Safety Program and this Plan;
- Ensure that records of training, inspection, and corrective measures, are properly maintained.
- Any trenches created during the construction phase will be clearly marked to help prevent accidents.

Training

Training of all employees regarding the Emergency Action Plan will occur at the following times:

- At the beginning of the construction activities when the program is first developed;
- When new employees are hired;
- When the program is modified;
- When employee responsibilities change;
- When retraining is deemed necessary.

Training for the project site will be documented by the site supervisor.

- At the beginning of the project when the program is first developed;
- When new employees are hired;
- When the program is modified;
- When employee responsibilities change;
- When retraining is deemed necessary.

Training for the project site will be documented by the site supervisor.

Emergency Procedures

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An emergency is an unforeseen combination of circumstances that calls for immediate action. An emergency generally creates a sense of panic and confusion at a time when prompt action and clear thinking is essential. In an emergency, seconds can be the difference between life and death. That is why it is important to be prepared for the emergencies that can occur.

Employee Responsibilities

It is the responsibility of every employee at the jobsite to know:

- The site supervisor will train you how to protect yourself in each type of emergency. This training occurs at toolbox safety meetings. In addition, you may be required to attend additional training regarding emergency procedures.
- Your site supervisor will train you how to report an emergency. You must follow the procedures given to you for your safety as well as the safety of others.
- Your site supervisor will train you on the proper sequence of actions to take if an emergency occurs. You must follow the sequence of actions for your safety as well as the safety of others.
- The location of emergency equipment (e.g., fire extinguisher, first aid kit, emergency telephone number, etc.) in or near your work area or crane.
- If an emergency occurs, you must be sure that the area is safe before you enter the area where the injured employee is. Get proper authorities involved immediately. Property is always of secondary importance.
- An Incident Investigation Report form and a Hazard Assessment Checklist should be completed for all incidents on site. (Appendix G and Appendix H respectively).

Types of Emergencies

Potential emergencies that are possible to occur at the workplace include:

- Trench collapse or cave-in;
- Fire
- Hurricane
- Chemical spill, leak, or threatened release explosion
- Power outage
- Others (e.g., flood, earthquake, bomb threat, domestic terrorism, etc.)

Reporting Emergencies

Emergencies must be reported promptly. Regardless of the type of emergency, use one of the methods of reporting listed below that will produce the quickest and most effective response.

1. Call 911 or 919 and give the following information:
    a. Your name, telephone number, your exact location, and any special directions of how to find the victim or incident;
    b. Description of the emergency, need for paramedic, ambulance, fire department, police department, etc.;

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c. Wait for questions. DO NOT HANG UP!

2. Call the office on the phone or radio;
3. Notify the local SWP main office immediately;
4. The site supervisor needs notification so a company representative can be sent immediately if needed;
5. Notify the general contractor assigned to the job.

Accident scenes must be safe to enter. Once safe and secured, preserve, and investigate the scene as soon as possible to ensure accuracy. The project supervisor should take photos of the scene to aid in the investigation.

- Call project site emergency numbers;
- Notify appropriate owner/client representatives;
- Notify appropriate subcontractor representatives.
- Elements of the Project Site Evacuation Program
- Know all means or methods by which to sound an alarm or otherwise alert workers of an emergency.
- Provide instructions as to the various evacuation routes and assembly locations.
- Provide specific instructions as to employee and supervisor actions and responsibilities if an emergency occurs.

Examples:

- Stay calm, do not panic.
- Exit as quickly as possible without stopping to gather personal belongings.
- Proceed to assembly point.
- Supervisors must direct others to leave when an evacuation has been sounded.
- Designated employees will check to see that no one has been left behind, particularly where the alarm may not be audible.
- Once in the designated assembly area, supervisors will take a head count to verify that everyone has evacuated the emergency area.
- Keep access clear for emergency equipment. Do not congregate in roadways or near building access points.
- Do not re-enter the emergency area until the "All Clear" has been given.

At no time should information concerning the emergency be given to members of the news media until a company representative has approved it for release. Contact with the media is limited to designated personnel.

Rescue and Medical Duties

Only trained employees are to perform emergency first aid. Those employees who are trained

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in first aid and CPR and are authorized to perform those duties. Outside emergency response services (911 or 919) is the primary source of critical medical treatment.

Emergency Phone Numbers

The "Emergency Contact List" shall be provided to field supervisors. Emergency phone numbers are used for emergencies only and shall not be distributed to any individuals outside of approved company business.

Emergency Contact List

- Royal Bahamas Police Force
  Sandy Point 1 (242) 366-4044 Marsh Harbour 1 (242) 367-2560
- National Emergency Management Agency (NEMA) 1 (242) 322-6081/5 or 361-5569 or 376-2042
- Sandy Point Community Clinic 1 (242) 366-4010

Main Office Notification

In the event of a serious injury or incident, the following notifications shall be made:

- Immediately notify the office of SWP. It will be the responsibility of the site supervisor to distribute the report to the appropriate people.
- If a subcontractor is involved in an accident, have the subcontractor's foreman fill out a report and give a copy to the SWP site supervisor. If serious in nature, a separate SWP investigation is needed.
- Forward the subcontractor's accident investigation report to SWP main office.
- During operation, the First Responders Station/triage facility will be available for immediate medical attention.

9.4 MALFUNCTIONS

Equipment operators will be familiar with the standard and emergency operating procedures of the tools they utilize and inspect them before each use to ensure they are in good working order. Equipment not used daily will be inspected in accordance with manufacturer's recommendations and local regulations.

9.5 COVID-19 SAFETY AND AWARENESS

Under the Bahamas Emergency Powers (COVID-19 Pandemic) Order 2020 from the Ministry of Health there will be rules to adhere to such as:

- All employees should wash hands with soap and water and if that were to not be available, they should use an alcohol-based hand sanitizer which should be applied regularly.

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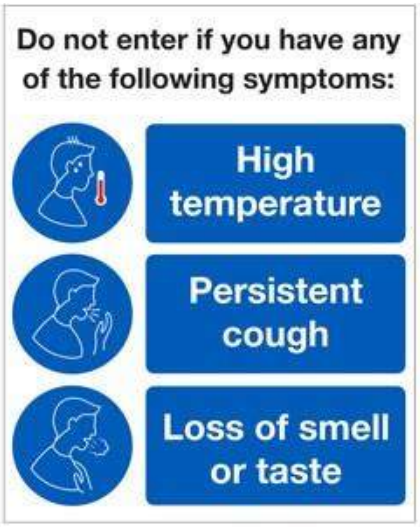
- All pieces of equipment and surfaces that are touched on a frequent basis need to be disinfected at the start and end of the day.
- All individuals that are on site of construction (employees, visitors) will have their temperature taken. If their temperature were to exceed 37.5 °C (99.5 °F) it will be recorded, and they will not be allowed on site.
- If an individual were to experience any of the following symptoms, they will be advised to stay home and contact the Ministry of Health or a medical professional for guidance on treatment and testing:
    a. Fever (temperature of 100.4°F or higher)
    b. Chills
    c. Cough
    d. Shortness of breath or difficulty breathing
    e. Fatigue
    f. Muscle or body aches
    g. Headache
    h. Loss of taste or smell
    i. Sore throat
    j. Congestion or runny nose
    k. Nausea or vomiting
    l. Diarrhea

Signage that deals with sanitation and disinfection equipment and surfaces will also be implemented to act as a daily reminder.

FIGURE 29. EXAMPLE OF COVID 19 SIGNAGE. [28]



[28] https://www.stocksigns.co.uk/items/do-not-enter-if-you-have-any-of-the-following-symptoms/

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10. PUBLIC CONSULTATION

10.1 PUBLIC CONSULTATION MEETINGS

Developer held an initial meeting on April 9th, 2019, with a number of local environmentalists in Marsh Harbour and a public consultation meeting with over 250 members of the public in attendance in Sandy Point. An additional public consultation for the Project was held on December 12th, 2019, in Sandy Point, Abaco. At that meeting, in addition to over 100 residents of Abaco, DEPP Officers and Bahamas Investment Authority (BIA) personnel were in attendance. Following the submission of the EIA to DEPP on November 5th, 2020, another meeting was held, on November 23rd, with environmentalist groups. The meeting was held virtually due to COVID-19 protocols

In order to further facilitate the public consultation process, the public was invited to download the EIA from the Project website, www.southabacotyrsozpublicconsultation.com, and submit comments to the Developer through an online portal available on the same site. The public was also invited to submit comments to the DEPP via email at inquiries@depp.gov.bs. via two public notices that were published in the newspaper by the Developer on November 10th, 2020,.

10.2 GRIEVANCE RESPONSE MECHANISM (GRM)

Any grievances stakeholders may have can be addressed via the Project website <https://www.southabacotyrsozpublicconsultation.com/feedback.html>. All grievances expressed and their resolutions will be shared with DEPP in the monthly environmental reports. Signage posted near the site will inform the public of the GRM process. The following figure is an example of GRM form.

FIGURE 30. EXAMPLE OF GRM FORM.

Date submitted: _____ Full Name: _____

Contact Information: _____

Would you like to be contacted to discuss the resolution to your grievance? _Yes _No

Description of Grievance _____

_____

_____

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Please email completed form to:

11 ENVIRONMENTAL EDUCATION AND OUTREACH

The Developer is committed to supporting the environmental education and outreach efforts of in Abaco. Griswold (2016)[29] states "Adult education has a significant role to play within the sustainability movement." During operation, educational material will be made available to guests that provide information on the Abaco National Park, the Cross Harbour National Park, and Bahamian fishery and forestry regulations. The material will be provided by the relevant management bodies. Making this information readily available to visitors will help increase environmental awareness of South Abaco.

12 CONCLUSION

The EMP is meant to be a living document, adapted as needed throughout the life of the project. Under the direction DEPP, the Project Manager in collaboration with the Environmental Manager, will oversee the implementation and adaptation of the EMP. The technical team responsible for the research and development of this document is shown in Appendix B. The significant efforts by Developer to mitigate and remediate environmental impacts of this Project, including significant expenditure on environmental initiatives of many tens of millions of $USD will ensure that the net effect of this Project on the environment and the community will be very positive.

[29] Griswold, W. 2016. Sustainability Adult Education: Learning to Re-create the World. ERIC Number: ED581863 https://eric.ed.gov/?id=ED581863

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APPENDIX A – PROJECT SCHEDULE

Gantt Schedule

Start:	Mon 1/3/2022	Display:	Monthly
End:	Sat 2/28/2026	Month:	1
Today:			

WBS	Task	Start	End
1	**Abaco 7/19/21 Draft Project Schedule**	03/01/2022	28/02/2026
1.1	**Phase 1**	03/01/2022	05/09/2025
1.1.1	**Phase 1A: Access & Clearing**	03/01/2022	13/08/2022
1.1.1.1	Logging road grading/filling	03/01/2022	01/02/2022
1.1.1.2	Clear site access roads	01/02/2022	02/03/2022
1.1.1.3	Clear staging areas	15/02/2022	16/03/2022
1.1.1.4	Grade/fill site access & staging	02/03/2022	31/03/2022
1.1.1.5	Water Wells (LH)	17/03/2022	14/07/2022
1.1.1.6	Establish Nursery in LH, BOH	16/05/2022	13/08/2022
1.2	**Phase 1B - South West Point**	02/01/2023	05/09/2025
1.2.1	Road Improvements	02/01/2023	06/09/2023
1.2.2	Rough Grade	01/02/2023	13/10/2023
1.2.3	Marina Construction	01/02/2023	12/06/2024
1.2.4	Marina Support Facilities	02/05/2023	07/05/2024
1.2.5	Marina Village	01/06/2023	28/09/2024
1.2.6	Casino & Nightclub	01/06/2023	29/07/2024
1.2.7	Hotel & Lodge	07/09/2023	04/01/2025
1.2.8	Yacht Club	07/09/2023	05/09/2025
1.2.9	Staff Housing Construction	02/04/2023	31/03/2024
1.2.10	Water Park Construction	06/07/2024	05/09/2025
1.2.11	Underground Utilities	02/04/2023	30/06/2024
1.2.12	Water Utility Plants	02/05/2023	30/04/2024
1.2.13	Power Plant	02/04/2023	31/03/2024
1.2.14	Finish Grading / Landscape	30/10/2024	05/09/2025
1.2.15	Opening SWP Facilities	12/06/2024	05/09/2025

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APPENDIX B – TECHNICAL TEAM CVS

Curriculum Vitae

Mark Daniels, B.Sc., M.Sc.

Associate Principal - Environmental

Mark provides comprehensive environmental management duties for CCS, serving as project leader for the environmental compliance process in the production of environmental baseline studies (EBS), environmental impact assessments (EIA) and environmental management plans (EMP) for regulating and permitting agencies.

Representative Experience

Environmental Management

Crystal Palace Resort & Casino Demolition
Environmental consultant for the demolition, implosion and cleanup of the former resort. Project lead for production of Environmental Management Plan and Explosives Safety Plan.

Enhancing Coastal Protection for Climate Change Resilience: Conducted field activities for a series of technical baseline studies for Green Climate Fund (GCF) Enhanced Direct Access (EDA) through the Caribbean Community Climate Change Centre (CCCCC) in six pilot countries.

Baha Mar Main Pier
Environmental lead for benthic assessments/data collection and production of EBS and EMP for modifications to the Main Pier.

Long Cay Redevelopment
Project lead for production of EIA and EMP. Government liaison for permitting process.

Bahamas Lodge Development
Terrestrial specialist, government liaison and project leader for production of EIA and EMPs.

Walker's Cay
Terrestrial surveys, data collection and habitat mapping. Project lead for production of EBS.

Davis Harbor
Habitat mapping and production of EBS for modifications to marina.

Bird & Cat Cay
Environmental lead for terrestrial and marine surveys, habitat mapping, and production of EBS, EIA and EMPs.

Profile

Education

M. Science, Botany
Miami University
Oxford, Ohio,

B. Science, Biochemistry
University of The West Indies
Kingston, Jamaica,

AS. Biology w/ Chemistry
College of The Bahamas
Nassau, Bahamas,

Professional Experience

Caribbean Coastal Services Ltd.
Nassau, Bahamas
Associate Principal - Environmental
Senior Environmental Scientist

The Bahamas National Trust
Nassau, Bahamas
Retreat Curator & New Providence Parks Manager

Miami University
Oxford, Ohio
Research Assistant

Leon Levy Native Plant Preserve
Eleuthera, Bahamas
Preserve Manager

The Bahamas National Trust
Nassau, Bahamas
New Providence Park Warden

Lucayan Tropical Farms
Nassau, Bahamas
Micropropagation Lab Technician

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Mark Daniels, B.Sc., M.Sc.
Associate Principal - Environmental

Adelaide Creek
Terrestrial survey and risk assessment for proposed development within Adelaide Creek system

Lighthouse Point
Terrestrial surveying, data collection and production of vegetation maps.

Little San Salvador
Terrestrial surveying, data collection, production of vegetation maps and environmental baseline study (EBS).

Orange Creek
Terrestrial surveying, data collection and production of vegetation maps.

Alligator Point
Terrestrial surveying, data collection and production of vegetation maps.

Integrated Coastal Zone Management (ICZM) Project - Andros
Terrestrial specialist for coastal surveys conducted at 7 proposed sites on Andros Island.

Protected Area Management

Mann Island
Project lead for terrestrial surveys, vegetation mapping, invasive species removal and petroleum waste cleanup.

Harrold and Wilson Ponds
Coordinator for invasive cattail (*Typha domingensis*) removal and management.

Bonefish Pond
Coordinator and project lead for mangrove cleanup, restoration and monitoring activities.

Retreat Gardens
Day to day management of Garden operations and curation of palm collection. Project coordinator for infrastructure development, utility repairs, building renovations, fundraisers, workshops, community meetings and Garden additions.

Levy Preserve
Day to day management of Garden operations and curation of native plant collection. Project coordinator for infrastructure [...]

Professional Experience cont.

Trauma and Emergency Medical Services Ltd.
Nassau, Bahamas
Physician's Assistant/EMT-B

Professional Memberships

Bahamas National Trust (Ambassador, Member)

Society for Conservation and Study of Caribbean Birds (SCSCB)

Certifications

PADI certified Open Water Diver
DAN World #w44583

Emergency Medical Technician – B

Continuing Education

Highly Effective Teams (HET)
The Nature Conservancy,

Centre for Agriculture and Bioscience International (CABI) – Invasive Species CBA,

Tropical Botany Taxonomy
Florida International University,

Emergency Medical Technician B
Florida Medical Training Institute,

Publications

Geographical ecology of dry forest tree communities in the West Indies
Journal of Biogeography

A Floristic Study of a former land bridge in The Bahama Archipelago
Diss. Miami University

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Mark Daniels, B.Sc., M.Sc.
Associate Principal - Environmental

Levy Preserve (continued)
[…] development, development of education and interpretive material, weather station installation and data collection, fundraisers, workshops, community outreach.

RAND Nature Center
Installation of arboretum and native plant display.

Moriah Harbour Cay
Invasive species (*C. equisetifolia*) removal and management

Restoration and Conservation Activities

Global Strategy of Plant Conservation
Project lead for ex-situ conservation of endemic, endangered and economically important flora of The Bahamas.

Eleuthera Heritage Trail
Consultant and team member for surveying and highlighting heritage sites for the island of Eleuthera.

Kew Seed Bank Initiative
Botany consultant for Seed Bank establishment in The Bahamas.

National Art Gallery Sculpture Garden
Project Lead for restoration of native forest in sculpture garden.

Windermere Island
Dune restoration activities at a private residence damaged by storm surges. Restoration included removal of invasive species, rebuilding of dune and installation of native flora.

Bank's Road
Dune restoration activities at a private residence damaged by storm surges. Rebuilding of dune and installation of native flora included.

Micropropagation of Sea Oats
Lead lab technician for the production of Sea Oats (Uniola paniculata) using tissue culture/micropropagation techniques. Plants used in dune restoration activities.

Native Plant Propagation
Propagation of native species to develop stocks for coastal and inland projects and restoration activities.

Invasive Species Management
Coordination of management activities for invasive Cattail, Casuarina, Scaevola, Paperbark, Brazilian Pepper and Lionfish.

Publications continued

Plant Conservation Challenges in The Bahama Archipelago
The Botanical Review

Presentations & Appearances

International Garden Club

Bahamas Natural History Conference

Leon Levy Native Plant Preserve Lecture Series

New York Botanic Garden Lecture Series

Fairchild Tropical Botanic Garden Lecture Series

Caribbean Agriculture and Bioscience Institute- Invasive Species Conference

Organizations

Community Crop, Co-Founder,

Rotaract Eleuthera, President

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Curriculum Vitae

Agnessa L. Lundy, B.A., M.Sc.

Senior Environmental Scientist

Agnessa provides comprehensive environmental management duties for BRON Ltd., formerly CCS, serving as project leader for the environmental compliance process in the production of environmental baseline studies (EBS), environmental impact assessments (EIA) and environmental management plans (EMP) for regulating and permitting agencies.

Representative Experience

Environmental Assessments

BRON Ltd. *formerly Caribbean Coastal Services Ltd.*
Marine Lead for environmental team in the preparation and submission of environmental assessments for research and development projects throughout The Bahamas and the Caribbean.

Environmental Management

Bahamas National Trust
Project manager for Community Based Conch Management in the Family Islands pilot in East Grand Bahama; Reversing the Decline of Bahamian Coral Reefs 10-year project; Conchservation Campaign.

Assisting with the development of a sustainable financing for the Science & Policy Department through the BNT Dive Tag Program, Expanding Research Permit fees to all National Parks in The Bahamas, Preparing grant proposals

Support the development of the BNT GIS Unit

Fundraising for the "Conchservation Campaign", "Reversing the Dec line of Bahamian Coral Reefs", "Community Based Conch Management in the Family Islands" projects.

Project Advisor for University of the Bahamas student, Ms. Tika Penn, "Mangrove restoration in Adventure Learning Center"

Member of the Bahamas Spiny Lobster Working Group

Profile

Education

M.Sc. Conservation Biology
Manchester Metropolitan University
United Kingdom

Queen's College Center for Continuing Education, Competitive Grant Writing

Conservation Leadership in the Caribbean (CLiC) Fellows Program
Grenada

B. Arts, Marine Science minors
Biology & Agriculture
University of Hawai'i Hilo, Hawaii

A. Arts, Biology with Agriculture
College of The Bahamas
Nassau, Bahamas

Certifications

Certified Environmental Professional in Training [EPt] through ECO Canada

PADI Specialty Diver – Coral Nursery, PADI Advanced Open Water Scuba Certification, PADI Emergency First Responder, Certified Reef Check Eco Diver

Atlantic and Gulf Rapid Assessment Advanced Benthic Certification

Class B Boat Captain, certified in Standards of Training, Certification and Watchkeeping for Seafarers (STCW)

Grant writing, Proposal development, Drafting contracts

Knowledgeable in Geographic Information Systems, Large format printing (HP), Proficient in Microsoft Office suite, ArcGIS10.1 Software & QGIS

Awards

Power of Her 2020 "Game Changer"

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Agnessa Laurelle Lundy, B.A., M.Sc.
Senior Environmental Scientist

The Nature Conservancy Northern Caribbean Program
Conservation Coordinator
Project Manager for Fostering Watershed Conservation in the Pine Islands of the Bahamas; Grand Bahama Environmental Project.

Building a National Network of Marine Protec ted Areas – the Bahamas Pilot demonstration

Incorporating climate change and mangrove restoration into conservation planning

Spatial Data manager for The Bahamas and Turks and Caicos Islands (Northern Caribbean) – GIS

Assisted with the following environmental projects throughout The Bahamas:
- Coral nursery installation and monitoring;
- Implementing a Model Marine Reserve in the South Berry Islands Marine Reserve;
- Expanding Marine Protections Across The Bahamas;
- Mitigating the Threats of Invasive Alien Species - lionfish and casuarina;
- General outreach and education to build support for the expansion of The Bahamas National Protected Areas System;
- Spiny Lobster Fishery Improvement Project

Representative on the following c ommittees.
- National Coastal Awareness Committee;
- National Invasive Species Strategy Committee;
- Biodiversity Committee;
- National Blue Flag Jury;
- National Imple mentation Support Partnership;
- National Steering Committee

Atlantis Paradise Island
As an Aquarist, built the mangrove donation project by establishing a black mangrove nursery and initiating the first red and black mangrove donation to the Victoria Pond Restoration project. Assisted with collecting marine life for exhibits and lead tours with the Sea Keeper Adventurer Programs.

Maintained exhibits in the Coral and Beach tower animal exhibits, and the Coral Towers Quarantine.

Assisted with collecting marine life for exhibits and lead tours with the Sea Keeper Adventurer Programs

Professional Memberships

Society Ecological Restoration
SER Member ID: 66623038

Publications

Ecol ogical s pillover from a marine protected area replenishes an over-exploited population across an island chain
https ://doi.org/10.1111/csp2.17

Andrew S. Kough, Carolyn A. Belak, Claire B. Paris, **Agnessa Lundy** Hea ther Cronin, Gaya Gnanalingam, Sam Hagedorn, Rachel Skubel, Amanda C. Weiler, Allan W. Stoner

Multiplex microsatellite PCR panels for the neotropicalred mangrove, Rhizophora mangle: combining efforts towards a cost-effective and modifiable tool to better inform conservation and management
https://doi.org/10.100
7/s 12686-020-01138-8

John Paul Kennedy, Hayely Craig, Antonella Jara-Cavieres, **Agnessa Lundy**, Richard F. Preziosi, Jennifer K. Rowntree

Expanding The Bahamas Marine Protected Areas Network Tomeet The Ba hamas 2020 declaration.
https://bit.ly/3nVw4oU

Lakeshia Anderson, Craig Dahlgren, Lindy Knowles, Lashanti Jupp, Shelley Cant-Woodside, Shenique Albury- Smith, Casuarina McKinnery-La mbert, **Agnessa Lundy**

Bonefish Pond Mangrove "Res toration": Monitoring Bonefish Pond. Poster. Lindy Knowles, Craig Da hlgren, Janeen Bullard, Felicity Burrows, **Agnessa Lundy**

Diver Insurance

Diver Alert Network (DAN)
Prepared Diver Plan, No. W38894

Curriculum Vitae

Garbrielle Neely, B.Sc.

Environmental Scientist

Garbrielle works with the Environmental Department at BRON Ltd., providing technical expertise in the field of environmental science, and the environmental compliance process.

Representative Experience

Bahamas Power and Light Ltd.
Assisted with oil spill remediation strategies to mitigate against negative environmental impact on the Bahamian marine and terrestrial ecosystems.

Ardastra Gardens Zoo & Conservation Centre
Delivered curriculum and activities centred on animal conservation, environmental conservation and sustainability.
Also, educated students and visitors on the native and invasive flora and fauna in The Bahamas.

The Nature Conservancy
Office Assistant duties consisted of organizing confidential employee files, coordinated donor trips/employee travel and management of contracts, grants and equipment rental agreements.

Research Projects

Wetland Water Quality and Environmental Research
Research was conducted to determine the anthropogenic influences on the state of the mangrove ecosystem and how it influences its ecosystem services. Its focus was based on biodiversity and water quality testing within Bonefish Pond National Park.

Valuation of Bahamian Natural Resources
Research was conducted to determine the value of ecosystem services provided by wetlands, pine forest, coral reefs and other vital ecosystems within The Bahamas.

Integrated Coastal Zone Management
Research focused on coastal development, coastal resilience to storm activity and stakeholder health within coastal communities.

Profile

Education

B. Science, Small Island Sustainability: Marine Science: Environment and Ecosystems Management
University of The Bahamas
Nassau, Bahamas

Professional Experience

Caribbean Coastal Services Ltd.
Nassau, Bahamas
Jr. Environmental Scientist

Ardastra Gardens Zoo & Conservation Centre
Nassau, Bahamas
Temporary Educator

Bahamas Power and Light Ltd.
Nassau, Bahamas
Summer Intern

The Bahamas National Trust
Nassau, Bahamas
College Intern

The Nature Conservancy
Nassau, Bahamas
Part Time Office Assistant

The Department of Marine Resources
Nassau, Bahamas
Summer Intern

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Garbrielle Neely, B.Sc.
Environmental Scientist

Ecotourism
Participated in research that tracked recent tourism models as it relates to ecotourism, while promoting local entrepreneurship and environmental sustainability practices.

Environmental Impact Assessment
Reviewed, prepared and critiqued environmental impact assessment reports for various developments throughout The Bahamas.

Conservation Activities

Conservian/Coastal Bird Conservation
Interned for the Casuarina Control Project. Participated in the removal of the invasive Casuarina plant "Australian Pine" on the island of New Providence.

Bahamas Marine Mammal Research Organization (BMMRO)
Interned for Shared Waters research project in a conservation effort to monitor marine mammal migration throughout the NW Providence Channel.

The Bahamas National Trust
Participated in various scientific research such as the Bahama Oriole population in Andros Bahamas, the Bark Anole Florida invasive species project and surveys on Bahamian Fisheries Status.

Department of Marine Resources
Collected data for a survey on public awareness of the legal harvesting size of mature Queen Conch. Organize public Lionfish demonstration as an initiative to eradicate this invasive species. Monitor and inspect Spiny Lobster tails for distribution to various seafood wholesale vendors and restaurants.

Certifications

PADI certified Open Water Diver.

Atlantic & Gulf Rapid Reef Assessment (AGGRA) Benthic Methodology Training.

Principles of Technical Writing Applied to the EIA Process.

Country Risk Profile for The Bahamas GIS Training Workshop 2019.

Publications

The Presence of Sewage Pollution at Bonefish Pond National Park.
Capstone
University of The Bahamas

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Curriculum Vitae

Franchesca Palomino, B.Sc.

Junior Environmental Scientist

Franchesca works with the Environmental Department at BRON, providing technical expertise in environmental sciences.

Representative Experience

Baha Mar Water Park
Assisted with daily site monitoring and photos of site activities during the construction phase at Baha Mar Resort, Cable Beach, Nassau, New Providence, Bahamas.

Buccara Resort
Assisted with a terrestrial habitat survey, photos of avian species, identification of plant species, and report writing for Environmental Baseline Statement for the proposed boutique resort development on Rose Island, New Providence, Bahamas.

Baha Mar Coastal Works
Assisted with a marine habitat survey, species identification, and report writing for two Environmental Baseline Statements for proposed coastal works at Baha Mar Resort in Cable Beach, Nassau, New Providence, Bahamas.

Saddleback Cay
Assisted with fish identification, coral identification, marine invertebrate identification, and sponge identification to prepare species lists and mitigation considerations for the Environmental Baseline Statement of proposed development on a remote island in the Exuma Cays, Bahamas.

Central Bank of The Bahamas Cash & Data Center
Assisted with an avian survey to identify various bird species for an Environmental Impact Assessment of a proposed development site in western New Providence, Bahamas.

Bonefish Alley
Assisted with report writing for the Environmental Management Plan for the proposed development on Harbour Island, Eleuthera, Bahamas.

Profile

Education

B. Science, Small Island Sustainability
University of the Bahamas
Nassau, Bahamas.

Professional Experience

BRON Ltd.
Nassau, Bahamas
Jr. Environmental Scientist

Forfar Field Station
Andros Bahamas
International Field Studies
Environmental Education

Evolve Functional Fitness
Nassau, Bahamas
Swim Instructor

Baha Mar
Nassau, Bahamas
Human Resources Coordinator

Baha Mar
Nassau, Bahamas
B.E.A.C.H. Sanctuary Intern

Bimini Biological Field Station
Bimini, Bahamas
Intern

Atlantis Resorts
Paradise Island, Bahamas
Marine Aquarium Operations Intern

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Franchesca Palomino, B.Sc.
Junior Environmental Scientist

Forfar Field Station
As an environmental educator, group trips and lessons were facilitated. Groups were taken into the field and educated on various terrestrial and marine ecosystems. Lectures were given on topics such as coral identification, coral conservation, fish identification, mangroves, as well as Bahamian history and culture. Activities and tests were created for college students as part of Forfar's marine program. Assistance was also given with manual labor such as landscaping, filling SCUBA tanks, and keeping guests entertained while they were not in the field.

Evolve Functional Fitness
As a swim instructor for infants and children, ages 6 months old to 13 years old. The main responsibility was teaching the basics of learning how to swim and float. For more advanced students, instruction focused on the proper forms for different swimming styles. Pool deck maintenance was also a duty.

Baha Mar Resort
As a Human Resources Coordinator, the main task was assisting with organizing and filing personal information of employees. Files were transferred from an older system database to the new operating system.

Baha Mar Resort
The B.E.A.C.H. sanctuary was a college internship which involved interacting with guests to answer any questions and educate them on the marine life. It also involved a project on how to improve the B.E.A.C.H. sanctuary experience for guests.

Bimini Biological Field Station
An internship was secured at the Field Station as a result of The Alf Thompson Scholarship. The internship involved tagging sharks, obtaining samples to do research, fishing for bait, conducting baited remote underwater video surveys, fixing nets, giving tours of the station, and landscaping.

Atlantis Resort
As an intern in the Marine Life Department, duties included feeding fish, performing live feedings for aquarium guests, informing guests about marine life and answering their questions, cleaning aquarium and quarantined tanks, and creating informational materials such as pamphlets and power point presentations.

Profile cont'd.

Diver Insurance

Diver Alert Network (DAN) Prepared Diver Plan, No. w40151

Certifications

PADI certified Rescue Diver

First Aid and CPR certified

Sea Kayak Level 2 Certified

Wilderness First Aid Certified

Leave No Trace certified

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Curriculum Vitae

Scott Johnson, B.A.

Environmental Scientist

Scott recently joined the company and has over 14 years of professional terrestrial field experience with special focus on birds, and reptiles. He is also a published author, wildlife educator, and eco-guide trainer.

Representative Experience

Wildlife Biologist and Environmental Scientist

Avian and Terrestrial Science Officer
Bahamas National Trust
My duties include assisting and leading research work in The Bahamas, namely National Parks, preparing and leading educational workshops, presentations, outreach work, and leading ecosystem and park tours

Chairman of Birds Caribbean's Media Working Group
Lead monthly meetings and worked along with other Caribbean countries and raising awareness about birds and bird conservation in the Caribbean via social media.

Hurricane Dorian Assessments on Grand Bahama and Abaco
Participated in post Hurricane Dorian avian and vegetation assessments on Grand Bahama and Abaco. Work included conducting point counts and vegetation sampling

Lead Scientist- Avian Research in Bahamas National Parks and Protected Areas
My research work aims to study the behavior and condition of birds in national parks and how they use protected area ecosystems. My work includes collecting morphometric information of birds in The Retreat and Primeval Forest National Park as well as other parks across The Bahamas.

Bahama Oriole Research on Andros
Assisted in research of the Critically Endangered Bahama Oriole with the University Of Maryland, Baltimore County. Work included searching for orioles, nest searching , capture and banding of birds and conducting point counts across North Andros

Profile

Education

B. Arts. Biology
St. Mary's College of Maryland
St. Mary's City, MD

B. Science, Biology with Chemistry (transferred)
College of The Bahamas
Nassau, Bahamas,

Certifications
Conservation Training
Certificates in Conceptualization, Planning Actions and Monitoring

Professional Memberships
Kirtland's Warbler Research and Training Project
Birds Caribbean
North American Ornithological Society
Wildlife Conservation and Trade Science Committee
Silver Boa Trust

Presentations & Appearances

Bahamas Natural History Conference
Birds Caribbean
North American Ornithological Conference
University of The Bahamas (guest lecturer)
Pine Rockland Working Group
Various schools throughout the Bahamas
Leon Levy Native Plant Preserve

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Scott Johnson, B.A.
Environmental Scientist

Piping Plover Census and Research on Andros

Assisted in Piping plover and shorebird research with the National Audubon Society and Virginia Tech. Also was the Project coordinator for the 2016 Piping plover Census

Booby Cay Iguana Surveys and Outreach

Led rock iguana outreach on Mayaguana and conducted surveys on Booby Cay Rock Iguanas

BNT/SHEDD Aquarium Rock Iguana Research

Field assistant who helped in research and data collection of Andros Rock Iguanas (*Cyclura cychlura cychlura*). Work included catching and collecting morphometric information from Andros Rock Iguanas.

Caribbean Flamingo Banding

Assisted in Caribbean Flamingo capture and banding on the island of Inagua Island, Bahamas. Work included trapping, banding and collecting morphometric data from Caribbean Flamingos

BNT/Island Conservation Rodent Eradication on Allan's Cay, Exuma

Assisted in the removal of mice on Allan's Cay in Exuma as part of a partnership with Island Conservation and Bahamas National Trust. Work included cutting trails and dispersing rodenticide bait across the island and monitoring the islands Audubon Shearwater population

U.S. Forest Service

Field technician for the US Forest Service in Mio, Michigan
Work included field monitoring, Kirtland's Warbler research and tour guiding

White Land Crab Research at The Bahamas Environmental Research Center (BERC) on Andros Island

Field technician who assisted in the capture and data collection of White land Crabs on North Andros

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Scott Johnson, B.A.
Environmental Scientist

Publications

Rowley, M. G., R. C. Stanley, J. M. Antalffy, J. L. Christhilf, D. C. Stonko, **S. B. Johnson**, S. Cant-Woodside, T. Scott Sillett, M. E. Fagan, C. E. Studds, and K. E. Omland. 2021. Hierarchical distance sampling reveals increased population size and broader habitat use in the endangered Bahama Oriole. *Avian Conservation and Ecology* 16(1):5.

Yancy, B.M., J.M. Antalffy, M.G. Rowley, C.N. McKoy, D.C. Stonko, L.E. Rolle, J.L. Christhilf, **S.B. Johnson**, S. Cant-Woodside, and K.E. Omland. 2020. Nest site characteristics of the Critically Endangered Bahama Oriole (*Icterus northropi*). Journal of Caribbean Ornithology 33:95–103

Johnson, S.2020. First Record of the Bahamian Racer (*Cubophis vudii vudii*) in Joulter Cays National Park, Bahamas IRCF Reptiles & Amphibians 27:253

Johnson, S. and W.K. Hayes. 2020. An improved approach to measuring sexual dimorphism in snakes: Morphological variation in the Bahamian Racer (*Cubophis vudii vudii*). Reptiles & Amphibians 27:137–146.

Johnson, S. and S. S. Yates. 2020. First Records of the North American Green Treefrog (*Hyla cinerea*) on New Providence, The Bahamas IRCF Reptiles & Amphibians 26: 257-258

Johnson, S. 2020. First record of a Green Iguana (*Iguana iguana*) on Andros (Bahamas): A potential threat to endemic Bahamian rock iguanas. IRCF Reptiles & Amphibians 26: 255-256

Johnson, S., and T. Knowles. 2019. North American Racer (*Coluber constrictor*) on Grand Bahama, The Bahamas. IRCF Reptiles & Amphibians 26:77–78

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Scott Johnson, B.A.
Environmental Scientist

Publications Cont'd

Johnson, S. and D. Gibson. 2018. South American Cane Toad (*Rhinella marina*) found on Great Guana Cay, Abaco, The Bahamas. Reptiles & Amphibians 25: 160–161.

Johnson, S. and K. Francios. 2018. First record of an Eastern Ribbonsnake (*Thamnophis sauritus*) from Paradise Island, The Bahamas. Reptiles & Amphibians 25: 214

Johnson, S. Black Spiny-tailed Iguana (*Ctenosaura similis*) on New Providence Island, The Bahamas. IRCF Reptiles & Amphibians 25:212–213

Johnson, S., S.D. Buckner, and D. Knowles. 2018. Another parthenogenetic species of gecko on New Providence Island, The Bahamas. Reptiles & Amphibians 25: 215–216

Johnson S, Loring P, Jones D, Yates S. 2018. Atypical foraging habitat use by Piping Plovers (Charadrius melodus) in The Bahamas. Journal of Caribbean Ornithology 31:65-67

Stonko, D.C., L.E. Rolle, L.S. Smith, A.L. Scarselletta, J.L. Christhilf, M.G. Rowley, S.S. Yates, S. Cant-Woodside, L. Brace, **S.B. Johnson**, and K.E. Omland. 2018. New documentation of pine forest nesting by the Critically Endangered Bahama Oriole (Icterus northropi). Journal of Caribbean Ornithology 31:1–5

Caribbean Waterbirds
http://www.birdscaribbean.org/wp-content/uploads/2014/06/Caribbean-Waterbirds.pdf

Working To Save What's Ours- That's Our CAWS
http://www.birdscaribbean.org/2017/03/working-to-save-and-protect-whats-ours-thats-our-caws/

A Caribbean-Led Effort to Stop Wildlife Smuggling Takes Flight
https://www.fws.gov/international/wildlife-trafficking/caribbean-effort-to-combat-wildlife-trafficking.html

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Scott Johnson, B.A.
Environmental Scientist

Publications Cont'd

Saving The Bahamian Oriole
https://www.huffingtonpost.com/entry/saving-the-bahamian-oriole_us_5934b9c8e4b00573ab57a4db

Johnson, S and D. Knowles. 2018. Cuban Knight Anole (*Anolis equestris*) on Great Abaco, Bahamas Reptiles & Amphibians 24: 142

Johnson, S. and D. Woods. 2016. First record of Red Cornsnakes (*Pantherophis guttatus*) on Andros Island, The Bahamas. Reptiles & Amphibians 23: 187

Ewert DN, Hall KR, Wunderle JM Jr, Currie D, Rockwell SM, **Johnson SB**, White JD.2012. Duration and rate of spring migration of Kirtland's warblers. Wilson J Ornithology 124:9–14

Johnson, S. 2011. A non-native skink on Grand Bahama. Reptiles & Amphibians 18:247–248.

Other Activities

Lead Bird guide/ Eco-tour guide trainer whose work included training of bird guides on Andros, Inagua, Long Island, San Salvador, and Abaco

Christmas Bird Count
Assists in identifying and counting birds across the island of New Providence, Bahamas

Snake Conservation Advocate
Leads snake conservation in the country which has led to a decrease in snake mortality on New Providence

Creator of "Wild Bahamas" and "CAWS- Caribbean against Wildlife Smuggling" pages on Facebook and Youtube

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Curriculum Vitae

Carlos Palacious, M.Sc., P.Eng., P.E., PMP

Managing Director

Sr. Coastal / Civil / Structural Engineer

Carlos has day-to-day oversight of company operations including: environmental, coastal, civil, structural, building services, field services and data collection projects; business development; financial management; and process improvement.

Representative Experience

Coastal and Marine Structural Engineering

Enhancing Coastal Protection for Climate Change Resilience, BARBADOS, BELIZE, JAMAICA, GUYANA, SAINT LUCIA, SAINT VINCENT & THE GRENADINES:
Team Leader for a series of technical baseline studies for Green Climate Fund (GCF) Enhanced Direct Access (EDA) through the Caribbean Community Climate Change Centre (CCCCC) in six pilot countries.

Flood Mitigation Infrastructure Project, Belize City, Belize:
Team leader for the technical cooperation between the IDB and Government of Belize for studies and design of the dredging at the mouth of the Belize River and the Haulover Creek.

Baha Mar Development, Nassau, Bahamas
$3B+ Mega resort development
Design and project engineer for coastal redevelopment and design including data collection, numerical and physical model studies, beach nourishment, shoreline protection systems.

The World, Dubai, United Arab Emirates
$15B+ human-made archipelago resembling the world map
Design engineer and master planner producing general layouts, areas and sections of islands ($15-$20M each), beaches and navigational channels.

Royal Bahamas Defense Force Bases, New Providence, Inagua, Ragged Island $200M
Senior engineer responsible for oversight of all local project execution including permitting, design, and project & construction management for Van Oord Marine Contractors.

Profile

Professional Services Bahamas
Top 40 Under 40

Education

M. Science, Coastal and Oceanographic Engineering
University of Florida
Gainesville, Florida,

B. Engineering, Civil Engineering
Dalhousie University
Halifax, Nova Scotia, Canada,

Dip. Engineering, Civil Engineering
St. Mary's University
Halifax, Nova Scotia, Canada,

Professional Qualifications

Registered Professional Engineer,
State of Florida, U.S.A.
(P.E.# 75618)

Registered Professional Engineer,
Province of Nova Scotia, Canada
(P.Eng.# 10108)

Registered Professional Engineer,
Commonwealth of the Bahamas
(P.E.# 10161)

Project Management Professional,
Project Management Institute
(PMP # 2111746)

Professional Experience

BRON Ltd.
Nassau, Bahamas
Managing Director

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Carlos Palacious, M.Sc., P.Eng., P.E., PMP

North Abaco Port, Coopers Town, Abaco, Bahamas
$39M international & domestic port facility
Team Lead and Engineer-of-Record for the contractor overseeing all project documentation and designs including Environmental Documents, Quality Control Documents, Design Reports and Drawings for all disciplines related to the project.

Gun Point Harbour, Ragged Island, Bahamas
$10M port construction and master planning
Construction manager and project engineer for the contractor performing bulkhead, sheet pile, revetment and retaining wall designs and quality control. Master planner co-ordinating BEC, RBDF, port facilities, roads, services etc.

Nassau Harbour Improvement Project, Nassau
$45M+ port expansion and dredging
Project engineer and quality control manager producing sea-bed profiles, overseeing dive teams, and monitoring drill crews during substrate sampling and dredging.

East Bay Marina, Nassau
$3M+ luxury marina
Design and Project engineer completing the planning, layout, coordination and design of a luxury marina including dredging, sheet pile bulkhead, wooden dock structures, floating docks, marina services and upland structures.

Exuma Ferry Dock Bridge, Exuma, Bahamas
$1M structural rehabilitation and restoration
Marine structural and coastal engineer completing structural assessment of existing structure including underwater SCUBA inspections. Also completed studies of littoral patterns, current, wave and tidal data collection, single beam sonar survey, and jet probing.

Lyford Cay Coastal Assessment, Nassau, Bahamas
$500K Coastal and shoreline study
Lead engineer and project manager completing detailed sediment sampling, constituent analysis, numerical modelling, littoral pattern assessment with sea level rise on marine structures and beach systems.

Over Yonder Cay Pond Restoration, Exuma
$100M+ private island development
Completed RTK GPS mapping of tidal pond, watershed, beach and near shore. Prepared an Environment Impact Assessment and conceptual design for the restored pond with a flushing channel.

Professional Experience (continued)

Bermello Ajamil & Partners Inc.
Miami, Florida
Coastal / Civil Engineer

George V. Cox and Co. Ltd.
Nassau, Bahamas
Civil / Structural Intern/Engineer

Thomas L. Brown Associates Inc.
Glen Burnie, Maryland
Geotechnical Engineering Intern

Professional Memberships

Project Management Institute (Member)

Bahamas Society of Engineers (Past Director, Current Member)

American Society of Civil Engineers (Member)

Coasts, Oceans, Ports and Rivers Institute, U.S.A. (Member)

Structural Engineering Institute, U.S.A. (Member)

American Shore & Beach Protection Agency, U.S.A. (Member)

Bahamas National Trust (Ambassador, Member)

Bahamas Reef Environment Educational Foundation (Member)

Bahamas Engineers and Architects and Allied Professionals (Member)

Certifications

PADI certified Open Water Diver

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Carlos Palacious, M.Sc., P.Eng., P.E., PMP

Little Abaco Causeway, Abaco, Bahamas
Bathymetric survey of the channels on either side of causeway to consider alternatives for the construction of a bridge.

Coastal Improvements at the Nauleau Property, Nassau $1.5M+ beach restoration and private marina
Conducted site assessments, data collection, coastal and marine structural engineering design and management for the luxury private residence including beaches, docks, sheet pile bulkhead, boat house, and demolition decomissioned structures.

Gillam Bay Beach Restoration, Green Turtle Cay, Abaco $600K dune and beach restoration
Completed site assessments and studies, local government town hall meeting presentations, and beach restoration and seawall designs. Project manager from planning through construction.

Luxury Residential & Commercial Dune and Beach Enhancement Projects: Lyford Cay, Old Fort Bay, Ocean Club: $200K+ coastal restorations
Lead engineer and project/construction manager completing planning, design and construction activities for numerous dune and beach development and restoration projects including sea walls, buried and exposed revetments, beach nourishment, groynes, breakwaters and coastal armoring.

London Creek Restoration Project, Andros, Bahamas
Team leader for the studies and design of the culvert installation to restore flow downstream of the London Creek Causeway.

Preparation of a National Integrated Coastal Zone Management (ICZM) Policy Framework for The Bahamas
Team leader responsible for overall project management of scope execution and communications with IDB & Government of the Bahamas.

Coastal and Oceanographic Field Data Collection

Baha Mar, Nassau
Bathymetric survey, beach profile survey, sand sample collection and analysis, wave and current recording (ADCP deployment and retrieval), satellite imagery acquisition.

Ocean Place Marina, Paradise Island, Bahamas
Bathymetric survey and underwater visual inspection of harbour entrance channel in front of proposed marina.

Continuing Education

Statement of Accomplishment in Intro to Ecosystem Services, Stanford University Online, Lagunita,

Inter-American Development Bank Climate Change Conference,

Emerging Leaders Alliance Conference,

Planning and Design Guidelines for Small Craft Habors

American Shore & Beach Protection Agency National Coastal Conference

Autodesk Revit Structure Training,

IDB Civil Society Conference, Suriname,

First National Environmental Conclave, Bahamas

KPMG Infrastructure Summit,

Leica RTK GPS Surveying Course,

ASCE COPRI Conference on Coastal Engineering Practice,

Hypack Hydrogaphic Surveying Software and Equipment,

Overcoming Corrosion and Designing Life into Steel Structures,

Mangrove Forest Ecology, Management and Restoration,

Publications

Building Beaches: A Case Study on Coastal Structure Considerations

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Carlos Palacious, M.Sc., P.Eng., P.E., PMP

Exuma Ferry Dock Bridge, Exuma, Bahamas
Bathymetric survey in channel and around bridge. Underwater SCUBA inspections, tide and current study.

Leaf Cay Bathymetric Survey, Exuma
Bathymetric survey around island and location of proposed marina, beaches and over water structures.

Civil and Structural Engineering

Dulles International Airport, Washington DC
Runway expansion project
Project engineering intern accompanying drill crews during in-situ sub-surface exploration, and performed Dynamic Cone Pentrometer(DCP) and Modified Proctor Tests to calculate the California Bearing Ratio. Also conducted Sieve Analysis, Hydrometer, pH Tests and AtterbergLimit tests for soil classification and descriptions.

Atlantis RO Plant Assessment and Redesign
Structural engineer performing site assessments, demolition inspections, and structural design for the reconfiguration and expansion of the industrial steel building.

Bank of Bahamas, West Bay Street, Nassau
Structural engineer designing all structural systems including the shear walls and two-way slab systems.

Radisson Hotel, Cable Beach, Nassau
Project engineer completing structural condition assessment for the report and repair details.

Atlantis All Suites Hotel (The Reef), Paradise Island
Engineer of Record performing wind load modeling and structural design checks for the 22-storey, 497 room condo hotel.

Paradise Blue Waters Condominiums, Paradise Island
Structural engineer completing designs and inspections for the piles and concrete frame of the multi-story luxury condominium complex.

IBM Building, Nassau
Structural engineer producing condition assessment report on the integrity of the concrete multi-story office building.

Presentations & Appearances

Recent Coastal/Hurricane/Climate Change Radio & TV Appearences:

Shenique Miller Live

The Koneksyon Leyvonn Miller

On Point with Wendell Jones

Ed Fields Live KISS FM 96.1

The Essentials (Hubert Edwards)

Real Talk Live (Carlton Smith)

Bahamas @ Sunrise

The Morning Boil (Eddie Carter)

Love 97/JCN News,

Voice Television Show

Baha Mar Final Design
Caribbean Water & Wastewater Conference,

Coastal Resource Management
National Water Symposium,

Organizations

Inter-American Development Bank Civil Society (ConSoc) Member

Junkanoo Corporation New Providence (JCNP) Independent Review Committee

St. Matthew's Anglican Church Vestry Member

Toastmasters International,
Area 90 Director
Club 1600 President

National LEAD Institute,
Board Director

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Curriculum Vitae

Kenneth W. Scott, B.Sc., E.I.
Coastal / Civil Engineer

Kenneth has coastal and marine structural engineering responsibilities including coastal field services, completing coastal engineering studies and analysis for beach nourishment, shoreline erosion mitigation, coastal armoring, and environmental impact assessment projects. In addition to field work, Kenneth has responsibilities in the assistance with the design and construction quality control of marine structures.

Representative Experience

Cape Eleuthera Resort, Eleuthera, Bahamas
Project manager, hydrographic/beach surveyor. Duties included managing numerical modeling works, collecting singlebeam bathymetric data, topographic surveying relative to Mean Sea Level (MSL), and tidal data collection and analysis.

Hurricane Hole Marina, Paradise Island, Bahamas
Lead waterfront design engineer for the proposed Hurricane Hole Marina expansion. Lead field engineer for coastal data collection including bathymetric surveying, flushing analysis of the proposed Hurricane Hole Marina expansion.

Long Cay, N.P., Bahamas
Lead field engineer for coastal data collection including bathymetric surveying, benthic surveying and wave/current data collection for the hydrodynamic analysis of the Long Cay, at the instance of the Baha Mar resort.

Sol Clifton Offshore Platforms, Bahamas
Underwater structural inspector, structural engineer. Duties included inspecting, assessing and reporting on the condition of dry and underwater structural elements of Sol Petroleum's offshore berthing platforms.

Profile

Education

B.Sc. Ocean Engineering
Florida Institute of Technology
Melbourne, Florida
Dec. 2010

Professional Qualifications

Engineering Intern, State of Florida

Professional Memberships

Member of the American Society of Civil Engineers

Member of Coasts, Oceans, Ports and Rivers Institute

American Shore & Beach Protection Agency

Professional Experience

Feb. 2011 – Present
Caribbean Coastal Services Ltd.
Nassau, Bahamas
Coastal / Structural Engineer

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Kenneth W. Scott, B.Sc., E.I.
Coastal / Civil Engineer

Princess Cays and Half Moon Cay, Bahamas
Project manager and hydrographic survey technician in association with a Certified Hydrographic team. Duties included managing logistics, collecting Multibeam bathymetric data collection relative to Lowest Astronomical Tide (LAT), and tidal data collection and analysis.

The Pointe, Nassau Bahamas
Lead design engineer for 44 slip luxury marina at the proposed lifestyle and residential development in Nassau, The Bahamas, The Pointe. Duties included layout and structural design of marina components, field data collection and processing, such as wave/current data collection, tidal data collection, and sediment sampling and analysis.

Chub Cay, Berry Islands, Bahamas
Lead field and design engineer for proposed remote island development at Chub Cay. Duties included bathymetric surveying, seabed probing investigations, and layout and structural design of marina components.

Children's Bay Cay, Exuma Cays, Bahamas
Lead field and design engineer for proposed remote island development at Children's Bay Cay. Duties included bathymetric surveying, wave/current/tidal data collection, seabed probing investigations, as well as layout and structural design of marina and pedestrian bridge components.

Project Sandybottom, Bahamas
Project engineer in association with a global international marine works contractor for the design of three new defense force bases throughout the Bahamas, including dredging, sea defense systems, bulkhead, pier design.

Flood Mitigation Study, Belize City, Belize
Lead field engineer for coastal data collection program including bathymetric surveying, wave/current data collection, profiling, sea and river bead sampling

Yamacraw Marina Flushing Analysis, Nassau, Bahamas
Lead field engineer for coastal data collection including bathymetric surveying and wave/current data collection for the numerical flushing analysis of a proposed private marina.

Continuing Education

Florida Shore & Beach Protection Agency Technical Conference 2018

Florida Shore & Beach Protection Agency Technical Conference 2017

Planning and Design Guidelines for Small Craft Habors: An overview of ASCE Manuals and Reports on Engineering Practice No. 50
2015

American Shore & Beach Protection Agency National Coastal Conference 2014

Autodesk Revit Structure Training, Bahamas, 2014

Leica RTK GPS Surveying Course, Bahamas
2011

ASCE COPRI Conference on Coastal Engineering Practice. USA
2011

Hypack Hydrogaphic Surveying Software and Equipment , USA
2011

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Kenneth W. Scott, B.Sc., E.I.
Coastal / Civil Engineer

Bakers Bay Sediment Analysis, Bakers Bay, Great Guana Cay, Bahamas
Lead project engineer/field engineer for particle size distribution analysis of proposed borrow sites for beach nourishment exercises at Bakers Bay

Cocodimama Resort, Eleuthera, Bahamas
Field engineer for coastal data collection including beach and existing condition surveys for the coastal study as a part of the Technical Outline Report for the Cocodimama resort.

Exuma Yacht Club Hydrodynamic Study, Exuma, Bahamas
Lead field engineer for coastal data collection including bathymetric surveying and wave/current data collection for the hydrodynamic analysis of the Exuma Yacht Club Marina.

Gillam Bay Beach Restoration, Green Turtle Cay, Abaco, Bahamas
Project manager for beach restoration works including sand pumping from offshore borrow areas and placement of sand on the shore, and vinyl sheet pile installation.

Baha Mar, Nassau, Bahamas
Lead field engineer for coastal monitoring program including beach surveying and bathymetric surveying at the Baha Mar beachfront.

Prince George Wharf, Nassau, Bahamas
Field engineer responsible for predredge and post dredge hydrographic surveys and inspection of existing marine fender systems for cruise ship berthing.

East Bay Marina, Nassau, Bahamas:
Field engineer and assistant project engineer for works including dredging, construction of sheet pile bulkhead and construction of wooden dock structures and floating docks.

Baha Mar, Nassau, Bahamas
Field engineer, and assistant project manager for construction of rubble mound coastal structures including revetments and submerged breakwaters.

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Kenneth W. Scott, B.Sc., E.I.
Coastal / Civil Engineer

Joe's Cay, Elbow Cay, Abaco, Bahamas:
Structural design of wooden dock elements, beach elements and rubble mound coastal structures.

Gun Point, Ragged Island, Bahamas:
Resident engineer for final phase of Gun Point Harbour construction.

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CONTACT

mathena@lightpointeng.biz

936-207-9984

Willis, TX

EDUCATION

OUR LADY OF THE LAKE UNIVERSITY
MASTER OF BUSINESS ADMINISTRATION
2004

TEXAS TECH UNIVERSITY
BACHELOR OF SCIENCE IN CIVIL ENGINEERING
1998

MICHAEL W. MATHENA, PE

PRINCIPAL/PRESIDENT OF LIGHTPOINT ENGINEERING

PROFESSIONAL EXPERIENCE

- **Professional Engineer No. 91895 (June 2003)**

LIGHTPOINT ENGINEERING - PRESIDENT

June 2017 - Current

BLEYL ENGINEERING, INC

September 2004 – June 2017

- **Project Manager/Construction Project Manager** (September 2004 to September 2005) – Managed the Construction Department, and a team of three Field Project Representatives. Responsibilities included overseeing construction schedules, pay estimates, change orders, and various construction questions and/or issues. Responsibilities included overseeing the design of various engineering projects including water and wastewater facilities, roadways, and subdivisions for both private and public clients. Responsibilities also including being the District Engineer for two Municipal Utility Districts and one City
- **Senior Project Manager/Client Manager** (September 2005 to December 2007)- District Engineer for five Municipal Utility Districts, three developers, two private water/sewer systems, and the City of Willis. Managed the engineering design work for these clients including all water and wastewater type facilities, subdivision design and roadway design. Coordinated with various governmental agencies to help secure approvals for these projects.
- **Vice President** (January 2008 to August 2016)/ Partner (April 2011 to June 2017) – District Engineer for six Municipal Utility Districts, two private water/ sewer systems, two Cities, and five developers. Managed the designs for these respective clients. Managed various aspects of BLEYL Engineering business including Corporate Human Resources, Marketing, and managed the San Angelo Office.
- **Chief Marketing Officer** (July 2016 to June 2017)- Managed the Human Resources, and Marketing aspects for BLEYL Interests, Inc. Was the District Engineer for six Municipal Utility Districts, two private water/ sewer systems, two cities, and six developer

ALEXANDER ENGINEERING

May 1995 – September 2004

- **Field Project Representative/Construction Inspector** (May 1995 to December 1997) – Construction Inspector for water, wastewater, and residential construction including utility lines, treatment plants and roadways for municipal and private clients.
- **Construction Project Manager** (May 1998 to December 1998) – Managed all aspects (schedules, work quality, pay estimates, etc.) of construction, including the Field Project Representatives and Contractors, for utility line installation, treatment plants and roadways.
- **Graduate Engineer** (December 1998 to June 2003) – Prepared engineering design for projects including water plants, subdivisions, wastewater facilities (lift stations and wastewater treatment plants)
- **Project Engineer** (June 2003 to September 2004) – Managed the design for various engineering projects and was the District Engineer for seven Municipal Utility Districts and the City of Willis

OTHER RELATED EXPERIENCES

- Eagle Scout (1992)
- Harris County MUD 16 Director (March 2000 to April 2006)
- Boy Scouts of America, Sam Houston Area Council, George Strake District (Montgomery, Walker, and Trinity County)
  - District Commissioner (October 2011 to April 2015)
  - District Chairman (April 2015 to August 2018)
  - District Vice Chairman (August 2018 to present)

JOHN A. BOWLEG, PE C.Eng, C.Env, C.Sci (Hydrology)

Chartered Water and Environmental Manager

M.CIWEM, M.ASCE, M.BSE

#7 Wild Tamarind Drive, 'BlueCloud' Camperdown
PO Box EE-17345, Nassau, The Bahamas
Mobile #'s: (242) 557-2775

855 W. Commercial Blvd, #103
Fort Lauderdale, Florida 33309
Email: JBowleg@AEESconsultants.com

EXPERIENCE:

6/05 – Present **CONSULTING PROFESSIONAL CIVIL-ENVIRONMENTAL ENGINEER | HYDROLOGIST | ANALYST ADARIE Engineering & Environmental Services [AEES]. AEES Consulting Group, Ft Lauderdale, FL, USA.** Project management for civil engineering works, environmental monitoring, hydrological design, reverse osmosis, and wetland projects. Conduct construction site inspections, prepare final reports, and expert witness in defense of environmental matters. Review of client independent environmental laboratory data. International project works for land development, water & natural resources management, climate | disaster risk reduction & mitigation mechanisms, and the scaling of resilient water-energy technologies.

- ***American Institute of Hydrology (AIH) – Member***
- ***American Society of Civil Engineers (ASCE) – Member***
- ***ASCE Environmental & Water Resources Institute (EWRI) – Member***
- ***Ocean Thermal Energy Association (OTEA) – Member (2020 – Present)***
- ***Shell Americas General Health, Safety & Environment (HSE) Certificate (thru 28Apr2022)***
- ***United Nations (UN) Department of Safety and Security [BSAFE] Certification (2021 - Present)***
- ***UN Development Programme [UNDP] | UN Environment Programme [UNEP] Consultancies (2021 -Present)***
- ***UNESCO-IHP, EcoHydrology Working Group for Latin America & Caribbean – Head (2021 - Present)***
- ***UNESCO-IHP Latin America & Caribbean (LAC) – Consultant (2020 – Present)***

7/99 – Present **WATER RESOURCES MANAGER | SR. HYDROLOGIST | CONSULTANT [Groundwater & WaSH]. Water & Sewerage Corp. [W&SC] – Water Resources Management Unit [WRMU]. Nassau, The Bahamas.** Water & Environmental Manager with responsibility for the assessment & monitoring of the groundwater resources, thru the Engineering & Planning Department of WSC. Assist in the development / management of the groundwater resources and coastal zone. Involved in all matters concerning groundwater abstraction, reverse osmosis processes, wastewater effluent disposal, and Water Sanitation & Hygiene [WaSH]. In accordance with a key international environmental convention, served as Chairman of the National Wetlands Committee [Ramsar Convention] to implement the countries goals/policy regarding wetlands. Additional international duties for water | hydrology | environment are:

- ***Global Water Partnership – Caribbean (GWP-C), Bahamas Water Resources Representative (2000 – Present)***
- ***International Water Association (IWA) Specialist Group – Caribbean Representative (2013 – Present)***
- ***Ramsar Convention on Wetlands – Caribbean Representative (2003 – 2008), Vice-Chairman of Standing Committee (2005– 2008), & Member of the Management Working Group (2009 – 2012)***
- ***UNESCO-IHP, Hydrological Representative for the Bahamas | Caribbean (Aug 2007 – Present)***
- ***Water Resources Government Representative to the Organization of American States (2002 – Present), & Inter-American Water Resources Network (IWRN) Board Member (2009 - 2012)***
- ***World Meteorological Organization (WMO) – Hydrological Advisor for the Bahamas (2004 – Present)***

4/99 – 7/99 **CONTRACT CIVIL | ENVIRONMENTAL ENGINEER. George V. Cox & Co. Nassau, NP, The Bahamas.** **Family Island Infrastructure Study - Great Exuma, Little Exuma | Exuma Cays, & Cat Island, The Bahamas.** Collection of data for the physical condition of government facilities. Project site data integrated into a Global Information Systems (GIS) Project. Facilities consist of Docks, Airports, Buildings, Bridges, Roads, and Utilities. Hazardous substances and potential environmental impacts also identified.

6/98 – 3/99 **PROJECT ENGINEER | CONSTRUCTION MANAGER. Willmer Engineering, Inc. Atlanta, Georgia, USA.** Project management of landfill closure, asphalt testing at airports, and asbestos surveys | abatement monitoring. Construction Quality Control | Assurance (CQC | CQA) services for the testing & inspection of fill density | compaction, asphalt & concrete pavements, building footings, and structures. Conduct construction site inspections, and prepare final CQA Certification Reports for landfill projects.

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JOHN A. BOWLEG, PE C.Eng, C.Env, C.Sci (Hydrology)

Chartered Water and Environmental Manager

M.CIWEM, M.ASCE, M.BSE

9/97 – 6/98 **CONTRACT CIVIL | DESIGN ENGINEER. EMCON Environmental Services. Duluth, Georgia, USA.** Designs of solid waste landfills & transfer facilities, site development, and hydrological analysis. Environmental Phase I & II Surveys, Corrective Acton Plan (CAP) analysis, site closure, and remediation for Environmental Projects. CQA, site inspections, and CQC for landfill projects.

8/96 – 9/97 **CIVIL ENGINEER | TECHNICAL SPECIALIST. GZA GeoEnvironmental, Inc. Gwinnett, Georgia, USA.** Solid waste landfill | transfer facility design, site development, drainage studies, & environmental site assessments. Engineering | hydrological design calculations using AutoCAD, and EaglePoint Software.

12/93 – 7/96 **ENVIRONMENTAL ANALYST. Analytical Services Inc. [ASI]. Norcross, Georgia, USA.** Extraction methodologies | organic analysis for analytical methods following the US Environmental Protection Agency (EPA) Solid Waste Regulations (SW-846). Performed the review and report of clientele results for sample extracts following EPA-8270, 625, 525 methods | regulatory guidelines, including all required QA/QC Protocols for US Army Corp Of Engineers Project Sites. [ASI - Norcross, GA Environmental | Lab is presently PACE Analytical]

PUBLICATIONS | RESEARCH:

Water-Energy Nexus: Case Study on Climate Change and Water Resources, in The Bahamas. {Use of the reverse geothermal conditions, towards adaptation measures - OTEC | SDC/SWAC | SWRO} – September 2017 | December 2020 | Ongoing Research Activities (Bowleg, 2017, DOI: 10.13140/RG.2.2.28981.91369).
https://www.researchgate.net/publication/345508705_Case_Study_on_Climate_Change_and_Water_Resources_in_The_Bahamas_Use_of_the_reverse_geothermal_conditions_towards_adaptation_measures_2017

Water Resources - Challenges for Groundwater Management & Climate Change in the Caribbean | Commonwealth of The Bahamas, North Andros and Grand Bahama Storm Surge Data (UNESCO International Science School - Havana Cuba, Bowleg, 2018, DOI: 10.13140/RG.2.2.22690.45765)

UNESCO Ecohydrology, Ecosystem Change & Management Response on Tropical Island Systems: Case Study of Great Exuma linking Land Use Change, Coastal Wetlands and Marine Fisheries (Exuma Bahamas, Sealey | Bowleg, 2015)

UNESCO Graphic Publication (CRC Press), Climate Change Effects on Groundwater – Chapter 5, Effects of storm surges on groundwater resources, North Andros Island, Bahamas (Bowleg | Allen, 2011)

UNEP 1st Expert Workshop on Vulnerability of Coastal Aquifers in the Insular Caribbean, Impact to North Andros Water Resources, due to storm surge – presentation of data, following Hurricane Frances (Havana City Cuba, Bowleg, 2004)

Mobil Oil Corporation, 'Biological Activated Carbon for Removal of Gasoline Contaminants in Groundwater', Determination of Isotherm(s) associated with the Competitive Adsorption of Benzene, Toluene, Ethylbenzene, & O-Xylene using Calgon Filtrasorb-400 Granular Activated Carbon (Howard University School of Engineering, Washington DC, 1993)

PROFESSIONAL REGISTRATIONS | AFFILIATIONS:

American Society of Civil Engineers (ASCE), Member (#296012)
Bahamas Professional Engineers Board (PEB) Registration for Civil & Environmental (#10129)
The Bahamas Society of Engineers (BSE), Member (#0131)
The Chartered Institution of Water and Environmental Management (CIWEM), Member (#27901)
UK Chartered Engineer (C. Eng.) Register – (Registration #542642)
UK Chartered Environmentalist (C.Env.) Register – (Registration #3505)
UK Chartered Scientist (C.Sci.) Register – (Registration #WEM/105/000293)

EDUCATION:

IHE DELFT INSTITUTE FOR WATER EDUCATION | Groundwater Hydrology Studies | Certificate – Short Course [2015]
UNV. OF COLORADO BOULDER – UCAR Comet | Hydrometeorology Analysis | Certificate – International Course [2008]
MASHAV – SHEFAYIM, ISRAEL – CINADCO | Water Resources Management | Certificate – International Course [2000]
HOWARD UNV. | Mobil Oil Removal of Gasoline Contaminants in Groundwater | Senior-Graduate Research [1993]
HOWARD UNIVERSITY | School of Civil / Environmental Engineering | Bachelor of Science (BSc) [1988 – 1993]

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APPENDIX C – ENVIRONMENTAL MONITORING CHECKLIST

Observer: _____ Date: _____

Time Started: _____ Time Ended: _____ Air Temperature:_____

Contractor: _____

Site Description: _____

Weather: ☐ Sunny ☐ Cloudy ☐ Partly Cloudy ☐ Rainy ☐ Thunderstorm

Types of Construction Activities

☐ Land clearing ☐ Site Grading ☐ Excavation ☐ Limestone Rock Import

☐ Erosion and Sediment Control ☐ Air Pollution or Dust Control ☐ Fueling

1. Site Safety and Health

1.1. Site Safety and Health

	Areas of Compliance with the Approved Site EMP	*Compliance with EMP*			*Remarks (Reference location, photos, and GPS coordinates if applicable, good practices, problem observed, and proposed corrective/preventative procedures)*
		Yes	*No*	*N/A*	
i.	Appropriate usage of Personal Protective Equipment (PPE).				
ii.	Appropriate signage installed for restricted and hazardous areas.				
iii.	Appropriate signage pertaining to COVID-19 around the site and at sanitization station.				
iv.	Sanitization station is setup and fully functional.				
v.	Adequate freshwater drinking supplies available.				
vi.	Proper disposal of spoils				

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1.2. Groundwater Management

Areas of Compliance with the Approved Site EMP		*Compliance with EMP*			*Remarks (Reference location, photos, and GPS coordinates if applicable, good practices, problem observed, and proposed corrective/preventative procedures)*
		Yes	*No*	*N/A*	
i.	Fueling and oil storage distant from waterbodies and/dewatering.				
ii.	Adequate secondary containment for fuel and oil tanks.				
iii.	Adequate drainage system / prevention method to prevent onsite run off into nearby waterbodies.				

1.3. Air Quality Management

Areas of Compliance with the Approved Site EMP		*Compliance with EMP*			*Remarks (Reference location, photos, and GPS coordinates if applicable, good practices, problem observed, and proposed corrective/preventative procedures)*
		Yes	*No*	*N/A*	
i.	Watering of construction sites to minimize dust generated.				
ii.	Equipment properly maintained to reduce emissions.				
iii.	On-site vehicles not exceeding 10 mph.				
iv.	Record Air Quality measurements	AM _____ PM _____			*Record the time measurements were taken in addition to the measurement. A minimum of 2 readings should be recorded.*

1.4. Waste Management

Areas of Compliance with the Approved Site EMP	*Compliance with EMP*	*Remarks (Reference location, photos, and GPS coordinates if applicable, good practices, problem observed, and proposed corrective/preventative procedures)*

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		Yes	*No*	*N/A*	
i.	Good housekeeping practices and general cleanliness of site.				
ii.	Adequate on-site sanitary facilities.				
iii.	Proper disposal of mobile toilet wastewater.				
iv.	Sewage being properly disposed of, with no drainage into marine or freshwater bodies.				
v.	Appropriate waste (i.e. Used oil, chemical, hazardous, vegetative, and solid waste) storage containers being used are properly labeled and sealed.				
vi.	Proper collection and disposal of construction and hazardous wastes (licensed collectors, manifests).				
vii.	Secondary equipment used to collect spills during fluid removal or transfer.				
viii.	Spill kits and absorbents easily accessible for quick spill response.				
ix.	Solid waste ticket receipts recorded for landfill disposal for onsite waste management.				

1.5. Erosion and Sedimentation Control

Areas of Compliance with the Approved Site EMP		*Compliance with EMP*			*Remarks (Reference location, photos, and GPS coordinates if applicable, good practices, problem observed, and proposed corrective/preventative procedures)*
		Yes	*No*	*N/A*	
i.	Proper sorting of spoils at stockpile management site.				

2. Biological Resource Management: Terrestrial and Marine

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2.1. Terrestrial Resources

Areas of Compliance with the Approved Site EMP		*Compliance with EMP*			*Remarks (Reference location, photos, and GPS coordinates if applicable, good practices, problem observed, and proposed corrective/preventative procedures)*
		Yes	*No*	*N/A*	
i.	Pre-clearing vegetation assessment completed.				*List species observed.*
ii.	Protected and endemic trees identified, and GPS logged.				*List species observed.*
iii.	Identification of protected, endemic, and native botanical species				*List species observed.*
iv.	Vegetative waste collected and contained for mulching/recycling.				
v.	The stockpile of vegetative waste does not exceed 6 cubic yards.				
vi.	Removal and proper disposal of Invasive Sand Dune species of plants.				*List species observed.*
vii.	Active/Inactive bird nest discovery.				*List species observed.*
viii.	Identification of avian species observed				*List species observed.*
ix.	GPS logging of rare, endemic, and migratory bird species, and other notable fauna.				*List species observed.*

2.2. Marine Resources

Areas of Compliance with the Approved Site EMP	*Compliance with EMP*			*Remarks (Reference location, photos, and GPS coordinates if applicable, good practices, problem observed, and proposed corrective/preventative procedures)*
	Yes	*No*	*N/A*	

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i.	Identification commercially important or protected species on the coastline and beach.				*List species observed.*
ii.	Identification of invasive marine species.				*List species observed.*
iii.	Sea turtle nesting area identified, and GPS logged.				*List the amount observed.*
iv.	Shorebird nesting area identified, and GPS logged.				*List the amount observed. Identify species, if possible.*
v.	Marine megafauna observed on site. (☐ Shark ☐ Rays ☐ Turtles)				*Describe impact is any. If no impact was observed state. No Impact. Provide time observation was made and the species observed.*

3. Environmental Incident(s) and Emergencies/Health Accident(s)

Areas of Compliance with the Approved Site EMP		*Compliance with EMP*			*Remarks (Reference location, photos, and GPS coordinates if applicable, good practices, problem observed, and proposed corrective/preventative procedures)*
		Yes	*No*	*N/A*	
i.	Proper maintenance and availability of fire extinguishers and first aid resources.				*Add date the kits were stocked or replenished. Add the last inspection date for the fire extinguishers.*
ii.	Accident & Emergency log – Any reported Safety, Health or Environmental incidents requiring outside interference of emergency response officials.				*If yes, complete the Incident Report Form*

4. Daily EMP Compliance Code

i.	Compliance Code:	☐ Green ☐ Orange ☐ Red *If orange of red is selected, explain the area(s) of noncompliance and the required action described to the site manager in the comments below. Be sure to include photos.*
ii.	Additional Comments:	

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Environmental Monitor to include photos of activities happening on site.			
	Report prepared by:	*Print Name*	*Sign*
		Environmental Monitor	

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APPENDIX D – HEALTH AND SAFETY PLAN

SOUTHWEST POINT
HEALTH AND SAFETY PLAN

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Contents

SECTION 1 - Health and Safety Program

Program Implementation and Responsible Person

The Health and Safety Program (HSP) Supervisor has the authority and responsibility for implementing the provisions of this program for South West Point (SW Point). All managers and supervisors are responsible for implementing and maintaining the HSP in their work areas and for answering worker questions about the HSP. A copy of this HSP is available from each manager and supervisor.

Job Site Start Up – General and Subcontractors

It is the responsibility of SW Point to ensure that our jobsites are consistent in the start-up procedures. This HSP contains a checklist that identifies the documentation required to be maintained, collected, and organized throughout the duration of the project. SW Point requires all subcontractors to maintain the HSP at the jobsite. The subcontractor's HSP and Code of Safe Practices will be the guidelines used by their employees. Subcontractors may review for reference the SW Point HSP and Code of Safe Practices to understand the standards of the company. However, the SW Point HSP and Code of Safe Practices shall not be intended as the sole practice guide used by subcontractors.

The subcontractor's authorized, competent and/or qualified person(s) will be identified to the SW Point Supervisor. In the event there is a safety concern, the Supervisor will address the issue with the subcontractor's designated person.

Supervisor Responsibility

Supervisors (**also known as superintendents, foremen, managers**) are responsible and held accountable for safety and health in their areas of supervision. This includes:

1. Remain informed about company and OSHA safety and health regulations affecting the operations you supervise.
2. Ensure that each employee is able to safely complete each task to which he is assigned and performs these tasks in a safe manner.
3. Ensure equipment and machines are maintained in safe operating condition. Whenever equipment is involved in an accident, regardless of how minor, secure the equipment in a safe location until an investigation is completed. Only after the equipment has been inspected and deemed safe, may it be returned to service.
4. Investigate incidents and injuries that have occurred as soon as reasonably possible, identify the corrective action necessary to prevent a similar incident or injury from occurring, reporting of injuries to the corporate office within 24 hours of occurrence of an injury.
5. Ensure that all employees follow all safety and health regulations and work

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practices, including using personal protective equipment and completing all required safety training.

6. Complete required daily job safety analysis, weekly site safety inspections and other delegated safety duties.
7. Reporting to work under the influence of alcohol or drugs of any type (including over the counter drugs that "may cause drowsiness") or using drugs or alcohol during work hours is immediate cause for dismissal. Remove any employee under the influence from the job site immediately and prepare a written report to be placed in his/her personnel file.
8. Always act professionally, dress appropriately.

Employee Responsibility

Employees are responsible for the following:

1. Follow all SW Point safety and health requirements and safe work practices, including using personal protective equipment where required and complete all required safety and health training.
2. Report to your site supervisor, any unsafe or unhealthy conditions with the work site. It is the policy of SW Point to encourage all employees to report hazards existing at their jobsite to their supervisor or the Responsible Person so that corrective action can be taken in a timely manner. Employees who report such conditions will not be disciplined nor will they suffer any reprisals due to their actions.
3. Report to your site supervisor, any unsafe equipment or work environment.
4. Employees shall see that all equipment guards and other protective devices are in the proper places and adjusted or shall report deficiencies promptly to your site supervisor.
5. Each tool or piece of equipment has a specific purpose and use (i.e. screwdrivers are not chisels; electric cords are not ropes, etc.). Altering the specific use of a tool is unsafe.
6. Whenever you or the equipment you operate is involved in an accident, regardless of how minor, report it immediately to your site supervisor.
7. Reporting to work under the influence of alcohol or drugs of any type (including over the counter drugs that "may cause drowsiness") or using drugs or alcohol during work hours is immediate cause for dismissal.
8. Always act professionally, dress appropriately. No shorts, baggy pants, or sweatpants. Wear shirt with sleeves (no tank tops) and ankle high work boots (no tennis shoes, flip flops, etc.).

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9. If you are unsure about how to perform a task that has already been explained to you, ask for additional instruction **before** you start working.

10. Be aware of what you intend to do **before** you start.

Your attention to and participation in the following guidelines will help considerably in eliminating job hazards and ensure a safe workplace for all employees. If you do not understand any of the policies outlined above, it is your responsibility to discuss each issue with your supervisor before you begin working. Your signature on this document ensures SW Point that you fully understand and comprehend the responsibilities and are able to follow them while performing as an employee of our company.

Dated_____

Print Name:_____ Signature:_____

Compliance

SW Point management is responsible for ensuring that all safety and health policies and procedures are clearly communicated and understood by all of our employees. Managers and supervisors shall enforce the rules fairly and uniformly.

All SW Point employees are responsible for using safe work practices, for following all directives, policies, and procedures, and for assisting in maintaining a safe work environment.

SW Point's system of ensuring that all workers comply with the rules established in our IIPP and Code of Safe Practices and to maintain a safe work environment include:

- Informing workers of the provisions of our HSP;
- Evaluating the safety performance of all workers;
- Recognizing employees who perform safe and healthful work practices;
- Providing training to workers whose safety performance is deficient;
- Disciplining workers for failure to comply with safe and healthful work practices; and
- Conducting recurring training that is relevant to our trade practices.

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Policy Communication

SW Point recognizes that open, two-way communication between management and staff and on-site supervisors and workers on health and safety issues is essential to an injury-free, productive workplace. The following system of communication is designed to facilitate a continuous flow of safety and health information between management and staff in a form that is readily understandable and consists of one or more of the following checked items:

- New worker orientation including a discussion of safety and health policies and procedures.
- Review of our HSP.
- Workplace safety and health training programs.
- Regularly scheduled safety meetings.
- Effective communication of safety and health concerns between workers and supervisors, including translation where appropriate.
- Posted or distributed safety information to include but is not limited to our Code of Safe Practices.
- A system for workers to anonymously inform management about workplace hazards.
- We communicate with and instruct our employees orally about general safe work practices and with respect to hazards unique to each employee's job assignment.

The Health and Safety Supervisor will meet with our management and field teams, prepare written records of the safety and health management meetings, review results of the periodic scheduled inspections, review investigations of accidents and exposures and makes suggestions to management for the prevention of future incidents, review investigations of alleged hazardous conditions, and submit recommendations to assist in the evaluation of employee safety suggestions.

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Suggestion Boxes

SW Point encourages all employees to report jobsite hazards and other unsafe or unhealthy conditions that may exist on the jobsite to their supervisor or the SW Point Supervisor without fear of reprisal. To this end, SW Point will provide anonymous suggestion boxes outside all jobsite trailers. Signage indicating that suggestions are welcome will be posted near the suggestion boxes. Also, to actively encourage SW Point employees as well as all subcontractors and their employees to use the suggestion box to report hazards, unsafe or unhealthy conditions on site, SW Point will hold weekly foremen's meetings with all subcontractors in which the use of the suggestion box will be discussed. If there are too few subcontractors on site to hold a formal weekly meeting, the Supervisor will meet with a foreman individually to explain the importance of the suggestion boxes.

All anonymous safety suggestions will be collected by a job site project management team member at the end of each workday. Any suggestion that is deemed an IDLH (Immediately Dangerous to Life and Health) will be acted upon immediately. Additionally, every suggestion received will be placed on the meeting agenda of the next weekly foremen's meeting as a discussion item.

All anonymous safety suggestions received will be reviewed by the SW Point job site project management supervisors and, if found to be a valid concern, SW Point will take the appropriate action to abate the safety concern in question. SW Point will announce the corrective actions that were put in place at the next weekly subcontractor's foremen's meeting. Each subcontractor will be encouraged to review the safety actions implemented by SW Point via the anonymous suggestion box at their next toolbox safety meeting.

Hazard Assessment

SW Point will conduct periodic inspections to identify and evaluate workplace hazards and shall be performed by competent observer(s) in the following areas of our workplace. Competent Observers will be identified on a project by project basis utilizing the following format:

Competent Observer	Area

Periodic inspections are performed daily and:

A. When we initially established our HSP;

B. When new equipment, processes, procedures, or substances which present potential new hazards are introduced into our workplace;

C. When new, previously unidentified hazards are recognized;

D. When occupational injuries and illnesses occur;

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E. When we hire and/or reassign permanent or intermittent workers to processes, operations, or tasks for which a hazard evaluation has not been previously conducted; and

F. Whenever workplace conditions warrant an inspection.

Periodic inspections consist of identification and evaluation of workplace hazards utilizing applicable sections of the attached Hazard Assessment Checklist and any other effective methods to identify and evaluate workplace hazards.

Hazard Correction

Unsafe or unhealthy work conditions, practices or procedures shall be corrected by SW Point supervisors in a timely manner based on the severity of the hazard(s). Hazards shall be corrected according to the following procedures:

G. When observed or discovered;

H. When an imminent hazard exists, which cannot be immediately abated without endangering employee(s) and/or property, SW Point site supervisor will remove all exposed workers from the area except those necessary to correct the existing condition. Workers necessary to correct the hazardous condition shall be provided with the necessary protection; and

I. All such actions taken and dates they are completed shall be documented on the appropriate form, Hazard Assessment and Correction Record.

Accident/Exposure Investigations

SW Point has established the following procedures for investigating workplace accidents and hazardous substance exposures to include:

- Visiting the accident scene as soon as possible;
- Interviewing injured workers and witnesses;
- Examining the workplace for factors associated with the accident/exposure;
- Determining the cause of the accident/exposure;
- Taking corrective action to prevent the accident/exposure from reoccurring; and
- Recording the findings and corrective actions taken.

Any incident whether or not involving personal injury (SW Point workers, subcontractor workers, or the general public) and/or property damage, indicates a potential breakdown in the Injury and Illness Prevention Program. The incident should be quickly and thoroughly investigated. All investigations will also be uploaded into Procore for review and filing.

Since the difference between minor and major accidents is often small (i.e. a “nick” from a power saw could have been an amputation), **ALL INCIDENTS SHOULD BE INVESTIGATED**

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AND REPORTED. Even near misses should be reviewed and reported. All incidents or accidents involving SW Point employees and equipment should be reported immediately to the site supervisor. A written report should be completed. This report should be turned into the main office within 24 hours.

NOTE: Serious personal injuries (fatalities, hospitalization of more than 24-hour observations, amputation, or disfigurement) and severe property damage (estimated losses in excess of $5,000) should immediately be reported to the site supervisor and The Health and Safety Supervisor.

1. Call for appropriate emergency help (paramedic, ambulance, fire department);
2. Make sure the scene is secure and not endangering any other workers;
3. Obtain witnesses' names, addresses, telephone numbers and written statements when possible;
4. Take pictures of the accident area and surrounding location, get as much detail as possible;
5. Do not move anything except where necessary to protect rescuers and aid the injured. Make sure the area is safe before touching or moving anything;
6. Keep the area clear of sightseers;
7. For their own safety, keep the media out of the immediate area. Tell them a representative from the office will give a statement when appropriate.

Purpose of Accident Investigation

1. To help management identify potential hazards that may exist at other jobs;
2. To determine the accident root cause so similar accidents can be prevented;
3. To pinpoint problem areas and improve methods;
4. Point out the need for additional training;
5. To obtain facts that may eliminate or reduce settlements in third party liability lawsuits;
6. To improve worker morale by showing our company's interest in preventing future injuries is a priority.

Determining Causes

Find all causes. Nearly all accidents result from a combination of physical hazards and unsafe work practices.

1. Investigate accidents as soon as possible, while physical conditions are the same and facts are clear;
2. Interview the injured employee, if possible;

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3. Interview witnesses;
4. Find facts vs. faults;
5. Test statements against actual physical conditions.

Corrective Action

1. Decide on a practical solution for eliminating each cause of the accident;
2. Implement corrective measures as soon as possible;
3. Review the accident and corrective measures at the next safety meeting;
4. Follow-up to assure controls are adequate.

Training & Instruction

All SW Point employees, including managers and supervisors, shall have training and instruction on general and job-specific safety and health practices. Training and instruction shall be provided as follows:

1. When the HSP is first established;

2. To all new employees, except for construction workers who are provided training through a Mow/OSHA approved construction industry occupational safety and health training program;

3. To all employees given new job assignments for which training has not previously been provided;

4. Whenever new substances, processes, procedures, or equipment are introduced to the workplace and represent a new hazard;

5. Whenever we are made aware of a new or previously unrecognized hazard;

6. To supervisors to familiarize them with the safety and health hazards to which workers under their immediate direction and control may be exposed; and

7. To all employees with respect to hazards specific to each employee's job assignment.

8. To any employee requiring retraining.

Workplace safety and health practices include, but are not limited to, the following:

1. Explanation of our HSP, emergency action plan and fire prevention plan, and measures for reporting any unsafe conditions, work practices, injuries and when additional instruction is needed.

2. Use of appropriate clothing, including gloves, footwear, and personal protective equipment.

3. Information about chemical hazards to which our employees could be exposed and other relevant hazard communication program information.

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4. Availability of toilet, handwashing and drinking water facilities.

5. Provisions for medical services and first aid including emergency procedures.

In addition, SW Point will provide specific instructions to all workers regarding hazards unique to their job assignment, to the extent that such information was not already covered in other training.

Orientation Safety Training

An employee's overall safety attitude will be greatly influenced by what he/she learns about SW Point's safety program during his/her first few hours on the job. Each new hire should:

1. Be aware of SW Point commitment to employee safety and receive a copy of SW Point's "Code of Safe Practices."
2. Be aware of the potential hazards associated with his/her job and the safety precautions to be taken including the availability and use of personal protective equipment and guards.
3. Review SW Point s Health and Safety Program and Code of Safe Practices.
4. Know the procedures for reporting accidents, receiving medical attention, and know the location of the first aid kit.
5. Review the safety bulletin board.
6. Receive follow up training on a regular basis or as his/her job functions change.

Toolbox Meetings

Toolbox meetings are an effective way of making all workers aware of the need for job safety on a continuing basis. They help reinforce SW Point's commitment to safe production.

The SW Point site supervisor will provide weekly toolbox topics for each jobsite.

The success of toolbox meetings depends upon the positive attitude and advance preparation of the leader. A copy of the minutes of each meeting is to be maintained at the jobsite. Here are some general guidelines for toolbox meetings:

1. Hold meetings weekly, preferable at the same time.
2. The first toolbox meeting on a job should review general safety rules and potential hazards as well as emergency procedures.
3. Get feedback from the workers. Ask questions. Get opinions. Act quickly on good suggestions and tell what steps were taken at the next meeting.

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4. Talk constructively.
5. When possible, use props (damaged ladder, signage).
6. Use the forms provided for documenting these meetings. Make sure that you get an attendance list at each meeting.

Additional training will be provided to supervisors to familiarize them with the safety and health hazards to which employees under their immediate direction and control may be exposed. It is the responsibility of the site supervisor to ensure that each SW Point worker receives adequate training before beginning work and on a continuing basis during his/her employment with SW Point. The primary objectives are to establish a clear concept of the employee's safety responsibilities, familiarity with the potential hazards involved, and knowledge of safety rules and proper job procedures. Training applies to experienced, as well as novice or inexperienced workers. Employees with previous experience may not be familiar with SW Point's specific safety procedures. The new worker may be placed with an experienced SW Point employee who is known to have a good safety record and familiar with our policies.

Specialized Hazards Training

All employees should be aware of the general and specific hazards of the jobs they will be performing. The employee will be required to:

1. Be aware of safe work procedures and safety equipment required.
2. Demonstrate proficiency in the area of work.
3. Have up-to-date training certificates as required.
4. Know appropriate CPR/First Aid procedures in the event of injury.

Training Subjects

At SW Point, workers must be trained in the following subjects based upon their designated responsibilities:

- SW Point Code of Safe Practices.
- Confined Spaces.
- Proper scaffold erection.
- Overhead electric power lines and maintaining safe working clearances.
- Inspection of all equipment prior to use.
- Good housekeeping, fire prevention, safe practices for operating any construction equipment.
- Safe procedures for cleaning, repairing, servicing, and adjusting equipment and

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machinery.

- Safe access to working areas.
- Protection from falls.
- Trenching and excavation.
- Proper use of powered tools.
- Guarding of belts and pulleys, gears and sprockets, and conveyor nip points.
- Machine, machine parts, and prime movers guarding.
- Lock-out/Tag-out procedures
- Power tool operation and safety
- Unsafe weather conditions
- Materials handling
- Fall protection from elevated locations.
- Use of elevated platforms, including condors and scissor lifts.
- Driver safety.
- Slips, falls, and back injuries.
- Ergonomic hazards, including proper lifting techniques and working on ladders or in a stooped posture for prolonged periods at one time.
- Personal protective equipment.
- Respiratory equipment.
- Hazardous chemical exposures.
- Hazard communication.
- Physical hazards, such as heat/cold stress, noise, and ionizing and non-ionizing radiation.
- Bloodborne pathogens and other biological hazards.
- Other specific job hazards such as: traffic control and flagging procedures.

Documentation and Recordkeeping

We have taken the following steps to implement and maintain our HSP:

1. Records of hazard assessment inspections, including the person(s) or persons conducting the inspection, the unsafe conditions and work practices that have been identified and the action taken to correct the identified unsafe conditions and work practices, are recorded on a Hazard Assessment and Correction Form; and

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2. Documentation of safety and health training for each worker, including the worker's name or other identifier, training dates, type(s) of training, and training providers are recorded on a Worker Training and Instruction Form. We also include the records relating to worker training provided by a construction industry occupational safety and health program approved by OSHA.

Inspection records and training documentation will be maintained according to the following checked schedule:

1. For one (1) year, except for training records of employees who have worked for less than one year which are provided to the worker upon termination of employment.
2. The medical record for each employee shall be preserved and maintained for at least the duration of employment plus five (5) years, except for employees who have worked for less than (1) year. SW Point need not retain records beyond the term of employment if they are provided to the less than 1-year employee upon the termination of employment.
3. Employee Exposure Records. Each employee exposure record shall be preserved and maintained for at least five (5) years, except that:

a. Background data to environmental (workplace) monitoring or measuring, such as laboratory reports and worksheets, need only be retained for one (1) year and a summary of other background data relevant to interpretation of the results are retained for at least five (5) years.

Disciplinary Policy

SW Point is committed to providing a safe and healthful place to work for our employees and subcontractors and their employees. All workers will be expected to know our safety policies and to comply with the safety guidelines. Any worker found in violation of the safety and health procedures will be subject to disciplinary action.

SW Point is sincere in its efforts to provide a safe place to work for all workers on our jobsites. Our employees and subcontractors will be made aware of SW Point's safety and health policies and will be required to conform to these standards. All employees and subcontractors who do not comply with the safety requirements may be removed from the project at the discretion of SW Point's site supervisor(s).

It is every employee's responsibility to verbally notify the site supervisor of *any* safety infraction and it is the site supervisor's responsibility to report it to SW Point. The following guidelines for disciplinary action will be enforced when there is a violation of our safety and health procedures/system.

However, the site supervisor or any company representative with authorization has the discretion to use any one of the following disciplinary actions in any order depending on the

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severity of the violation:

1. The first violation will be a verbal warning explained to the employee, including required corrective action.
2. The second violation will be a written warning using the Safety Warning Notice. The employee will be retained, and both the warning and retraining will be documented and maintained in the employee's file.
3. The third violation will be a written warning using the Safety Warning Notice and the employee will be sent home without pay. Further retraining will be conducted and documented and maintained in the employee's file.
4. The fourth violation will be termination.

SW Point would rather have its employees and subcontractors cooperate with the safety and health policies than take disciplinary action. The cooperation of everyone involved should be solicited. If the cooperation is not forthcoming, then disciplinary action will be necessary. At any time, if the violation is deemed serious, SW Point reserves the right to remove any worker from the site permanently for just cause.

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SECTION 2 – CODE OF SAFE PRACTICES

Code of Safe Practices

All persons shall follow these safe practice rules, render every possible aid to safe operations, and report all unsafe conditions or practices to the foreman or Supervisor.

The term "worker" and "employee" refer to SW Point employees.

1. Employees shall observe and follow these safe practices rules.
2. Employees shall report any unsafe conditions or practices to the foreman or site supervisor.
3. Foremen and/or site supervisor(s) take such action as is necessary to make sure employees observe the safe practice rules.
4. Employees shall be given accident prevention instructions at least every 10 working days once a week is preferred.
5. Evaluate your workspace to determine if any spaces are "confined spaces" and enter only if you are trained and authorized to do so.
6. Anyone under the influence of drugs or intoxicating substances which impair an employee's ability to safely perform his/her duties will not be allowed to work.
7. Horseplay, scuffling, and other acts which tend to endanger the safety or well-being of employees is prohibited.
8. Work will be well planned in advance and supervised to prevent injuries in the handling of materials and/or equipment.
9. No one shall knowingly be permitted to work while their ability or alertness is impaired by fatigue, illness, or other causes that might expose any employee or worker (SW Point or a subcontractor) to injury.
10. Employees shall not enter ditches, manholes, underground vaults, chambers, tanks, silos, or other similar places that receive little ventilation, unless it has been determined safe to enter.
11. Employees are instructed to ensure that all guards and other protective devices are in proper places and adjusted and will report deficiencies promptly to the foreman or site supervisor.
12. Be aware of activities around you that could become pinch points. Be aware of the tools you use that can cause pinch points.
13. Awareness and common sense are your best methods of prevention of pinch points. Always wear safety gear and PPE (proper gloves and footwear).

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14. Crowding or pushing when boarding or leaving any vehicle or machinery or other conveyance shall be prohibited.
15. Workers shall not handle or tamper with any electrical equipment, machinery, or air or water lines not within the scope of their duties, unless they have received instructions from their foreman or site supervisor, and both agree that the worker is trained and understands the proper use of the equipment.
16. Report all injuries immediately to the foreman or site supervisor so that medical or first aid treatment can be arranged.
17. When lifting heavy objects, use the large muscles of the leg instead of the smaller muscles of the back.
18. Do not wear tennis shoes, flip flops, sandals or worn or damaged footwear to any jobsite. Wear a leather type work boot that covers the ankle.
19. Do not throw materials, tools, or other objects from buildings or structures until proper precautions are taken to protect others from falling objects.
20. Employees shall cleanse thoroughly after handling hazardous substances and follow the instructions from the manufacturer and from the foreman or site supervisor.
21. Face a ladder and use both hands while climbing.
22. Do not carry items in either hand when climbing a ladder.
23. Gasoline shall not be used for cleaning purposes.
24. No burning, welding, or other source of ignition shall be applied to any enclosed tank or vessel until you have been told that no possibility of explosion exists.
25. When carrying material, watch for and avoiding obstructions, loose material, etc.
26. If you are required to lift heavy objects, use proper lifting methods by balancing the load and lifting with the legs. If necessary, get help.
27. Any damage to scaffolds, falsework, or other supporting structures shall be immediately reported to the foreman or site supervisor and repaired before use.
28. Employees shall not ride in the back of pickup trucks or on tailgates.
29. Listen for audible back up alarms from heavy equipment. Always be aware of where equipment is operating and keep a safe distance.
30. All project employees will be subject to fair and consistent disciplinary action for policy noncompliance.
31. Persons not directly involved with the construction of this project shall not enter the site without obtaining permission from the SW Point Supervisor and completing a visitor release form, if required.

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32. Materials must not be stored within six feet of floor openings or within ten feet of open floor edges.
33. Materials on roofs and open floors must be secured to prevent them from being windblown.
34. Rebar, conduit, pipe, and other impalement type hazards need to have the ends protected with MoW/OSHA approved impalement protective covers.

Tools & Equipment

1. Do not borrow from or loan any equipment to other subcontractors on the job site.
2. All tools and equipment shall be maintained in good condition.
3. Damaged tools/equipment shall be removed from service and tagged "DEFECTIVE."
4. Only appropriate tools shall be used for the job.
5. Files shall be equipped with handles and not used to punch or pry.
6. A screwdriver shall not be used as a chisel.
7. Portable electric tools shall not be lifted or lowered by the power cord. Use ropes.
8. Plug electrical equipment into appropriate wall receptacles or into an extension of only one cord of similar size and capacity. Three-pronged plugs shall be used to ensure continuity of ground.
9. Electric cords shall not be exposed to damage from vehicles. Never use a damaged cord.
10. In locations where the use of a portable power tool is difficult, the tool shall be supported by means of a rope or similar support of adequate strength.

Welding & Cutting

1. All welding and cutting operations will be performed by qualified individuals. The individual's employer will ensure that the person has received the required training and takes the necessary precautions.
2. Fire extinguishers will be located within 25 feet of the welding or cutting operations.
3. Fuel gases and oxygen cylinders will be stored in an upright position and secured so they cannot fall or be knocked over.
4. Electrical welding equipment will have proper internal and external grounds.
5. Proper Personal Protective Equipment will be worn while welding or cutting.
6. Oxygen cylinders will be stored away from fuel gases, flammable, or combustible materials when they are not being used. At least 20 feet of clear space is required,

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or a five foot high fire resistive barrier with a 1/2 hour fire rating.

7. When required, the employer will assign an individual to serve as a fire watch. The individual will stay at the area where the hot work was being performed at least one-half hour after the welding and/or cutting operations has ceased.
8. LPG cylinders will not be stored inside of the building. They will be stored in a well-ventilated area, away from ignition sources.

Machinery & Equipment

1. Only authorized employees shall operate SW Point machinery or equipment.
2. You are never authorized to operate another subcontractor's equipment or machinery unless you are trained/qualified and receive written permission from the subcontractor.
3. SW Point prohibits you from operating machinery if you have not received proper training and authorization, even if you are asked to do so at the job site.
4. Loose or frayed clothing, long hair, jewelry, finger rings, etc., shall not be worn around moving machinery or other sources that can snag it on machinery controls.
5. Machinery shall not be serviced, oiled, repaired, or adjusted while in operation, except on equipment that is designed or fitted with safeguards to protect the person performing the work.
6. Employees will inspect any heavy equipment before the start of each shift and daily.
7. SW Point requires that all safety messages on heavy equipment are legible. Notify the site supervisor if you cannot read the labels so that they can be replaced.
8. Employees are not allowed to operate equipment that they have not been trained to operate.
9. A seat belt should always be worn during equipment operation to prevent serious injury.
10. Heavy equipment may move unexpectedly and without warning. Before leaving the equipment lower the work tool to the ground, lock operator controls, shut off the engine and remove the key.
11. Keep equipment and attachments a safe distance from electrical power and lines.
12. Keep the equipment free from foreign material. Remove debris, oil, tools, and other items that do not belong on the equipment.
13. Know the appropriate work site hand signals and the personnel that are authorized to give the hand signals.

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14. All repairs must be made before vehicles are placed in service.
15. Roll over protection structures (ROPS) on vehicles and heavy equipment must be used. On equipment with open ROPS wear a hard hat, protective glasses and other protective equipment as required.

Traffic Control

1. Flaggers shall be trained in the proper methods of flagging and controlling traffic.
2. Flaggers shall wear florescent vents and have a stop/slow paddle and other appropriate equipment for flagging and controlling traffic.
3. Flaggers should always position themselves in a manner that allows them an escape route from traffic that is not complying with a flagger's instruction.
4. If you do not have proper training, you cannot be a flagger even if asked to do so at the job site.
5. Training must be documented in accordance with MoW/OSHA regulations.

Asbestos

No SW Point employee shall work with or around asbestos unless specifically trained and authorized to do so. Any material suspected of containing asbestos or lead shall be reported to the Supervisor or foreman immediately, who will thereby notify the site safety supervisor.

Chemicals

Labels on materials and chemical containers must be read before use and the instructions for proper use, handling, and personal protective equipment must be followed.

Wash thoroughly after handling hazardous substances and follow all special instructions from authorized sources regarding this matter.

Hands should be thoroughly cleaned just prior to eating if they have been in contact with hazardous, toxic, or similar substances.

Confined Space Entry (Construction)

Employees shall not enter manholes, underground vaults, chambers, tanks, silos, or other similar places that receive little ventilation, unless it has been determined by the competent person that it is safe to enter. Authorization from the SW Point Supervisor/project manager or The Health and Safety Supervisor is required for entry into confined spaces, trenches or enclosed areas that may contain a hazardous atmosphere. All employees shall read and follow the confined space entry procedures contained in the Safety Program.

Cranes & Rigging

1. Cranes shall not be operated in such a manner that any part of the equipment

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or its load is permitted to come within ten feet of low voltage electrical lines. Any crane work near high voltage electrical lines shall be performed under the high voltage electrical safety policy.

2. Operators of mobile and tower cranes must have a valid certificate to operate the type of crane used.
3. All cranes and accessory gear that exceeds three (3) tons must be certified annually by a licensed certifier.
4. A signal person shall be provided when a load is not in full view of the crane operator.
5. Cranes must be inspected before each shift and daily.
6. A load rating chart must be posted at a location that is readily visible to the operator.
7. Outriggers must be used according to certified agent requirements.
8. A fire extinguisher rated 10: BC shall be accessible to the crane operator.

Slings & Attachments

1. Slings and attachments must be inspected prior to the start of work and daily for damage or defects.
2. The manufacturer's label with load capacity listed must be attached to the sling.
3. Damaged or defective slings must be removed from service.
4. Slings must not be overloaded.
5. Slings must be padded to protect against damage from sharp loads.
6. Employees shall not work under suspended loads.

Electrical

SW Point personnel shall perform no repairs, maintenance, construction, or service work involving energized electrical circuits or equipment.

- Electrical cords shall be inspected prior to each use. Electrical cords shall not be exposed to damage from vehicles. Damaged cords must be immediately removed from service and repaired or destroyed. Only trained electricians shall perform work on an energized circuit.
- Only GFCI equipped temporary power will be used at the jobsite.
- Anyone that works on electrical equipment requires very specific training and authorization. No SW Point employee shall have authorization to work on electrical equipment at any time. Every effort should be made to have the electrical subcontractor at the project site install, maintain, test, and inspect all temporary

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power systems and GFCI receptacles.

- All temporary power systems and GFCI receptacles must be tested at least every 30 days and the documentation for that test kept on file at the project. This documentation is to include the unit number of the item being tested, the test date, results, and name of the person conducting the test.
- It is SW Point's policy to purchase only double insulated tools, and to provide only GFCI protected circuits on all of our projects. If, however, there is a need to use a non-double insulated tool, or non-GFCI protected circuits, the Assured Grounding Program must be followed. All properly tested and maintained GFCI protected circuits used with double insulated tools are exempt from this program.
- For all 120 volt AC single-phase equipment, receptacle cord sets and portable hand tools falling under the program, the following steps apply:
- Visual inspections shall be made daily before the use of any electrical hand tools, equipment, extension cords, etc. Any damaged equipment shall be returned to the yard for repair.
- Equipment ground conductor continuity tests and electrical continuity and polarity tests shall be performed by a qualified electrician, as follows:

  Before first use of new equipment;

  Before equipment is used after any incident which may have caused any damage.
- All repaired equipment must pass all continuity tests satisfactorily before returning to service.
- All equipment, tools and cords that are to be maintained under this program, shall be marked, tagged, or color-coded to ensure timely inspections.
- All equipment, tools and cords that are covered under this program, shall be tested at least every 90 days.
  - Documentation that contains the unit number of the item being tested, the date, results, and name of the person conducting the test, shall be kept at the project site.
  - Any equipment, tools, or cords not passing all continuity tests satisfactorily shall be removed from service and turned in to the supervisor for repair.

Training

OSHA regulations require employers to train employees about electrical safety and hazards. These training requirements apply to all employees who face a risk of electric shock. All such employees will receive training and be familiar with safety related work practices that pertain to their respective job assignments. This training will be conducted at the new employee orientation held at the project site. The project Supervisor will ensure that all such training

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has been completed.

Required Topics are:

- Electrical Hazards: What are they and how to avoid or eliminate them?
- Power Tools: Inspection and use, proper storage, and handling.
- Temporary Power: Inspection of cords and boxes, GFCI testing, routing of cords.
- Cords: Inspection for damage, proper routing to avoid vehicle and pedestrian traffic.
- Lights: Proper installation, maintenance, and routing.
- Permanent Power Installations being constructed: Live circuits, live wiring, energized panels, and equipment.
- Demolition: Assume hot, Lock-Out Tag-Out (LOTO), testing.
- Welding: Current path and proper grounding.
- The effects of electricity and electrical shock on the body.
- SW Point's policy to not work on or repair electrical tools, systems, or equipment.
- Lock-Out Tag-Out procedures for electrical equipment and systems specific to the project site.

Elevating Work

Platforms Boom Lifts

- Employees shall be trained in the safe operation of a boom lift before operating on the job site.
- All employees working in an articulating and straight arm type boom lift shall wear a full body harness, and lanyard.
- The lanyard shall be attached to a manufacturer designed and approved attachment point inside the basket.
- Unless specified by the manufacturer, top and mid-rails are not to be used as attachment points for lanyards.

Scissor Lifts

- Employees shall be trained in the safe operation of a scissor lift before operating on the job site.
- Employees working in a scissor lift are not required to wear PFAS unless required by the manufacturer or the general contractor.
- Manufacturer railings are considered fall protection.
- At no time shall an employee climb on the rails or above the floor of the unit.

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- Ladders shall not be used in the unit.
- Employees shall lower the scissor lift to the down position before moving the lift to a new work location.

Positioning Systems

These allow workers, at elevation, to have their hands free to work.

- Positioning systems alone (without a fall arrest system) are allowed as the sole source of fall protection for ROD BUSTERS ONLY.
- Positioning systems can be, and often are, included as part of the PFAS.
- Positioning systems attach to the wearer at the O-rings located on each hip.
- No SW Point employee will use positioning alone as the sole source of fall protection.
- Positioning lanyards may be made from rope, webbing, chain, or cable.
- Various hooks are used to facilitate positioning, the most common being a "Pelican Hook".
- "Pelican Hooks" are legal, as long as the hook has a double locking action built in.
- All hooks used in any type of fall protection, must be the double locking type.
- Double locking is defined as requiring two distinct actions to open the device.

Fall Protection

- Employees must be properly trained before using fall protection equipment.
- Employees shall wear a complete personal fall arrest system which includes and anchor point, lanyard, and full body harness.
- All anchor points shall be capable of supporting 5,000 pounds.
- Always inspect fall protection equipment before each use.
- Never reduce the length of a lanyard with a knot.
- Never attach two lanyardstogether.
- Only one person can be tied off to a single anchor point.
- Do not use rope or nylon lanyards near sharp surfaces.

Fire Protection

No burning, welding, or other source of ignition shall be applied to any enclosed tank or vessel, even if there are some openings, until it has first been determined that no possibility of

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explosion exists and authority for the work is obtained from the foreman or Supervisor. Employees should be aware of the locations of fire extinguishers that have been provided throughout the project and know- how to use them. A five-pound ABC rated fire extinguisher must be readily available while welding, burning, cutting, or using flammable gases or liquids.

Smoking is not permitted around gasoline or other flammable liquids or gases. Equipment must be turned off before refueling.

Gasoline must be stored and transported only in approved safety containers and gasoline must not be used for cleaning purposes.

Compressed gas cylinders must be kept secured, upright, capped and separated when not in use. Empties should be marked and returned to the storage area for pickup.

Fitness for Duty

No one shall knowingly be permitted or required to work while their ability or alertness is so impaired by fatigue, illness, or other causes that it might unnecessarily expose them or others to injury.

Employees should advise our supervisor of any limitations that might impede their required duties.

Forklifts

- All employees that operate a forklift must be trained and certified prior to any operations. Operators shall read the operating manual for each specific model of forklift they operate.
- Seatbelts shall always be worn while operating a forklift. No riders are permitted anywhere on the lift.
- Approved and certified man baskets are permitted only if the manufacturer has approved the basket for use with that model of forklift. Employees must use the man baskets per manufacturer's recommendations. Employees shall be tied off whenever working in a man basket to an approved anchor point.
- The operator is responsible for all mechanical and safety inspections daily.
- The operator must ensure that the back-up alarm is in working condition prior to use

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at all times. The operator must use a spot tower where the back-up alarm is not working or where there is any doubt as to safe backing operations.

Hearing Protection

Employees working in loud environments shall wear proper hearing protection when needed. Employees shall make every effort to reduce or eliminate the cause of the noise where possible.

Ladders

- All ladders shall be used and set-up properly.
- "A-Frame" ladders shall not be used while leaning against the work. The legs must be spread apart, and spreaders locked prior to use.
- Employees must not stand on the "Top Cap" or the top step of an "A-Frame" ladder.
- Extension ladders shall extend above the landing three feet and shall be secured prior to use.
- Face ladders while climbing and descending always maintaining a 3-point contact.
- Job-built ladders shall be constructed under the supervision of a competent person, using select or good quality grade Douglas for lumber free of knots, splits, or cracks.
- Employees shall not carry tools or materials while climbing ladders.
- All ladders shall be inspected prior to each work shift. Damaged or defective ladders shall be immediately tagged and removed from service and repaired or destroyed.

General Requirements

- SW Point personnel will use only Type 1 or Type 1A portable ladders.
- All ladders will be inspected by yard personnel prior to project site delivery.
- SW Point personnel should use only NDSI ladders, not those belonging to subcontractors.
- All ladders will be inspected by the user prior to each work shift.
- All "A-Frame" type ladders shall be opened, and the spreaders locked while being used.

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- Two or more people shall not work from the same ladder unless it is specifically designed for two people. Training should be given before employees use a two-person stepladder.
- All straight and extension ladders will be tied off when the ladder is set up.
- Only non-metallic, approved ladders shall be used during electrical operations where employees may meet electrical circuits or systems.
- Job-built ladders shall be fabricated per the regulations in MoW/OSHA, Title 8 CCR 1675.
- The ladder's side rails shall extend 36 inches above the landing.
- All extension, straight and job-built ladders shall be tied, blocked, or otherwise secured to prevent an accidental displacement.
- Employees shall be prohibited from carrying equipment or materials, which prevent the safe use of ladders.
- Employees shall be required to face the ladder when ascending and descending.
- Employees shall always use both hands and feet when climbing a ladder, always maintaining 3 points of contact.

Scaffolding

- Employees working from scaffolding shall be trained in the hazards associated with scaffolding and its safe use.
- A competent person will check the scaffolding prior to use and daily.
- Guardrails shall be installed on all open sides and ends as the primary means of fall protection on scaffolding.
- At no time shall any employee leave a partially assembled or unsafe scaffold unattended without tagging the scaffold out of use and notifying the competent person and Supervisor.
- Any scaffolding defects or damage shall be reported immediately to the competent person or Supervisor and no one shall use the scaffold until it is determined safe.
- No employee shall use any scaffold that is unsafe.
- Scaffolding, when properly erected and used, provides a platform with railing from which employees can safely work.

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Tools and Equipment

- All tools and equipment shall be maintained in good condition.
- Damaged tools or equipment shall be removed from service and tagged "DEFECTIVE." Only appropriate tools shall be used for the job.
- Portable electric tools shall not be lifted or lowered by means of the power cord. Ropes shall be used.
- In locations where the use of a portable power tool is difficult, the tool shall be supported by means of a rope or similar support of adequate strength.
- Tools and power cords must be inspected for damage or defects before each use.
- Any problem found with any tool must be reported to a supervisor and corrected before being put into service.
- Guards and other safety devices on tools and equipment must be kept in place and working properly.
- Specific training and certification are required for the operation of powder-actuated tools. Each employee shall inspect their personal tools or company-furnished tools before using them each day to ensure that they are in good working condition. Damaged or defective tools must be returned to the yard and tagged for repair.

Trenching, Excavating and Shoring Procedure

- Trenches 4' or deeper shall have an access/egress ladder every 25'.
- Any trench 5' or deeper shall be protected by a means of sloping, benching, or shoring.
- No employee shall enter a trench 4' or deeper until it has been inspected by a competent person.
- Protective systems (i.e. sloping, benching, or shoring) shall be based on soil type A, B or C.
- Spoil piles shall be kept at least 2' from the excavation or trench.

Vehicles

- Only authorized persons shall operate company vehicles.

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- Before operating vehicles, a check to ensure components are working and adjusted properly: Taillights, headlights, and signal lights, mirrors, windshield wipers, back-up alarms, etc.
- Do not work under vehicles supported by jacks or chain hoists without protective blocking that will prevent injury if jacks or hoists should fail.
- No worker can ride outside of the cab of any truck without a seat provided by the manufacturer that includes a seat belt. Arms or legs should never be dangled over the sides. Workers should never ride on fenders, tailgates, running boards, or loads.
- The parking brake must be set, and the ignition turned off when a vehicle is parked. Vehicles must not be left unattended until after the motor has been shut-off, parking brakes set, and doors locked.

SECTION 3 – HEALTH and SAFETY PROGRAMS

Health and Safety Programs

- The SW Point HSP must be on the jobsite at all times.
- Required permits shall be kept on the job site.
- It is the policy of SW Point that our company is required to manage, implement, and follow the Safety Plans set forth in this document. It is also the policy of SW Point that all subcontractors are required to manage, implement, and follow their respective Safety Plans and that they provide SW Point with a copy of their most recent safety documentation. Safety is a cooperative undertaking requiring participation by every person on the job site. Failure by a SW Point employee or a subcontractor's employee to comply with safety rules set forth in our safety programs will be grounds for retraining, discipline, stopping work or termination of our contract and removal from the job

site. Supervisors shall take the necessary action to assure compliance by employees with all applicable local, MoW/OSHA, Federal, safety regulations and safety rules and practices.

Each subcontractor shall provide the SW Point Supervisor with the name and phone

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number of the *responsible individual* they designate for ensuring compliance with their Safety Plan and Code of Safe Practices before starting work on the SW Point job site. Subcontractors will familiarize themselves with the SW Point Code of Safe Practices and in the event the subcontractor's Code of Safe Practices does not set out specific guidelines for a situation that arises on our job site(s), the subcontractor shall enforce the SW Point policy.

The subcontractor's designated *responsible individual* shall have the full responsibility of enforcing all safety policies and procedures set forth in their Safety Plan and Code of Safe Practices and comply with all applicable State and/or Federal safety regulations.

The Health and Safety Supervisor is the *responsible individual* for establishing procedures and ensuring compliance with the SW Point's Safety Plan and Code of Safe Practices.

Jobsite Safety

Jobsite injuries are a major concern for workers, property owners and contractors. SW Point employees must learn proper work habits and have a thorough understanding of our policies and procedures as well as be familiar with OSHA safety regulations on the work site. SW Point is committed to ongoing safety programs. These efforts serve to substantially reduce accidents, SW Point's liability, and valuable time lost on work projects.

Supervisors are responsible for:

1. Ensuring those employees under their supervision receives the required training.
2. Providing training for each jobsite to ensure that all employees understand the protocol, timeline, andresponsibilities.
3. Evaluating new employees in the environment to ensure they are complying with your instruction and that they remain safe.
4. Ensuring that all equipment is inspected and tested monthly by a responsible individual.
5. Ensure that all subcontractors have safety plans, a Code of Safe Practices and have identified a responsible individual for the management and implementation of their plans.

Employees are responsible for:

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1. Listening to the daily instructions and asking questions if you do not understand.
2. Inspect any equipment assigned to you to make sure it is working properly and is not damaged.
3. Watch for and report any unsafe conditions.
4. Do not do any job that you are asked to do by someone other than your supervisor(s). Regular safety visits to the job-sites will be made to ascertain that all safety precautions are being properly met by SW Point and the subcontractors. A written record of each visit will be made; one copy will be given to the Supervisor and one copy will be turned in to the main office.

ELECTRICAL SAFETY PROGRAM

Understanding Electricity

Electrical equipment is used on a construction site daily. The basic flow of electricity involves 3 steps:

- Starts from a generating source (plug in)
- Travels through conductors (wires)
- Arrival to the equipment

If these three steps in the continuous and uninterrupted flow of electricity are in place, we have what is called a circuit.

Considering the Hazards

The main concern with electrical safety is to not come in contact with the flow of electricity within the 3 steps; otherwise you could receive a shock that could seriously harm you.

Hazards to be aware of include:

- Shock if your body becomes a part of the electrical circuit.
- Burns to both the inside and outside of the body upon contact.
- Arcing that may cause fire problems on site if there is contact with flammable liquid or fumes.
- Explosion due to electricity providing a source of ignition to flammables.
- Fires which are caused by the high resistance of inhibiting of electricity in wires. Examples that make it difficult for the flow of electricity in wires include necks, kinks, or improperly spliced and connected wires to switches these can cause fire.

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General Causes of Electrical injury and How to Prevent Them

On a construction site, the common electrical hazard has to do with ground fault electrical shock. This means that electricity is somehow released into the ground and allowed to travel to anywhere or to anything that conducts electricity. This includes human beings as well.

Therefore, to reduce/prevent occurrence of this, Ground Fault Circuit Interrupters (GFCl) are used. The GFCl's are like a watchdog that monitors the imbalanced flow of electricity between the three steps (plus- in, wire and equipment).

If there is an imbalance that poses a threat, the GFCI automatically shuts off/down the generating source.

Note however, that the GFCI cannot protect a person from line to line hazards, i.e.: holding 2 hot or 1 hot and one neutral wire. The GFCI is for protection from the flow of electricity that escapes from the electrical source into the ground and to a good conductor, i.e.: like a human being.

Most injuries are caused by:

- Unsafe equipment
- Unsafe workplaces which are a result of environmental factors.
- Unsafe work practices and lack of knowledge to prevent injuries and protect workers:
- Make sure all necessary guards are in place and in good condition
- Use electrical protective devices such as GFCl's.
- Use appropriate PPE when necessary.

Work in a safe manner and in accordance with local and relevant international regulations and training given.

Inspections

It is very important that employees understand the importance of electrical safety. The best way to make sure of that is to instill the importance of inspecting the equipment they will be using and the area they will be working in. This includes inspecting:

- Temporary wiring and wiring on equipment to make sure they are in good condition;
- Plug ins and receptacles that are not a part of the permanent building;
- Equipment connected by cord and plug that is available to employees;
- Equipment that runs off of a combustion engine that is available to employees.

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TAGGING OUT/ LOCKING OUT (See Accident Prevention Tags)

If there is defective equipment on site or at the facility it must be tagged to indicate it is out of order. With a uniform tag that reads, "Out of Service" or "Do Not Use." It should then be removed from service until it is replaced or repaired.

Locking Out

If it is applicable and a piece of equipment is out of order the source of energy should be blocked/isolated to prevent activation of the equipment.

Maintenance

Servicing and repairs should only be done by a qualified person designated by SW Point or by a third party (outsource) depending on the repair that is required. Large equipment will normally be sent out to a third party to be serviced or repaired.

Guarding

As per OSHA regulations, any live parts of electrical equipment operating at 50 volts or greater must be guarded. Guards must not be removed or bypassed. They must be in good working condition. If there is a guard that is not working properly this should be reported to the acting foreman and the equipment should be taken out of service until it is repaired.

Temporary Wiring

Since construction sites must utilize temporary wiring on a larger scale than other occupations it is important to keep up with their maintenance. In inspecting them it is important to know what to look for. The employee inspecting must make sure the insulation is in good condition. This means that there are no breaches throughout the length of the cord to prevent exposure of wiring or conductors at any time. There should be no deterioration of the insulation or the cord. Temporary wiring must have their ground in place. If it does not comply with this, it must be marked or tagged and taken out of service by means of replacing or properly repairing.

Circuit Protection Devices

As mentioned previously, there are several protection devices such as GFCl's, fuses and circuit breakers that act as "watchdogs" for abnormalities in the flow of electricity.

The purpose of these fuses and circuit breakers is to recognize over capacity currents and monitor the amount of current that the circuit will carry.

These "watchdogs" automatically open or break the circuit (flow of electricity) when the wiring has exceeded its capacity to handle the size of the flow.

MoW/OSHA grounding requirements specifically state that each 15/20 ampere receptacle must have a grounding contact, which is connected to an equipment grounding conductor.

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Grounding of Electrical Equipment

The three-pronged plug is used to allow a path for dangerous fault currents to return to the ground at the plug in/socket/original source of the electricity. The ground of any cord or equipment must always be in place. The ground shall not be removed. If the ground is removed during normal working activity the cord or equipment shall be tagged out and removed from service until it is repaired properly or replaced. SW Point will adhere to all applicable regulations.

Preventive Maintenance

In order to prevent harm to workers, it is important to maintain electrical tools and equipment as well, it is critical that workers wear appropriate, and ANSI approved personal protective equipment.

Training

A good form of protection is a good training program. Most workers have respect for electricity. However, it is critical that employers be provided with training on basic electrical principles and that they know how to check, maintain, and store electrical equipment on site.

To train workers to recognize if:

- A repair is required
- Loose connections are anywhere
- There is defective insulation anywhere.

To have workers trained to routinely check equipment is a part of the loss prevention approach we emphasize at SW Point.

Employees must learn proper work habits and have a thorough understanding of our policies and procedures as well as be familiar with OSHA safety regulations on the work site. SW Point aha Mar is committed to ongoing safety programs. These efforts serve to substantially reduce accidents, SW Point's liability, and valuable time lost on work projects.

Personal Protective Equipment (PPE)

Every jobsite must always follow 100% Head Protection and 100% Eye Protection. Other proper work attire includes t-shirt with 4" sleeve, long pants, and leather work boots with a hard sole.

Additional protective footwear (metatarsal covers, rubber boots, etc.) will be determined by job task.

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Head Protection

Head protection is required for employees who are exposed to flying or falling objects or to electrical shocks and burns.

Eye Protection

In addition to safety glasses, employees shall wear a face shield when cutting or grinding due to the hazard of flying objects and debris.

In the case of a splash hazard, chemical goggles must be worn.

Hearing Protection

In areas of high noise, while operating certain equipment, hearing protection is provided and must be worn.

Respiratory Protection

To control atmospheric contamination and/or occupational diseases, injuries or illnesses that can be caused by breathing contaminated air, respiratory equipment and appropriate control measures must be provided to protect the health of each employee. The need for respiratory protection is determined by:

1. The Material Safety Data Sheets
2. Air monitoring of the work area if required.

It is our goal to implement and maintain a respiratory protection program that will:

1. Enhance the protection of worker health.
2. Promote more effective use of respirators by selecting appropriate respirators for use in the workplace and fit testing to ensure proper fit. The respirator must allow for eye protection and communication.
3. Inspection of respiratory protection equipment must be conducted before and after each use. If proper repairs cannot be made to the unit, it will be removed from service.
4. Cleaning and disinfecting of non-disposable respiratory protection shall be done after each use following the manufacturer's guidelines if available. As a rule, remove filters, cartridges or canisters and replace where necessary. Rinse remaining components in warm water with a mild detergent or cleaning solution as recommended by the manufacturer. The cleaner must contain a disinfecting agent.
5. Respiratory protection equipment must be properly stored.

Respiratory Classification

Before employees can use respiratory equipment, they must be:

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1. Fit tested for proper use by a competent person;

2. Pass a medical respiratory evaluation.

The classification of particulate respirators is subdivided into three categories:

1. **Particulate Filtering Face Piece Respirators** –These are disposable respirators because the entire respirator or face mask is discarded when it becomes unsuitable for further use due to considerations of hygiene, excessive resistance, or physical damage.
2. **Half-Faced Respirators** –Reusable respirators because the face piece is cleaned and reused but the filter cartridges are discarded and replaced when they become unsuitable for further use.
3. **Powered Air-Purifying Respirators (PAPRs)** – A battery-powered blower moves the air flow through the filters.

Fall Protection

All employees working on construction sites who may be exposed to fall hazards in the course of their daily activities are covered by this program. This program will also apply to non-site personnel, visitors and any individual on site who may be exposed to a fall hazard.

This program is intended to reduce and eventually eliminate the occurrences of fall-related injuries during the performance of employee work activities. This program will address all fall hazards which can reasonably be expected to occur prior to the performance of work and will provide the guidance to control or eliminate those hazards. Through effective administration, enforcement, training and evaluation of related incidents, this program will be modified until all injuries are effectively controlled.

Six Foot Fall Exposure Rule

Each site supervisor, foreman and employee **must** take action to prevent, restrain or arrest any fall risk that is greater than six feet. Falls typically occur when a person steps through/into an opening or falls from an elevated structure. The three main accepted types of fall protection systems:

1. Guardrails
2. Safety nets and
3. Harnesses (personal fall arrest systems).

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Listed below are the different types of fall safety equipment and their recommended usage:

Class 1	**Body belts (single or double D-ring) are designed to restrain a person in a hazardous work position and to reduce the possibility of falls. They should not be used when fall potential exists; positioning only.**
Class 2	**Chest harnesses are used when there are only limited fall hazards (no vertical free fall hazard), or for retrieving persons such as removal of persons from a tank or a bin.**
Class 3	**Full body harnesses are designed to arrest the most severe free falls.**
Class 4	**Suspension belts are independent work supports used to suspend a worker, such as boatswain's chairs or raising or lowering harnesses.**
Rope Lanyard	**Offers some elastic properties for all arrest; used for restraint purpose.**
Web Lanyard	**Ideal for restraint purposes where fall hazards are less than 2 feet.**
Cable Positioning	**Designed for corrosive or excess heat environments and must be used in conjunction with shock absorbing devices.**
Shock Absorbers	**When used, the fall arresting force will be greatly reduced if a fall occurs.**
Rope Grabs	**A deceleration device which travels on a lifeline used to safely ascend or descend ladders or sloped surfaces and automatically, by friction, engages the lifeline and locks to arrest the fall of an employee.**
Retractable Lifeline Systems	**Gives fall protection and mobility to the user when working at height or in areas where there isa danger of falling.**
Safety Nets	**Can be used to lessen the fall exposure when working where temporary floors and scaffolds are not used and the fall distance**
Rail Systems	**When climbing a ladder, rail systems can be used on any fixed ladder as well as curved surfaces as a reliable method of fall prevention.**

Fall protection training is very important to help mitigate risk of workplace falls by teaching our employees how to use safety equipment properly. Fall protection training of all employees will occur during the following times:

- At the time of hire.
- When the program is first developed.
- When the program ismodified.
- When employee responsibilities change.
- Specifics for eachjobsite.
- Tailgate meetings.

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- After disciplinary action.

Fall Prevention/Protection methods, equipment and controls are in place for your protection, and it is each Supervisor/foreman/employees' responsibility to understand the six foot exposure rule and the appropriate fall protection equipment to use for each project in order to reduce and eliminate serious injury.

Hierarchy of Fall Prevention Controls

All fall-related hazards will be identified prior to any employee beginning a work activity. Any fall related hazard that is identified will be dealt with in the following manner:

- Hazard eliminated through engineering design.
- Hazard controlled through alternative work methods.
- Personal fall protection equipment/systems utilized.

Leading Edge Work

A Leading Edge is an "unprotected side and edge" during periods when it is not actively and continuously under construction. Each employee who is working near a leading edge 6 feet or more above lower levels shall be protected from falling by guardrail systems, personal fall arrest systems, or other approved means as deemed necessary by the competent person based upon the site conditions.

SW Point may develop and implement a fall protection plan which meets OSHA requirements if it is demonstrated that it is infeasible or creates a greater hazard to use guardrail systems, safety net systems, or fall arrest systems.

Training

All employees who could reasonably be expected to become exposed to fall hazards will be trained in the identification and control of those hazards.

Any employee who knowingly violates fall prevention procedures will be disciplined according to SW Point's Disciplinary Policy and/or his supervisor's discretion.

Each employee will be instructed in fall prevention by a competent person. Employees will be trained in the fall protection systems and equipment, how to identify fall hazards, and special fall hazards. In the event an employee does not understand the procedures of fall hazards, the employee must notify his supervisor and further training will be provided.

Training Documentation

All employees trained in fall prevention will be documented in the following manner:

- The date of the training.

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- The employee's printed name.
- The employee's signature.
- The name of the trainer.
- The specific subjects covered in the training session.

Personal Fall Arrest System

- Horizontal lifelines must be installed under the supervision of a qualified person and have a safety factor of 2.
- Lanyards and vertical lifelines must have a 5,000lbs minimum breaking strength.
- Lifelines must be protected from damage.
- When vertical lifelines are used, each person must have separate lifelines.
- Self-retracting lifelines and lanyards that limit free fall to 2' must have a 3,000lb tensile strength, when fully extended.
- Lifelines, lanyards, and belts must be made of synthetic fibers.
- Anchorages must be separate of suspended platforms and have a 5,000lbs capacity.
- Lanyards must be of the shock absorbing type; body harness must limit force to 1,800lbs.
- Lanyards must be rigged to limit falls to 4'. The anchor end should be secured above the waist.
- Personal Fall Arrest System components must be inspected before use and must not be used to hoist materials. Also, a documented inspection of the PFAS must be done twice a year by a competent person.
- PFAS must not be attached to a guardrail.
- Prompt rescue must be provided in the event of a fall.

Fall Restraint System

- Fall restraint is required in any aerial lift (scissor lift, zoom boom, etc.) that has a manufacturer-provided anchorage point.
- Body belts can only be used for positioning systems.
- Anchorages must support 4 times the intended load. Manufacturer-provided anchorage points are marked inside of the platform. DO NOT TIE OFF TO GUARDRAILS.
- Restraint must be rigged so that you cannot fall over the edge. An 8' web lanyard SRL

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("yo-yo") will best accomplish fall restraint in an aerial lift.

- Inspect prior to use and as other conditions warrant.
- Remove defective equipment from use.

Positioning Device System

- System must be rigged so that you cannot free fall more than 2'.
- Inspect prior to use and as other conditions warrant.
- Remove defective equipment from use.

Anchor Points DO'S

- Understand that a total fall protection system is only as good as its weakest link.
- Involve all the "necessary" professionals" in the project planning process.
- Realize that there are often many ways to provide anchorage for the same task. Examine all options.
- Select an anchorage/connector that can support 5,000lbs for a single tie-off point for one person or use other certified engineering information.
- Consider how many workers must be protected and at what points over the life of the project.
- Limit the fall to the shortest possible distance.
- Select an anchorage directly overhead whenever possible to avoid swing fall injury.
- Include shock absorbing lanyards or devices to provide an additional level of safety.
- Consider how a rescue plan would be performed.
- Plans consider ongoing work.
- Know what is available. Choose compatible equipment.
- Work with manufacturers to find the best combination of equipment.
- Keep abreast of new and better methods.

Anchor Points DON'TS

- Do not select anchorages where you could strike a lower structure.
- Do not use anchorages where sharp objects or rough edges could cause excessive wear on equipment.
- Do not use anchorages where equipment could contact high heat or harmful chemicals.

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- Do not create or improvise anchorages without first determining whether they could compromise structuralintegrity.
- Do not use anchorages that will cause a load to be applied to the snap hook keeper or snap hook lock.
- Do not use anchorages that will not allow the snap hook keeper to close completely and lock.
- Do not join multiple lanyards together to reach an anchorage.
- Do not wrap a lanyard around a beam or other anchorage and attach it back on itself, unless specifically designed for that purpose.
- Do not allow more than one worker to tie off to the same anchorage unless it is designed to hold more.
- Do not select anchorages on your own unless you have had adequate training.

Harness Inspection

For harness inspection, perform the following procedures for all harness straps.

Belts and Rings: Beginning at one end, holding the body side of the belt toward you, grasp the belt with your hands 6-8" apart. Bend the belt in an inverted U. The surface tension resulting makes damaged fibers or cuts easier to see. Follow this procedure the entire length of the belt or harness. Watch for frayed edges, broken fibers, pulled stitches, cuts, or chemical damage.

D-Rings: Check the d-ring and d-ring metal wear pad (if any) for distortion, cracks, breaks, and rough or sharp edges. The d-ring bar should be at a 90 degree angle with the long axis of the belt and should pivot freely. Check the back D-ring for an indication. Many harnesses will have a red tag that rips out and is visible. This means the harness has been involved in a fall and should be taken out of service and replaced.

Attachments and Buckles: Note any unusual wear, frayed, or cut fibers, or distortion of the buckles or D's. Rivets should be tight and unmovable with fingers. Body side rivet base and outside rivet burr should be flat against the material. Bent rivets will fail under stress.

Inspect for frayed or broken strands. Broken webbing strands generally appear as tufts on the webbing surface. Any broken, cut, or burned stitches will be readily seen.

The tongue or billet of the belts receives heavy wear from repeated buckling and unbuckling. Inspect for loose, distorted, or broken grommets. Belts should not have additional punched holes.

Tongue Buckle: Buckle tongues should be free of distortion in shape and motion. They should overlap the buckle frame and move freely back and forth in their socket. Roller should turn

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freely on frame. Check for distortion or sharp edges.

Friction Buckle: Inspect the buckle for distortion. The outer bars and center bars must be straight. Pay special attention to corners and attachment points of the center bar.

Lanyard Inspection

When inspecting lanyards, begin at one end and work to the opposite end. Slowly rotate the lanyard to the entire circumference is checked. Spliced ends require particular attention. Hardware should be examined under procedures also detailed below.

Snaps: Inspect closely for hook and eye distortions, cracks, corrosion, or pitted surfaces. The keeper (latch) should seat into the nose without binding and should not be distorted or obstructed. The keeper spring should exert sufficient force to firmly close the keeper. Keeper locks must prevent the keeper from opening when the keeper closes.

Thimbles: The thimble must be firmly seated in the eye of the splice, and the splice should have no loose or cut strands. The edges of the thimble must be free of sharp edges, distortion, or cracks. Steel Lanyard: While rotating the steel lanyard watch for cuts, frayed areas, or unusual wearing patterns on the wire. Broken strands will separate from the body of the lanyard.

Web Lanyard: While bending webbing over a pipe or mandrel, observe each side of the webbed lanyard. This will reveal any cuts or breaks. Swelling, discoloration, cracks, charring are obvious signs of chemical or heat damage. Observe closely for any breaks in the stitching.

Rope Lanyard: Rotation of the rope lanyard while inspecting from end-to-end will bring to light any fuzzy, worn, broken, or cut fibers. Weakened areas from extreme loads will appear as a noticeable change in original diameter. The rope diameter should be uniform throughout, following a short break-in period.

Shock Absorbing Devices: The outer portion of the pack should be examined for burn holes and tears. Stitching on areas where the pack is sewn to D-rings, belts, or lanyards should be examined for loose strands, rips, and deterioration.

Self-Retracting Lanyard/Lifeline (SRL, "yoyo"): The casing should be examined so that no parts are missing, and the label is legible. The web or cable lanyard must be pulled out all the way to inspect the quality and to ensure it pulls out and retracts easily. Look for a red indicator near the snap hook which tells you that the SRL has been involved in a fall. If you find any indication of a fall, the SRL must be taken out of service to be inspected and recertified by the manufacturer before it can be returned to service.

Visual Indications of Damage to Webbing and Lanyards

Heat: In excessive heat, nylon and polyester become brittle and have a shriveled brownish appearance. Fibers will break when flexed. Nylon should not be used above 200 degrees F. Polyester should not be used above 180 degrees F.

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Chemical: Change in color usually appears as a brownish smear or smudge. Transverse cracks appear when bent over mandrel, loss of elasticity.

Molten Metal or Flame: Webbing strands fuse together. Hard shiny spots. Hard and brittle feel. Nylon will not support combustion, however polyester will.

Paints and Solvents: Paint which penetrates, and dries restricts movement of fibers. Drying agents and solvents in some paints will appear as chemical damage.

Cleaning: Basic care of all safety equipment will prolong the durable life of the unit and will contribute toward the performance of its vital safety function. Proper storage and maintenance after use are as important as cleansing the equipment of dirt, corrosives, or contaminants. Storage areas should be clean, dry, and free of exposure to fumes or corrosive elements.

Nylon and polyester: Wipe off all surface dirt with a sponge dampened in plain water. Squeeze the sponge dry. Dip the sponge in a mild solution of water and commercial soap or detergent. Work up a thick lather, with a vigorous back and forth motion. Then wipe dry with a clean cloth. Hang freely to dry, away from excessive heat.

Drying: Equipment should dry thoroughly without close exposure to heat, steam, or long periods of sunlight.

Storage of Fall Protection Equipment and Systems

Proper storage procedures will be followed on all SW Point projects to assure fall protection equipment and systems maintain effective use. The following guidelines will be used for storage on all of our projects:

- Do not store personal fall arrest equipment or systems near solvents, paint, grease, oil, acid, or any substance which could deteriorate synthetic fiber.
- Return all personal fall arrest equipment after each shift in a place designed by the senior site manager.
- Do not place personal fall arrest equipment in the bottom of gang boxes used for storage of other tools or equipment.

A Competent Person Must Know:

1. Approved full body harness and lanyards shall be worn by those employees whose work exposes them to falling in excess of 6 feet from the perimeter of a structure, through shaft ways and openings, sloped roof surfaces steeper than 7:12, or other sloped surfaces steeper than 40 degrees not otherwise adequately protected under the provisions of these orders.
2. Where practical, the anchor end of the lanyard shall be secured at a level not lower than the employee's waist, limiting the fall distance to a maximum of 4 feet.

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3. If an employee's duties require horizontal movement, rigging shall be provided so that the attached lanyard will slide along with the employee. Such rigging shall be provided for all suspended staging, outdoor advertising sign platforms, floats, and all other catwalks, or walkways 6 feet or more above the ground level beneath.
4. Any lanyard, safety belt, or drop line involved in a fall, shall be immediately removed from service, and shall not be used again for employee safeguarding.
5. All safety belts, harnesses, and lanyards shall be labeled as meeting requirement contained in ANSI A10.14-1975, Requirements for Safety Belts, Harnesses, and Lanyards, Lifelines and Drop Lines for Construction and Industrial Use.
6. Body harnesses must be used for restraint and/or fall arrest and where vertical free fall hazards exist.
7. Personal fall arrest systems shall be rigged so that an employee can neither free fall more than 4 feet or contact any lower level.
8. Each restraint system shall be inspected daily or before each use by a competent person according to the manufacturer's recommendation. Equipment showing any defect shall be withdrawn from service immediately.
9. Each unit shall be visually inspected for defects prior to each use and particular attention should be directed to the following types of damage: cuts, cracks, tears or abrasions, undue stretching, overall deterioration, mildew, operational defects, heat, acid, or corrosion, defective or distorted snap-hooks or faulty springs.
10. All items used as a component of, or in conjunction with, harnesses should also be examined by a competent person every three months, ore more frequently and the inspection recorded.
11. When work is performed from thrust outs or similar locations, such as trusses, beams, purlins, or plates of 4-inch nominal width, or greater, at elevations exceeding 15 feet above ground, water surface, or floor level below and where temporary guardrail protection is impractical, employees shall be required to use approved harnesses with attached lanyard.
12. Personnel using SRLs (self-retracting lifelines/lanyard or "yoyos") must be told to work directly underneath the SRL casing when possible and avoid excess horizontal travel.
13. Personal fall arrest systems must be inspected prior to each use for wear, damage and defects and inspected by a competent person at least twice a year, in accordance with the manufacturer's recommendations, with inspection dates documented.

Fire Prevention

This Fire Prevention Plan has been developed by SW Point to identify potential fire hazards

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or sources of ignition, to establish procedures which minimize the risk of fire in the workplace, and to describe construction site fire suppression system requirements.

The plan was written in compliance with MoW/OSHA requirements. In general, the health and safety of Company personnel depends upon a thorough knowledge of their surroundings, the work they perform, the hazards posed, a sincere safety conscientiousness, good judgment, and common sense.

This written Fire Prevention Plan is designed with four fundamental objectives:

1. To identify potential fire hazards and potential ignition sources.
2. To establish proper handling and storage practices for potentially flammable or combustible materials, as well as other control procedures to minimize the risk of fire.
3. To identify fire protection equipment or systems to be used in response to a fire.
4. To describe fire suppression system-related requirements associated with building construction, alteration, or demolition.

The overall goal of this plan is to minimize personal injury and property damage.

It is SW Point's policy for all employees to follow the requirements set forth in this Fire Prevention Plan.

Duties

It is the responsibility of each employee to ensure the overall administration and implementation of this Fire Prevention Plan. It is each person's responsibility to assist in:

1. Identify and evaluate potential fire hazards and sources of ignition, including but not limited to activities such as welding, smoking, hot surfaces, and storage of flammable materials.
2. Establish and/or review control procedures to include fire protection equipment as needed and ensure sufficient numbers of extinguishers are at each job site.
3. Ensure compliance with the work practices and procedures specified in this plan.
4. Ensure that employees receive training on this program and that the training is up to date.
5. Establish a monthly schedule for regular fire safety inspections.
6. Ensure that records of training, fire protection inspections including those performed by the local fire department, and corrective measures as necessary, are properly maintained as required by this plan and the Injury and Illness Prevention Program.
7. Ensure the maintenance of equipment and systems installed to prevent or control

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ignition or fires, including systems at sites under construction, alteration, or demolition.

8. Identify and control the accumulation of flammable or combustible waste materials.

Control of Potential Fire Hazards and Ignition Sources

Common fire hazards include flammable and combustible materials, smoking, torches, welding, sparks, fuel, grease, and electrical systems.

Maintenance of Fire Extinguishers and Systems

Safe and unobstructed access to firefighting equipment must be maintained at all times. Fire extinguishers must be kept fully charged, inspected monthly and serviced annually. Records of annual maintenance will be retained for one year after the last entry or the life of the shell, whichever is less.

- One fire extinguisher must be provided for every 3000 square feet of floor area or fraction thereof.
- Portable fire extinguishers for Class A fires will be provided so that the travel distance for employees to any extinguisher is 75 feet or less. Class A extinguishers are used on fires involving ordinary combustibles, such as wood, cloth, and paper.
- Portable fire extinguishers for Class B fires will be provided so that the travel distance from the Class B hazard area to any extinguisher is 50 feet or less. Class B extinguishers are used on fires involving liquids, greases, and gases.
- Portable fire extinguishers for Class C hazards will be provided on the basis of the appropriate pattern for the existing Class A or Class B hazards. Class C extinguishers are used on fires involving energized electrical equipment.
- Portable fire extinguishers or other containers of Class D extinguishing agent will be provided so that the travel distance from the combustible metal working area to any extinguishing agent is 75 feet or less. Portable fire extinguishers for Class D hazards are required in those combustible metal working areas where combustible metal powders, flakes, shavings, or similarly sized products are generated at least once every two weeks. Class D extinguishers are used on fires involving metals such as magnesium, titanium, zirconium, sodium, and potassium.

If water fed firefighting equipment is present, a supply of water sufficient in volume, duration and pressure must bemaintained.

Flammable and Combustible Liquids

Only approved containers and portable tanks will be used for flammable and combustible

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liquids. Storage in excess of 25 gallons of flammable liquids or 60 gallons of Class III liquids must be within cabinets complying with the requirements of NFPA 30. Not more than 25 gallons of flammable liquids may be stored in safety cans outside of a flammable liquid's storage room or storage cabinet. Areas where flammable or combustible liquids are transferred in quantities of 5 gallons or greater, at one time, must be separated by a distance of 25 feet or a one-hour-rated fire wall from other operations.

Bonding and grounding practices must be employed during dispensing of flammable liquids. Flammable liquids must be kept in closed containers when not actively in use.

Flammable liquids may be used only in areas where there are no flames or other sources of ignition.

Control of Accumulation of Flammable and Combustible Waste Materials, Housekeeping

- Employees shall regularly inspect their work areas and promptly remove and properly dispose of accumulations of combustible materials.
- Office and shop employees shall ensure that the aisles and workspaces remain clear and free of flammable or combustible trash.
- Suitable clearances shall be maintained below sprinkler heads for storage.
- Access to electrical switches and controls shall remain clear.
- There shall be no excessive accumulation of paper, rags, sweepings, or debris.
- Exits and fire door closures shall remain unobstructed and in good working order.

Training

This Fire Prevention Plan shall be reviewed with each employee (full-time, part-time, and temporary) upon initial assignment. This review shall include, at a minimum, the topics listed below.

1. The nature and classes of fire.
2. Responsibilities for fire prevention as outlined in this plan.
3. Potential fire hazards (materials, processes) to which the employee may be exposed.
4. Proper methods for controlling fire hazards.
5. Location, care, and proper use of portable fire extinguishers.

Training of all employees in SW Point's Fire Prevention Plan will occur during the following times:

- At time of hire.

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- When the program is first developed.
- When the program ismodified.
- When employee responsibilities change.
- Specifics for eachjobsite
- If retraining is required by employees who have violated any policy or does not understand it.

All training will be documented in accordance with the company's Injury and Illness Prevention Program.

Maintenance

Fire safety inspections shall be conducted on a regular basis as determined by the Responsible Person or his/her designated representative. These items should be checked at the time of any other safety audit orinspection.

The inspections shall verify that the fire hazards and ignition sources are properly controlled as required by this Plan. If corrective actions are required, they will be documented in accordance with SW Point's Injury and Illness Prevention Program. The fire safety inspection shall be documented. All inspection records will be documented in accordance with Company's Injury and Illness Prevention Program.

Fire Safety – General Procedures

1. Supervisors are responsible for instructing the employees in the procedures implemented for specific job sitelocations.
2. Fire extinguishers and applicable fire suppression equipment will be located in easily accessible locations and remain visible at all times.
3. Building exits will be clearly identified and kept free from obstructions.
4. General work areas will be kept clean and free of unnecessary clutter.
5. Discarded packing material or scrap will not be allowed to accumulate in open areas.
6. Sufficient number of wastebaskets and/or trash receptacles (including noncombustible containers) will be accessible in all work areas.
7. Floors will be swept or vacuumed to prevent accumulation of combustible materials.
8. Equipment will be kept clean (avoid buildup of fluids, grease, etc.).
9. Designated "NO SMOKING" areas will be observed.
10. Signs will be clearly posted in areas where flammable or combustible liquids are stored.

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Globally Harmonized System

Formerly called the Hazardous Communication Program (HazCom), SW Point is implementing the Globally Harmonized System ("GHS") adopted by the United Nations as part of the company's comprehensive Injury and Illness Prevention Program. The GHS serves as a formal method of conveying important information regarding hazardous substances to all employees who may potentially be exposed during the performance of their job duties.

Program Responsibilities

SW Point shall maintain at each jobsite, in written and/or electronic format, a GHS which describes the use of labels and other forms of warning, Safety Data Sheets ("SDS"), and employee information and training as follows:

1. Obtain current SDS forms for all hazardous substances in the workplace and make them available to employees for review.
2. Review incoming SDS forms for completeness and for new and significant health/safety information.
3. Maintain the chemical inventory (list of hazardous substances) to ensure it is kept up-to- date and that an SDS has been obtained for each product on the list.
4. Ensure that employees are provided with effective information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new physical or health hazard the employees have not previously been trained about is introduced into their work area.
5. Ensure all employees exposed to hazardous substances are trained on the provisions and requirements of the GHS.
6. Confirm that all training is properly documented, and that recordkeeping is accomplished in compliance with MoW/OSHA requirements.
7. Maintain the written GHS in a current form. Make changes/updates as necessary to reflect the company's present practices with regard to implementing the GHS.

Jobsite supervisor(s) are responsible for maintaining SDSs for products used at the jobsite, container labeling (as necessary), and ensuring that workers at the site have received the appropriate GHS training.

List of Hazardous Substances

An inventory (hazardous substances list) of all known hazardous substances present at the facility and/or used at the worksite by workers has been developed. The list includes the work area, product name, chemical composition, health and physical hazard codes, and approximate quantity on hand of each substance. A copy of the written and/or electronic chemical inventory is to be placed in the binder with the SDS collection or on a computer or

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mobile (iPad) device.

On a periodic basis, the GHS Administrator compares the inventory list with the SDSs on file to ensure that there is a GHS for every hazardous substance on the worksite. Specific information pertaining to each of the listed hazardous substances can be obtained by reviewing the appropriate Safety Data Sheet.

Listed below are some of the known hazardous substances common to most of our jobsites. Specific information on each hazardous substance can be obtained by reviewing the Material Safety Data Sheets. *Note: This is not a comprehensive list of all possible hazardous substances on the project site. Each project is different and has different hazardous substances. The project supervisor will monitor, review, and list substances which may affect employees at the project site*.

Limestone	Crystalline Silica	Fly Ash	Aluminum Oxide
Amorphous Silica	Calcium Oxide	Iron Oxide	**Acetylene**
Concrete Cure	Portland Cement	Silica Sand	**Form Release**
Diesel	Gasoline	Solvents	**Grease**
Motor Oil	**Oxygen**	**Spray Paint**	**Asbestos**

Heat Illness Prevention Plan (HIPP)

The Site Safety Supervisor assigned to each jobsite are the persons that have authority and responsibility for implementing the provisions of this program at each SW Point location.

Temperature Triggers

It is important to be aware of the **80/95** Temperature Triggers to prevent heat illness.

80°: If the temperature is expected to reach 80° or above, based on the National Weather Service forecast as of 5 p.m. the previous day, specific heat illness prevention procedures will be implemented. (See *Provisions for Access of Shade* and *Handling a Heat Wave*)

High Heat

95°: 95° is considered a "high heat temperature" and requires specific prevention procedures. (See *High Heat Procedures*)

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Effective training in the following topics shall be provided to each supervisory and non-supervisory employee before the employee begins work that should reasonably be anticipated to result in exposure to the risk of heat illness.

Procedures for Provisions of Water

1. Drinking water containers (of five to 10 gallons each) will be brought to the site by the site supervisor or a person he has designated, so that at least one quart per hour per employee is available at the start of the shift and for the entire shift. All workers whether working individually or in smaller crews, will have access to fresh, pure, and suitably cool drinking water, free of charge.
2. Paper cone rims or bags of disposable cups and the necessary cup dispensers will be made available to workers and will be kept clean until used.
3. As part of the Effective Replenishment Procedures, the water level of all containers will be checked periodically (e.g. every hour, every 30 min), and more frequently when the temperature rises, by the site supervisor or his designated person. Water containers will be refilled and replenished with fresh, pure, and suitably cool water, when the water level within a container drops below 50 percent. Additional water containers (e.g. five gallon bottles) will be carried, to replace water as needed. SW Point will have plenty of water on site at all times to facilitate the needs of all employees.
4. Ice will be carried in separate containers, so that, when necessary, it will be added to the drinking water to keep it cool.
5. Water containers will be placed as close as practicable to the workers (given the working conditions and layout of the worksite), to encourage the frequent drinking of water. If field terrain prevents the water from being placed as close as possible to the workers, bottled water or personal water containers will be made available, so that workers can have drinking water readily accessible.
6. Water containers will be relocated to follow along with the crew, so drinking water will remain readily accessible.
7. Water containers will be kept in sanitary condition.
8. Daily, workers will be reminded of the location of the water coolers and of the importance of drinking water frequently. When the temperature meets or exceeds 95 degrees Fahrenheit, brief 'tailgate' meetings will be held each morning to review with employees the importance of drinking water, the number and schedule of water and rest breaks and the signs and symptoms of heat illness.
9. Audible devices (such as whistles or air horns) will be used to remind employees to drink water.

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10. During employee training and tailgate meetings, the importance of frequent drinking of water will be stressed.
11. Management and supervisors shall instruct employees of the importance of frequent consumption of small quantities of water, up to 4 cups per hour, when the work environment is hot, and employees are likely to be sweating more than usual in the performance of their duties.

Procedures for Access to Shade

1. Shade structures will be opened and placed as close as practicable to the workers when the temperature equals or exceeds 80 degrees Fahrenheit. Shaded areas will be either open to the air or provided with ventilation or cooling. SW Point will be prepared to provide shade even if the forecast is for temperature highs below 80 degrees. When the temperature is below 80 degrees Fahrenheit, access to shade will be provided promptly, when requested by an employee. Note: The interior of a vehicle may not be used to provide shade unless the vehicle is air-conditioned, and the air conditioner is on.
2. When the temperature equals or exceeds 80 degrees Fahrenheit, shade will be available on site at the beginning of the shift to accommodate all employees on recovery or rest periods, and those on site taking meal periods.
3. Shade must not expose employees to unsafe or unhealthy conditions and must not deter or discourage access or use.
4. Employees must be able to sit comfortably and fully shaded without touching each other.
5. Employees must be able to reach the shaded area within a 2-½ minute walk and never greater than ¼ mile, whichever is shorter.
6. There must always be enough shade to accommodate employees who seek to cool off.
7. Daily, workers will be informed of the location of the shade structures and will be encouraged to take a preventative cool-down rest in the shade when they feel the need to do so to protect themselves from overheating. Such access to shade will be permitted at all times. An individual employee who takes a preventative cool-down rest:
    a) will be monitored and asked if he or she is experiencing symptoms of heat illness;
    b) will be encouraged to remain in the shade; and
    c) will not be ordered back to work until any signs or symptoms of heat illness have abated, but in no event less than 5 minutes in addition to the time needed to access the shade.
    d) If an employee exhibits signs or reports symptoms of heat illness while taking a preventative cool-down rest or during a preventative cool-down rest period, SW Point will provide appropriate first air or emergency response.

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8. Shade structures will be relocated to follow along with the crew and they will be placed as close as practical to the employees, so that access to shade is provided at all times.
9. In situations where trees or other vegetation are used to provide shade, the thickness and shape of the shaded area will be evaluated, before assuming that sufficient shadow is being cast to protect employees.
10. In situations where it is not safe or feasible to provide access to shade (e.g., during high winds), a note will be made of these unsafe or unfeasible conditions, and of the steps that will be taken to provide shade upon request.
11. In situations where it is not safe or feasible to provide shade, a note will be made of these unsafe or unfeasible conditions, and of the steps that will be taken to provide alternative cooling measures but with equivalent protection as shade.

Supervisor Procedures for Monitoring the Weather

1. The site supervisor will be trained and instructed to check in advance the extended weather forecast. Weather forecasts can be checked with the aid of the internet (http://www.weather.gov/), or by calling the National Weather Service phone numbers (see CA numbers below) or by checking the Weather Channel TV Network. The work schedule will be planned in advance, taking into consideration whether high temperatures or a heat wave is expected. This type of advance planning should take place all summer long.
2. Prior to each workday, the forecasted temperature and humidity for the worksite will be reviewed and will be compared against the National Weather Service Heat Index to evaluate the risk level for heat illness. Determination will be made of whether or not workers will be exposed at a temperature and humidity characterized as either "extreme caution" or "extreme danger" for heat illnesses. It is important to note that the temperature at which these warnings occur must be lowered as much as **15 degrees** if the workers under consideration are in direct sunlight.
3. Prior to each workday, the supervisor will monitor the weather (using http://www.weather.gov/ or with the aid of a simple thermometer, available at most hardware stores) at the worksite. This critical weather information will be taken into consideration, to determine, when it will be necessary to make modifications to the work schedule (such as stopping work early, rescheduling the job, working at night or during the cooler hours of the day, increasing the number of water and rest breaks).
4. A thermometer will be used at the worksite to monitor for sudden increases in temperature, and to ensure that once the temperature reaches or exceeds 80 degrees Fahrenheit, shade structures will be opened and made available to the workers. In addition, when the temperature equals or exceeds 95 degrees Fahrenheit, additional preventive measures such as the High Heat Procedures will be implemented.

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Handling a Heat Wave – A Heat Wave is defined as when the outside air temperature reaches 80 degrees Fahrenheit or more

1. Workers will be allowed and encouraged to take a preventative cool-down rest in the shade when they feel the need to do so to protect themselves from overheating. Such access to shade will be permitted at all times.
2. SW Point employees will be observed for alertness and signs and symptoms of heat illness. When the site supervisor is not available, an alternate responsible person may be assigned, to look for signs and symptoms of heat illness. Such a designated observer will be trained and know what steps to take if heat illness occurs.

"High Heat" Procedures – High Heat is defined as when the outside air temperature reaches 95 degrees Fahrenheit or more.

High heat procedures are additional preventative measures that SW Point will use when the temperature equals or exceeds 95 degrees Fahrenheit.

1. Employees must be provided with a minimum 10-minute cool-down period every two hours.
2. To the extent practicable, SW Point will ensure that effective communication (voice, observation, cell phone, etc.) is available so that employees at the work location can contact a supervisor when observing heat prevention measures
3. SW Point will observe employees for alertness and signs or symptoms of heat illness.
4. SW Point will ensure effective employee observation/monitoring by implementing one or more of the following:
    a. Supervisor or designee observation of 20 or fewer employees, or
    b. Mandatory buddy system whereby each employee will be assigned a "buddy" to be on the lookout for signs and symptoms or heat illness and to ensure that emergency procedures are initiated when someone displays possible signs or symptoms of heat illness, or
    c. Regular frequent communication with our employees working by themselves or in smaller groups (via phone or two-way radio if the reception in the area is reliable), or
    d. Other effective means of observation.
5. SW Point will designate one or more employees on each worksite as authorized to call for emergency medical services and allow other employees to call for emergency services when no designated employee is available.
6. Throughout the work shift, SW Point will remind employees (and the employee will take responsibility for) drinking plenty of water.

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7. SW Point will hold pre-shift meetings before the commencement of work to review the high heat procedures, encourage employees to drink plenty of water, and remind employees of their right to take a cool-down rest when necessary.

Procedures for Acclimatization

Acclimatization is the temporary and gradual physiological change in the body that occurs when the environmentally induced heat load to which the body is accustomed is significantly and suddenly exceeded by sudden environmental changes. The body needs time to adapt when temperatures rise suddenly, and an employee risks heat illness by not taking it easy when a heat wave strikes or when starting a new job that exposes the employee to heat to which the employee's body has not yet adjusted.

Inadequate acclimatization can be significantly more perilous in conditions of high heat and physical stress.

1. At SW Point we will monitor the working conditions of our employees, and we will act effectively when conditions result in sudden exposure to heat their employees are not used to.
2. The weather will be monitored daily. The site supervisor will be on the lookout for sudden heat wave(s) or increases in temperatures. For purposes of this section, "heat wave" means any day in which the predicted high temperature for the day will be at least 80 degrees Fahrenheit and at least 10 degrees Fahrenheit higher than the average high daily temperature in the preceding five days.
3. For new employees, the intensity of the work will be lessened during a two-week break-in period (such as scheduling slower paced, less physically demanding work during the hot parts of the day and the heaviest work activities during the cooler parts of the day (early-morning or evening). Steps taken to lessen the intensity of the workload for our new employees will be documented.
4. The site supervisor will be extra-vigilant with new employees and stay alert to the presence of heat related symptoms. New employees will be closely observed by a supervisor or designee to watch closely for discomfort or symptoms of heat illness for the first 14 days of the employee's employment.
5. During a heat wave, all employees will be observed closely (or maintain frequent communication via phone or radio), to be on the look-out for possible symptoms of heat illness.
6. Employees and supervisors will be trained on the importance of acclimatization, how it is developed and how these company procedures address it.

Procedures for Emergency Response

SW Point will implement effective emergency response procedures including:

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1. SW Point will ensure that effective communication by voice, observation, or electronic means is maintained so that employees at the work site can contact a supervisor or emergency medical services when necessary. An electronic device, such as a cell phone or text messaging device, may be used for this purpose only if reception in the area is reliable. If an electronic device does not furnish reliable communication in the work area, SW Point will ensure a means of summoning emergency medical services. Checks will be made to ensure that these devices are functional prior to each shift.
2. Prior to assigning a crew to a particular jobsite, SW Point workers and the site supervisor will be provided a map of the site, along with clear and precise directions (such as streets or road names, distinguishing features, and distances to major roads), to be given to emergency responders to avoid a delay of emergency medical services.
3. Prior to assigning a crew to a particular worksite, efforts will be made to ensure that a qualified and appropriately trained and equipped person is available at the site to render first aid if necessary.
4. Prior to the start of the shift, a determination will be made of whether or not a language barrier is present at the site and steps will be taken (such as assigning the responsibility to call emergency medical services to the site supervisor or an English speaking worker) to ensure that emergency medical services can be immediately called in the event of an emergency.
5. If a supervisor observes, or any employee reports, any signs, or symptoms of heat illness in any employee, the supervisor will take immediate action commensurate with the severity of the illness.
6. If the signs or symptoms are indicators of severe illness (such as, but not limited to, decreased level of consciousness, staggering, vomiting, disorientation, irrational behavior, or convulsions), SW Point will implement emergency response procedures by calling 911.
7. When a SW Point employee is exhibiting signs or symptoms of heat illness, the employee will be monitored and will not be left alone or sent home without being offered onsite first aid and/or being provided with emergency medical services in accordance with SW Point procedures. Steps will be taken immediately to keep the stricken employee cool and comfortable once emergency service responders have been called (to reduce the progression to more serious illness).
8. At remote locations such as lots or undeveloped areas, the site supervisor will designate an employee or employees to physically go to the nearest road or highway where emergency responders can see them. If daylight is diminished, the designated employee(s) shall be given reflective vest or flashlights in order to direct emergency personnel to the location of the worksite, which may not be visible form the road or

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highway.

9. If necessary, the stricken employee will be transported to a place where they can be reached by an emergency medical provider.
10. During a heat wave or hot temperatures, workers will be reminded and encouraged to immediately report to their site supervisor any signs or symptoms they are experiencing.
11. Employees and our site supervisors training will include every detail of these written emergency procedures.

Handling a Sick Employee

1. When a SW Point employee displays possible signs or symptoms of heat illness, a trained first aid worker or site supervisor will check the sick employee and determine whether resting in the shade and drinking cool water will suffice or if emergency service providers will need to be called. A sick worker will not be left alone in the shade, as he or she can take a turn for the worse!
2. When an employee displays possible signs or symptoms of heat illness and no trained first aid worker or supervisor is available at the site, emergency service providers will be called.
3. Emergency service providers will be called immediately if an employee displays signs or symptoms of heat illness (loss of consciousness, incoherent speech, convulsions, red and hot face), does not look OK or does not get better after drinking cool water and resting in the shade. While the ambulance is in route, first aid will be initiated (cool the worker: place the worker in the shade, remove excess layers of clothing, place ice pack in the armpits and groin area and fan the victim). Do not let a sick worker leave the site, as they can get lost or die before reaching a hospital!
4. If an employee does not look OK and displays signs or symptoms of severe heat illness (loss of consciousness, incoherent speech, convulsions, red and hot face), and the worksite is located more than 20 minutes away from a hospital, call emergency service providers, communicate the signs and symptoms of the victim, and wait for further instructions from the emergency dispatcher.

Procedures for Employee and Supervisor Training

Supervisors will be trained prior to being assigned to supervise other workers. Training will include SW Point's written procedures and the steps site supervisors will follow when employees' exhibit symptoms consistent with heat illness.

1. Effective training in the following topics will be provided to each supervisory and non-supervisory employee before the employee begins work that should reasonably be anticipated to result in exposure to the risk of heat illness:

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a. SW Point's procedures for complying with the MoW/OSHA Heat Illness Prevention Regulation standard, including, but not limited to, SW Point's responsibility to provide water, shade, cool- down rests, and access to first aid as well as the employee's right to exercise their rights under this standard without retaliation.

b. The concept, importance, and methods of acclimatization.

c. The different types of heat illness, the common signs, and symptoms of heat illness, and appropriate first aid and/or medical responses to the different types of heat illness, and in addition, that heat illness may progress quickly from mild symptoms and signs to serious and life threatening illness.

2. Site supervisors will be trained on how to track the weather at the job site (by monitoring predicted temperature highs and periodically using a thermometer). Site supervisors will be instructed on, how weather information will be used to modify work schedules, to increase number of water and rest breaks or cease work early if necessary.

3. Employees will be trained on the steps that will be followed for contacting emergency medical services, including how they are to proceed when there are non-English speaking workers, how clear and precise directions to the site will be provided and the importance of making visual contact with emergency responders at the nearest road or landmark to direct them to their worksite.

4. When the temperature exceeds 95 degrees Fahrenheit, short 'tailgate' meetings will be held to review the weather report, to reinforce heat illness prevention with all workers, to provide reminders to drink water frequently, to inform them that shade can be made available upon request and to remind them to be on the lookout for signs and symptoms of heat illness.

5. New employees will be assigned a "buddy" or experienced coworker to ensure that they understand the training and follow company procedures.

Heat Illness Defined

Heat illness is a serious medical condition that occurs when the body cannot cope with the heat and can include the following symptoms:

- Heat Cramps
- Heat Exhaustion
- Heat Syncope
- Heat Stroke

Causes of Heat Illness

Certain working conditions and the **environmental conditions** contribute to heat illness. These risk factors include:

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- Air temperature
- Relative humidity
- Radiant heat from the sun and other sources
- Conductive heat sources such as the ground
- Air movement (or lack of)
- Workload severity and duration
- Protective clothing worn by person
- Personal protective equipment worn by person
- Pre-existing medical condition.

In addition to environmental risk factors, there are **personal risk factors** that can contribute to heat illness, these include:

- Age – the very old and the very young are more susceptible to the heat.
- Weight – people who are overweight are more at risk for heat illness
- Physical Fitness – if you have a low level of physical fitness, you are more susceptible to the heat.
- Metabolism
- Degree of Acclimatization – if you have not been working in the heat for very long, you are not used to it.
- Prescription Drugs – certain prescription drugs dehydrate you, so you need to drink more water if you are taking these prescriptions.
- Water consumption – consuming water prior to work and throughout the day will reduce your risk for heat illness.
- Alcohol consumption – alcohol dehydrates the body.
- Caffeine consumption – caffeine (found in coffee and energy drinks like “Rockstar” and “Red Bull”) dehydrates the body.
- Or other conditions that affect the body’s water retention or physiological responses to heat.

Your personal risk factors may put you at a higher risk of developing heat illness.

If you have any **personal risk factors** you must be especially cautious in the heat:

- Drink plenty of water
- Acclimate to the weather

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- Report any signs of heat illness to your supervisor immediately
- The most important thing you can do to prevent heat illness is drink plenty of water: small quantities and frequent intervals.

  Thirst is not an indicator of dehydration – if you are thirsty, you are already dehydrated.

Types of Heat Illnesses

Heat Cramps –are caused by performing hard physical labor in a hot environment. Painful spasms of the muscles are caused by the body's loss of salt and by lack of water replenishment. Excess salt can build up in the body if water is not replaced.

Treatment: Drink water, rest in the shade, get near a fan, spray the person with water and massage the cramp. Severe cramps require medical attention.

Heat Syncope (Fainting) – a person who is not acclimated to hot environments and who stands erect and immobile in the heat may faint.

Blood Vessels in the skin and in the lower part of the body dilate which may cause blood to pool there rather than return to the heart to be pumped to the brain causing dizziness or fainting. One of the greatest dangers of this condition is hitting your head on a sharp object after having fainted.

Treatment: This condition is usually short-lasting and greatly improves after lying down in a cool environment. However, if the fainting lasted for more than a minute, or is accompanied by changes in mental state, get immediate medical attention call 911 or your company procedure.

Heat Exhaustion- Results from loss of fluid through sweating and not drinking enough fluids. Signs of heat exhaustion include cool, moist, pale flushed or red skin; heavy sweating; headache; nausea or vomiting; dizziness; giddiness and extreme weakness or fatigue. The skin is clammy and moist while body temperature will be near normal or slightly elevated.

Treatment: Get the person to cooler area, if fully awake water may be administered slowly, remove tight clothing, and apply cool compresses, ***if they refuse water, vomit, or lose consciousness get immediate medical attention by calling 911 and notifying your Supervisor.***

Heat Stroke is the most serious heat illness. This occurs when the body's system of temperature regulation fails, and the body temperature rises to critical levels. This is a MEDICAL EMERGENCY! Immediately dial 911 and notify your Supervisor if a coworker shows these signs and symptoms.

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Signs and Symptoms: Sweating stops, confusion, irrational behavior, loss of consciousness, convulsions, (usually) hot, dry skin and high body temperature (105.8 F) which may lead to death. ***Remember Heat Stroke is a Medical Emergency!***

Victims of heat stroke usually die unless treated promptly. Their medical outcome depends on prompt first aid - how quickly you can cool them down - and the victim's physical health.

Before Help Arrives – Have them lie down in a shady area or get them indoors

Soak clothing in cool water or remove clothing and gently apply cool water to the skin followed by fanning to stimulate sweating. Apply ice packs to the groin and armpits.

Recordkeeping and Posting Requirements

The following safety related records are to be maintained at each jobsite. A separate binder for recordkeeping is suggested.

1. On-site daily safety meeting (printed out);
2. The Site Safety Supervisor will periodically audit daily pre-lift safety meetings;
3. Forward a copy to the SW Point office;
4. Weekly Toolbox Meetings will be held when there are two or more employees at a worksite;
5. Safety Inspection Checklist;
6. Accident/Incident Investigation Reports.

Correcting Unsafe or Unhealthy Conditions and Work Practices

All unsafe and/or unhealthy work conditions or work practices identified will be evaluated and corrected in a timely manner. Personnel will not be required or permitted to work under conditions that post a clear or imminent hazard. Once corrected, written documentation of the action taken will be forwarded to

and maintained in the main office.

When an imminent hazard exists, which cannot be immediately corrected without endangering employees and/or property, the following steps will be followed:

1. Remove all potential endangered employees from the area;
2. Provide employees responsible to correct the condition with necessary safeguards;
3. Correct the problem;
4. Document and date the Corrective Action taken and forward to The Health and Safety Supervisor.

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Emergency Crisis Response

In the event of an emergency, or a situation that could evolve into an emergency, management must be notified immediately.

During the new-hire orientation, employees will be advised of the company Emergency Action Plan and the procedures implemented for responding to emergencies, to include fire/explosion; natural disasters; earthquake; chemical leak, spill or threatened release; bomb threat; domestic terrorism or civil disturbance.

When beginning work at a new jobsite, employees will be informed of procedures implemented for responding to emergencies at that specific location. The alarm system that will be used to initiate evacuation of the jobsite will be identified.

When a jobsite evacuation is initiated, employees:

- must proceed to the designated assembly area;
- are not to stop and pick up personal belongings when exiting the jobsite/structure;
- are not to block areas that would be considered access for emergency vehicles;
- will not be allowed to re-enter the job site/structure without clear indication that it is safe to do so;
- cannot leave the assembly area unless advised to do so by a designated employee or supervisor;
- will be instructed not to respond to news media, contact with the media is limited to management only

The most important focus of an emergency is the protection of human life.

Emergency Action Plan

This Emergency Action Plan has been developed for the safe and efficient egress of employees during an emergency situation such as fire, explosion, earthquake, bomb threat, threatened release, domestic terrorism, or chemical spill/leak. This Emergency Action Plan is designed with three fundamental objectives:

1. To facilitate a safe evacuation of company employees to a pre-designated safe meeting point in the event of an emergency to ensure that all our employees are accounted for.
2. To minimize the potential for personal injury during an evacuation.
3. To establish methods or procedures to minimize loss of property including buildings and equipment.

It is company policy for all employees to follow the requirements set forth in this Emergency

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Action Plan, which will be kept in the office, job truck or crane, and available for employee review.

Responsible Person

It is the responsibility of the site supervisor to ensure the overall implementation of the Emergency Action Plan and to direct the following tasks for the project site:

- Identify and evaluate potential emergencies at the project site that may require personnel evacuations;
- Establish and/or review procedures for emergencies;
- Ensure that employees receive training on this program and that the training is up to date;
- Ensure compliance with the safety and health work practices as specified in the Safety Program and this Plan;
- Ensure that records of training, inspection, and corrective measures, are properly maintained.

Training

Training of all employees regarding the Emergency Action Plan will occur at the following times:

- At the beginning of the project when the program is first developed;
- When new employees are hired;
- When the program is modified;
- When employee responsibilities change;
- When retraining is deemed necessary.

Training for the project site will be documented by the site supervisor.

Emergency Procedures

An emergency is an unforeseen combination of circumstances that calls for immediate action. An emergency generally creates a sense of panic and confusion at a time when prompt action and clear thinking is essential. In an emergency, seconds can be the difference between life and death. That is why it is important to be prepared for the emergencies that can occur.

Employee Responsibilities

It is the responsibility of every employee at the jobsite to know:

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- Your site supervisor will train you how to protect yourself in each type of emergency. This training occurs at toolbox safety meetings. In addition, you may be required to attend additional training regarding emergency procedures.

- Your site supervisor will train you how to report an emergency. You must follow the procedures given to you for your safety as well as the safety of others.

- Your site supervisor will train you on the proper sequence of actions to take if an emergency occurs. You must follow the sequence of actions for your safety as well as the safety of others.

- The location of emergency equipment (e.g., fire extinguisher, first aid kit, emergency telephone number, etc.) in or near your work area or crane.
- If an emergency occurs, you must be sure that the area is safe before you enter the area where the injured employee is. Get proper authorities involved immediately. Property is always of secondary importance.

Types of Emergencies

Potential emergencies that are possible to occur at the workplace include:

- Trench collapse or cave-in;
- Fire
- Earthquake
- Chemical spill, leak, or threatened release explosion
- Power outage
- Others (e.g., flood, hurricane, bomb threat, domestic terrorism, etc.)

Reporting Emergencies

Emergencies must be reported promptly. Regardless of the type of emergency, use one of the methods of reporting listed below that will produce the quickest and most effective response:

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1. Call 911 or 919 and give the following information:
   a) Your name, telephone number, your exact location, and any special directions of how to find the victim or incident;
   b) Description of the emergency, need for paramedic, ambulance, fire department, police department, etc.;
   c) Wait for questions. **DO NOT HANG UP**!
2. Call the office on the phone or radio;
3. Notify the local SW Point main office immediately;
4. The site supervisor needs notification so a company representative can be sent immediately if needed;
5. Notify the general contractor assigned to the job.

Accident scenes must be safe to enter. Once safe and secured, preserve, and investigate the scene as soon as possible to ensure accuracy. The project supervisor should take photos of the scene to aid in the investigation.

- Call project site emergency numbers;
- Notify appropriate owner/client representatives;
- Notify appropriate subcontractor representatives.

Elements of the Project Site Evacuation Program

- Know all means or methods by which to sound an alarm or otherwise alert workers of an emergency.
- Provide instructions as to the various evacuation routes and assembly locations.
- Provide specific instructions as to employee and supervisor actions and responsibilities if an emergency occurs.

Examples:

- Stay calm, do not panic.

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- Exit as quickly as possible without stopping to gather personal belongings.
- Proceed to assembly point.
- Supervisors must direct others to leave when an evacuation has been sounded.
- Designated employees will check to see that no one has been left behind, particularly where the alarm may not be audible.
- Once in the designated assembly area, supervisors will take a head count to verify that everyone has evacuated the emergency area.
- Keep access clear for emergency equipment. Do not congregate in roadways or near building access points.
- Do not re-enter the emergency area until the "All Clear" has been given.

At no time should information concerning the emergency be given to members of the news media until a company representative has approved it for release. Contact with the media is limited to designated personnel.

Rescue and Medical Duties

Only trained employees are to perform emergency first aid. Those employees who are trained in first aid and CPR and are authorized to perform those duties. Outside emergency response services (911) is the primary source of critical medical treatment.

Emergency Phone Numbers

The "Emergency Contact List" shall be provided to field supervisors. Emergency phone numbers are used for emergencies only and shall not be distributed to any individuals outside of approved company business.

Main Office Notification

In the event of a serious injury or incident, the following notifications shall be made:

- Immediately notify the office of SW Point. It will be the responsibility of the site supervisor to distribute the report to the appropriate people.
- If a subcontractor is involved in an accident, have the subcontractor's foreman fill out a report and give a copy to the SW Point site supervisor. If serious in nature, a separate SW Point investigation is needed.
- Forward the subcontractor's accident investigation report to SW Point's main office.

Office Personnel

1. Report all safety hazards to management for correction.

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2. Keep desk and work areas clean and orderly.
3. Wipe up spills immediately to prevent slips and falls.
4. Keep electrical and telephone cords out of aisles.
5. Keep all drawers closed when not in use. Never open more than one file drawer at a time.
6. Store heavy items at waist level in order to avoid unnecessary reaching or bending when lifting is required.
7. Be attentive when using scissors, paper cutters, staples, and other sharp items that could cause unnecessary cuts and lacerations.
8. Keep floor clear of sharp objects and other debris that could result in injury.
9. Do not overload electrical circuits.
10. Know where fire extinguishers and emergency exits are located. Know how to properly use a fire extinguisher.
11. Learn the proper procedures for reporting fires and other emergencies.
12. All equipment that has moving parts (i.e., copy machines, blueprint copiers, and printers) should be properly guarded to prevent hands, hair, and clothing from being caught in the moving parts.
13. When using video display terminals (VDT's), position the VDT so that there are no reflections from bright lights and windows. Request a non-glare screen, if needed.
14. Avoid musculoskeletal stress by taking your breaks, stretching exercises, and practicing correct posture. Report any concerns or required workspace corrections to your Supervisor.
15. Always be on guard for conditions and practices that could result in an injury occurring.

Housekeeping – General Requirements

1. General waste, scraps, debris, and rubbish shall be cleared from work area, passageways, and stairs and in and around buildings on a daily basis.
2. All stairways, gangways and access ways shall be kept free of materials, supplies and obstructions at all times.
3. Tools, material, extension cords, hoses and/or debris shall not be strewn about in a manner which may cause tripping or other hazards.
4. Oil, grease, or other hazardous materials shall not be allowed to accumulate so as to prevent slipping or fire hazards.

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5. Keep area around cranes free of debris, materials, and tripping hazards.

Disposal

1. Metal or other approved containers shall be provided in adequate numbers to handle waste and rubbish disposal.
2. Garbage and other hazardous waste such as caustics, acids, and toxic materials shall be stored in approved, covered containers. Containers are to be appropriately labeled as to contents.
3. Employees, while cleaning up, shall not throw or drop materials from upper levels to lower levels or to the ground unless disposal are provided, or the area below is barricaded or secured.

Storage

1. Nails, wire ties, and other accessories will either be removed or bent over on form lumber or any other used lumber at the time of stripping or dismantling.
2. Materials shall be maintained in safe, neat stockpiles for ease of access and to prevent collapse or falling.

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Hearing Conservation – Scope and Purpose

Increased attention is being paid to the problem of excessive noise in industry. Noise can be defined as "any unwanted sound." The intensity of noise is commonly expressed in terms of decibels (DBA) and measured by a sound level meter. Medical authorities state that continuous exposure to noise levels above 90 DBA for eight-hour days, five days a week may endanger a person's hearing. The safe period of exposure to a noise level is directly related to the level of noise.

Protection against the effects of noise exposure shall be provided when the sound levels exceed those shown in Table N-1 of this section when measured on the A-scale of a standard sound level meter at slow response.

When employees are subjected to sound levels exceeding those listed in Table N-1 of this section, feasible administrative or engineering controls shall be utilized. If such controls fail to reduce sound levels within the levels of the table, personal protective equipment shall be provided and used to reduce sound levels within the levels of the table.

Table N-1 Permissible Noise Exposure

Exposure Per Day (Hours)	Sound Level DBA in Hours
8	**90**
6	**92**
4	**95**
3	**97**
2	**100**
1 ½	**102**
1	**105**
½	**110**
¼ or less	**115**

Hearing loss will result from over-exposure to excessive noise levels.

Only after Engineering Controls to reduce noise levels have been considered, will ear protectors to individual workers be made. There are two types of ear devices: the plug type and the muff type. The proper individual fitting of both types of ear protectors is critical as any leakage can seriously impair efficiency.

Engineering Controls

Engineering Controls are put into place to reduce employee noise exposures, if practical, before the alternative of a hearing protection device is used. Examples of engineering controls include construction of enclosures around the noise-producing equipment,

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enclosures for personnel to shield them from the noise, process changes or system redesign, equipment repair, and replacement of equipment. Careful cost-effectiveness analysis of these controls is required to assess their feasibility. Engineering controls should reduce or attenuate the noise levels enough that hearing protection is not necessary or is minimally required. For short term projects, engineering controls are not cost effective and proper ear protection is required. If the project is long-term and the engineering control would eliminate the need for cumulatively costly hearing protection, then the engineering control is cost-effective and will be considered.

Hearing Protection

Hearing protection will not reduce the sound of machinery and equipment completely, but if properly fitted will reduce excessive noise to a tolerable and safe level. Unusual equipment noises or warning alarms will not sound as loud but will be loud enough to attract personnel attention. There are different types of ear protectors ranging from glass wool, waxed cotton, or foam insert disposable plugs to earmuffs. While ear plugs are worn in the ear blocking the auditory canal, earmuffs fit over the ears to reduce noise transmitted through the surrounding bone structure. The choice of protection depends on the type of noise, the job, and comfort.

SW Point will provide hearing protection to all employees exposed to an 8-hour TWA of 85 dB(A) or greater. The hearing protectors will be provided at no cost to the employee.

Training on the use and care of hearing protectors must be provided to all employees who are issued them. Instructions must be provided to all employees in construction due to the variable nature of the work conditions.

The noise reduction rating (NRR) is listed on the hearing protection device. This rating reflects the maximum amount of noise reduction (attenuation) that can be achieved for the wearer when using the device as directed. Actual workplace or field use noise exposure reduction may be less since protection is highly dependent on user training, motivation, and utilization.

For dual protection (i.e., ear plugs and muffs) add 5 dB to the Noise Reduction Rating of the higher- rated protector. Where it appears that the attenuation of the hearing protector is not sufficient to reduce employee noise exposures below required levels, the site supervisor should determine if a greater degree of employee protection is necessary.

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Vehicle and Truck Safety

The definition of "**Vehicle**" includes but is not limited to trucks, semis, and cranes.

1. Only qualified, licensed operators may operate company owned, leased, or rented **Vehicles**. Prior to assigning a **Vehicle** to an employee, a check shall be made to determine the employee has a current, valid driver's license without prior violations or points, proper class certification, and minimum auto insurance required by the Government of The Bahamas. A copy of this license will be placed in the employee's personnel file. All **Vehicles** transporting material must comply with city, county or state laws pertaining to weight, height, length, and width. If permits are required for these loads, they shall be obtained.
2. Operating Company owned, leased, or rented **Vehicles** or equipment while under the influence of alcohol or drugs is prohibited.
3. Wearing a seat belt is required for all operators, drivers, and passengers of company owned, rented, or leased **Vehicles** and equipment.
4. City, county, state, or federal safety inspections of **Vehicles**, when required, will be obtained and decals posted on **Vehicle**.
5. Company owned, rented, or leased **Vehicles** will not be used off the project except for company business. However, there are cases where certain individuals are assigned a **Vehicle** with permission to drive the **Vehicle** between the project and their residence. This permission will be granted on an individual basis and the use of **Vehicles** other than described above will not be tolerated.
6. Persons not employed by the company will not operate a company owned, rented, or leased **Vehicle**.
7. **Vehicles** used to transport explosives, gasoline, fuel oils or other flammable material will not be allowed to haul passengers other than those authorized by supervisor.
8. Smoking will not be allowed on, in or within 50 feet of **Vehicles** hauling fuel oils, gasoline or explosives.
9. No person shall ride with arms or legs outside of the **Vehicle**, in a standing position on the **Vehicle** body, or on running boards or seated on side fenders, cabs, cab shields, **Vehicle** bed, or on the load.
10. No **Vehicle** shall be driven at a speed greater than is reasonable and proper, with due regard for weather, traffic, intersections, width and character of the roadway, type of motor **Vehicles**, and any other existing condition.

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11. Do not use any motor **Vehicle** or equipment having an obstructed view to the rear unless:
    a. The **Vehicle** or equipment has a backup alarm audible above the surrounding noise level or;
    b. The **Vehicle** or equipment is backed up only when an observer signals that it is safe to do so.
12. No personnel shall be permitted to get off or on moving **Vehicles** or equipment.
13. Other operators (individuals other than the employee assigned to the **Vehicle**) will not be allowed to operate equipment unless authorized by the site supervisor.
14. The employee assigned to the **Vehicle** is personally responsible for the safe movement and/or operation ofequipment.
15. No equipment will be operated beyond its safe load or operational limits.
16. No unauthorized personnel will be allowed to ride on equipment. This will include the riding of loads, headache ball, fenders, etc. Everybody needs to be in a seat with a seatbelt as designed for that vehicle.
17. Operators using signalpersons should make sure that the signalpersons can be seen that they understand signals prior to moving equipment and that they are aware of overhead structures, electrical lines, etc.

Subcontractor Vehicles and Equipment

Subcontractors will be responsible for managing and implementing all safety policies and procedures for their vehicles and equipment. In addition, they shall understand that:

1. No unsafe **Vehicles** or equipment will be allowed in construction areas. Where compliance is refused, the site supervisor shall be notified immediately.
2. Subcontractor employees shall follow established safety procedures in operation, inspection and maintenance of **Vehicles** and equipment.
3. It is the responsibility of the subcontractor's designated responsible individual to visually inspect the **Vehicles** and equipment before starting work and report any unsafe condition or practices to the site supervisor. Equipment not in compliance with applicable safety standards shall not be permitted to be put in operation.

Delivery of Material - Subcontractors

1. When trucks arrive to deliver subcontractor material or equipment, only authorized employees are to perform the unloading operations and the yard

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supervisor and/or responsible individual designated by the subcontractor will oversee this operation.

2. Before tie-downs are loosened, the load is to be inspected by the yard supervisor and/or responsible individual designated by the subcontractor for shifted material or any situation that could cause injury. If a dangerous situation is observed, the load must be stabilized before unloading begins.

Sanitation Requirements

One separate toilet/washing facility shall be provided for each 20 employees. Washing stations will have soap, single use towels, and be located so that any time a toilet is used, the user can readily wash. SW Point stresses the importance of hand washing. Employees are instructed to wash their hands after work, prior to eating, drinking, or smoking. Frequent hand washing is the easiest way to prevent illness.

Signs and Barricades

Signs and barricades are important, if not critical, to the safety of our workers.

Signs are the warnings of hazard, temporarily or permanently affixed or placed, at locations where hazards exist.

Barricades are intended to obstruct or deter the passage of persons or vehicles.

Tags are temporary signs, usually attached to a piece of equipment or part of a structure, to warn of existing or immediate hazards.

ACCIDENT PREVENTION SIGNS AND TAGS

General

Signs and symbols shall be visible at all times when work is being performed and shall be removed or covered promptly when the hazards no longer exist.

Danger Signs

Danger signs shall be used only where an immediate hazard exists.

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Danger signs shall have red as the predominating color for the upper panel; black outline on the borders; and a white lower panel for additional sign wording

Caution Signs

Caution signs shall be used only to warn against potential hazards or to caution against unsafe practices. Caution signs shall have yellow as the predominating color; black upper panel and borders; yellow lettering.

Accident Prevention Tags

This section applies to all accident prevention tags used to identify hazardous conditions and provide a message to employees with respect to hazardous conditions.

Tags shall be used as a means to prevent accidental injury or illness to employees who are exposed to hazardous or potentially hazardous conditions, equipment or operations which are out of the ordinary, unexpected, or not readily apparent. Tags shall be used until such time as the identified hazard is eliminated or the hazardous operation is completed. Tags need not be used where signs, guarding or other positive means of protection are being used.

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Specifications for accident prevention tags similar to those shown below shall apply:

Basic Stock (Background)	Safety Colors (Ink)	Copy Specification (Letters)
White	Red	**Do Not Operate**
White	Black and Red	**Danger**
Yellow	Black	**Caution**
White	**Black**	**Out of Order Do Not Use**

Signaling

Flagmen shall be provided with and shall wear a red or orange warning garment while flagging. Warning garments worn at night shall be of reflectorized material.

A flagger or flaggers shall be utilized at locations on a construction site where barricades and warning signs cannot control the moving traffic. Unless this section provides differently, the number of flaggers required and matters regarding the deployment of the flagger or flaggers shall be according to the Ministry of Works and Road Traffic Department standards, in addition to applicable international standards and best practices.

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When a flagger or flaggers are required, they shall be placed in relation to the equipment or operation so as to give effective warning.

Placement of warning signs shall be according to the Manual.

Flaggers shall wear warning garments such as vests, jackets, or shirts manufactured in accordance with the requirements of the American National Standards Institute (ANSI)/International Safety Equipment Association (ISEA) 107-2004, High Visibility Safety Apparel and Headwear.

During the hours of darkness, flaggers' stations shall be illuminated such that the flagger will be clearly visible to approaching traffic and flaggers shall be outfitted with reflectorized garments manufactured in accordance with the American National Standards Institute (ANSI).

SW Point shall select the proper type (class) of high visibility safety apparel for a given occupational activity by consulting, ANSI, or American Traffic Safety Services Association (ATSSA).

Flaggers shall be trained in the proper fundamentals of flagging moving traffic before being assigned as flaggers. Signaling directions used by flaggers shall conform to the Manual. The training and instructions shall be based on the Manual and work site conditions and also include the following:

a. Flagger equipment which must be used,
b. Layout of the work zone and flagging station,
c. Methods to signal traffic to stop, proceed or slow down,
d. Methods of one-way traffic control,
e. Trainee demonstration of proper flagging methodology and operations,
f. Emergency vehicles traveling through the work zone,
g. Handling emergency situations,
h. Methods of dealing with hostile drivers,
i. Flagging procedures when a single flagger is used (when applicable),

Documentation of the training shall be maintained as required by Section 3203, Injury Illness and Prevention Program of the General Industry Safety Orders.

Flaggers shall be trained by persons with the qualifications and experience necessary to effectively instruct the employee.

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Aerial Lifts, Boom Lifts and Elevated Platforms

Aerial devices, such as cherry pickers and boom trucks, may be vehicle-mounted or self-propelled and used to position employees.

General safety requirements for the use of aerial devices (cherry pickers and boom trucks) are as follows:

1. Only authorized persons may operate aerial devices;
2. Aerial devices must not rest on any structure;
3. Controls must be tested before use;
4. Workers must stand only on the floor of the basket. No planks, ladders, or other means are allowed to gain greater heights;
5. A fall protection system must be worn and attached to the boom or basket;
6. Brakes must be set when employees are elevated;
7. An aerial lift truck must not be moved when an employee is on the elevated boom platform.

Information must be displayed on the aerial devices as follows:

1. Manufacturer's name, model and serial number;
2. Rated capacity;
3. Operating instructions;
4. Cautions and restrictions, and
5. Load chart, if applicable.

Devices must be designed to applicable American National Standards Institute (ANSI) standards.

Elevating Work Platforms

Elevating work platforms, such as vertical towers and scissors lifts, are designed to raise and to hold a work platform in a substantially vertical axis. Operation requirements are as follows:

1. An operations and inspection manual must be available where the platform is in use.
2. The following must be displayed on each unit:
    a. Safe operation restrictions;
    b. Manufacturer's name, model and serial number;

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c. Rated capacity;

d. Maximum travel height;

e. Operating instructions;

f. A statement that the unit is in compliance with listed ANSI standards.

3. Employees must be instructed in proper (safe) use of the platform.

4. The platforms must have guardrails 42 in. ± 3 in. high. When guardrails are lower than 39 in. high, personal fall protection is required.

Inspection

Lifts must be inspected by a competent person prior to every operation. Ensure guardrails and safety chains are in place. Check for visual oil and fuel leaks. Controls must be properly marked and legible. Proper capacity ratings must be posted. Proper ignition system (key, etc.) must be operational. Check ground and platform controls for proper operation, if applicable.

Training

Personnel must be shown safe operational procedures for lifts. An operator manual must be provided with the aerial lift.

Operational Requirements

Lift controls must be tested each day prior to use to determine that they are in safe working order. Brakes must be set, and outriggers positioned on flat, solid surfaces. Wheel chocks should be used on inclines. Boom and basket load limits must be checked and not exceeded (usually two (2) employees and their necessary tools). Employees must tie-off with a full body harness and lanyard to the basket, but never to adjacent pole, structure, etc. Never place extended lifts in travel path of overhead cranes. Employees must stand on the floor of the basket. They should never be allowed to sit or climb on its sides or use planks, ladders, etc., for a work position. Scissor lifts must never be moved with the platforms up. Outriggers must be in the stored position before any aerial lift is moved. Do not operate lifts while batteries are being charged in place.

Environmental Concerns

When lifts are used inside buildings, consideration must be given to carbon monoxide emissions. Lifts that are propane driven or have air purifying scrubbers generate far less carbon monoxide.

To prevent oil leakage on floor, install plastic type catch cloth under carriage of equipment.

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Forklifts

1. Only trained and authorized operators shall be permitted to operate forklifts. Training shall be conducted at least every three years for operators and instructors.
2. Certification. The employer shall certify that each operator has been trained and evaluated as required by this section. The certification shall include the name of the operator, the date of the training, the date of the evaluation, and the identity of the person(s) performing the training or evaluation
3. Unauthorized personnel shall not be permitted to ride on forklifts.
4. Unattended forklift shall have the load engaging means fully lowered, controls neutralized, power shut off, and brakes set. On an incline, the brakes shall be set, and the wheels blocked.
5. A safe distance shall be maintained from the edge of ramps or platforms while operating on any elevated dock.
6. Brakes shall be set, and wheels blocked on trucks, trailers or railroad cars while loading or unloading.
7. The forklift shall have an overhead guard for protection against falling objects.
8. Only approved forklifts shall be used in hazardous locations.
9. Personnel safety platform shall be firmly secured to lifting carriage and/or forks. Personnel on platform shall have the means to shut off power to the forklift.

Inspection

A pre-operation safety inspection shall be performed at the beginning of each shift by the operator.

1. Forklift shall be tagged and taken out of service when defects are found.
2. Only certified mechanics are permitted to perform repairs.

Forklift Types

There are eleven types of forklifts which are designated for use as follows:

D	Diesel	
DS	Diesel Additional Safeguards DY	Diesel Temperature Limited E Electric
ES	Electric Additional Safeguards EE	Electric Completely Enclosed

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EX Electric Permissible G Gas

GS Gas Additional Safeguards LP Liquid Propane

LP Liquid Propane Additional Safeguards Only approved forklifts shall be used in hazardous areas.

Fuel Handling and Storage

1. The storage and handling of liquid fuels such as gasoline and diesel shall be in accordance with NFPA Flammable and Combustible Liquids
2. The storage and handling of liquefied petroleum gas fuel shall be in accordance with NFPA Storage and Handling of Liquefied Petroleum Gases regulations.

Changing and Charging Batteries

1. Charging of batteries shall be in approved locations.
2. Facilities shall be provided for flushing and neutralizing spilled electrolyte, for fire protection, for protecting charging apparatus from damage and for adequate ventilation for dispersal of fumes gassing batteries.
3. Appropriate lifting equipment shall be provided for handling batteries.
4. Reinstalled batteries shall be secured to forklift.
5. Smoking shall be prohibited in battery charging areas.
6. Precautions shall be taken to prevent open flames, sparks or electric areas in battery charging areas.
7. Tools and other metallic objects shall be kept away from the top of uncovered batteries.

Appropriate personal protective equipment will be provided and worn by employees assigned to changing and charging batteries.

Asbestos Policy

Asbestos refers to six naturally occurring, fibrous, hydrated mineral silicates that differ in chemical composition. Asbestos fibers are commonly referred to as actinolite, ammonite, anthophyllite, chrysotile, crocidolite and tremolite.

You may encounter asbestos at a construction site in the following applications/areas:

- Excavations where asbestos-bearing rock outcroppings are at or near the surface;
- Fireproofing for steel-frame high rise buildings;
- Pipe and boiler insulation;

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- Insulators of electrical conductors, plaster, cement, drywall and taping compounds;
- Floor tile and tileadhesives;
- Acoustical ceilings (tiles and spray on);
- Asbestos cement piping, shingles, and panels;
- Roofing felt and sealing compounds.

Asbestos has been linked to serious illnesses and can only enter the human body through inhalation or ingestion. It cannot pass through the skin; thus, it is harmful when airborne. It will become airborne when the material it is contained in is broken apart, sanded, scraped, etc.

Every effort should be made to determine if a project site has had an asbestos survey and subsequent abatement/encapsulation, if needed, **BEFORE** any personnel arrive on site to begin construction activities. Buildings owners must communicate any knowledge of the presence and location of Asbestos Containing Materials (ACM) and/or Presumed Asbestos Containing Material (PACM).

To prevent exposure to our employees, other workers on the construction site and the general public, if you suspect the presence of ACM or PACM at a construction site immediately take the following steps:

a. Clear all people out of thearea;
b. Seal off the area and post signage warning of the PACM;
c. Notify the site supervisor of thePACM.

When a site supervisor has been informed of an area which contains PACM, he/she must take the following steps:

a. Ensure that the ACM area has been secured from unauthorized entry;
b. Notify SW Point Project Manager and/or the on-site owner representative;
c. Maintain the barriers to the PACM until told to remove them by SW Point management.

When a Project Manager of SW Point has been notified of PACM he/she must take the following steps:

a. Notify the owner's representative that a PACM area has been discovered and that work has been suspended;
b. If the owner says the area has previously been survey and is clear of ACM, explain that work will remain suspended until SW Point has had time to review such report.

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(Project Manager needs to obtain copy of report for our records);

c. If the owner does not know if the area has been surveyed, explain that all work will remain suspended until a complete asbestos survey has been conducted and results obtained;

d. If the owner asks for advice, state that SW Point will not contract to have a survey done or contract for the abatement/encapsulation if required. Advise the owner to contact an environmental engineer to perform a survey;

e. Notify SW Point's site supervisor or The Health and Safety Supervisor of the situation.

Work will resume on the site once abatement/encapsulation has been completed and SW Point management is satisfied that the presumed material did not contain asbestos.

SW Point employees will not conduct asbestos abatement. If it is determined that asbestos must be removed from an area, professionals trained in asbestos abatement will conduct the work. If SW Point workers enter the PACM area, they must wear respirators and certain protective clothing depending on the concentration of asbestos in the area. When all asbestos is removed, the area must be thoroughly cleaned using a HEPA dust collector or vacuum and wet cleaned. No dry sweeping is permitted under any circumstances. All asbestos materials must be properly disposed of in leak-tight containers and removed from the site. All certified asbestos workers are familiar with the intricacies and exceptions to these rules, and they must follow every regulation to ensure the maximum level of safety for our workers.

Confined Space Entry Program

Definition of a Confined Space

- A space which can be bodily entered to perform work;
- Has limited means of entry and exit;
- Is not designed for continuous human occupancy.

Permit Required Confined Space

A Permit-Required Confined Space has one or more of the following characteristics:

- Contains or has the potential to contain a hazardous atmosphere;
- Contains a material that has the potential for engulfing an entrant;
- Has an internal configuration such that an entrant could be trapped or asphyxiated

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by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross section; or

- Contains any other recognized serious safety or health hazard such as: 19. Toxic gases above the Permissible Exposure Limit (PEL) 20. Oxygen deficiency (Less than 19.5% Oxygen by volume) 21. Oxygen enrichment (Over 23.5% Oxygen by volume)
- Potential for engulfment
- Flammable gas above 10% of the Lower Explosive Limit (LEL) 24. Potential for Immediately Dangerous to Life or Health (IDLH) atmospheres 25. Sloped floors which may pin and cause asphyxiation

If the permit space poses no actual or potential atmospheric hazards and if all hazards within the space are eliminated without entry into the space, the permit space may be reclassified as a non- permit confined space for as long as the non-atmospheric hazards remain eliminated.

Ignition Sources: A fire or explosion can occur due to:

- Static Electricity
- Metal Friction
- Unapproved lamps or electrical equipment
- Cigarettes
- Sparks from grinding or welding

Toxic Contaminants:

- Above Threshold Limit Value (TLV) should be considered a serious potential hazard
- IDLH conditions pose serious danger to workers
- Contaminants may already be inside the space and/or introduced by work operations – ***even in brand new lines!***

Oxygen Deficient Atmosphere: May occur as a result of:

- The work being done (welding)
- Chemical reactions (rusting)
- Bacterial decomposition

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May also occur by displacement of another gas – examples include using Nitrogen or Carbon Dioxide to inert an atmosphere.

Low Oxygen Symptoms When Oxygen level is at:

- 16% - Rapid Breathing, drowsiness
- 14% - Faulty judgment, rapid fatigue
- 12% - Unconsciousness
- 6% - Death

*Know your crew so you can recognize symptoms of Low Oxygen levels! *

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General Requirements

Using the Confined Space Safety Checklist:

1. Evaluate your workplace to determine if any spaces are Permit Required Confined Space.
2. Review the past and current uses of the Confined Space.
3. Take into account the physical characteristics, configuration, and location of the Confined Space.
4. Take into account what work you will be doing in the space: what tools you will be using, what chemicals etc.

Identified hazards need to be evaluated by a qualified person with respect to:

- scope of the hazard
- likelihood of hazard occurrence
- potential for changing conditions
- strategies for eliminating or controlling hazards
- emergency response capabilities

If "Permit Required Confined Spaces" are found, a means of warning employees about the existence of these spaces and the fact they are dangerous is required. This can be done with a tailgate meeting, safety huddle, and/or signs:

DANGER

PERMIT REQUIRED CONFINED SPACE DO NOT ENTER

1. Inform employees of the confined spaces in the workplace and their hazards.
2. Prevent unauthorized entry into confined spaces.
3. Conduct training and establish proficiency for all employees for safe entry into and working within and around confined spaces.
4. Use Entry Procedure provided at the end of this section.

Assignment of Responsibilities Employer

- Identify employee job duties
- Identify Permit Required Confined Spaces
- Provide Personal Protective Equipment (PPE)
- Administer the Confined Space Program

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- Assist Supervisors in determining and identifying Confined Spaces
- Conduct approved training programs for employees
- Evaluate instruments and equipment to be used in confined spaces
- Analyze conditions where hazards exist
- Review and update program as necessary
- Evaluate requests for entries
- Issue entry permits
- Maintain necessary documentation
- Provide annual refresher training
- Provide contractors and subcontractors with information on the hazards of entry
- Provide written Safety Rules
- Provide written Emergency Procedures
- Provide pertinent information regarding operations in and around the confined space
- Must ensure and certify that employees have the skills, knowledge and understanding necessary to perform their assigned duties in a competent manner

Supervisor

- Request training for new employees
- Identify hazards
- Understand consequences of hazard exposure
- Ensure entry permit is issued before entry
- Ensure pre-entry requirements are met
- Ensure permit is completed and posted
- Authorize worker entry
- Ensure acceptable entry conditions are maintained
- Terminate or cancel permits when entry is completed, or new condition exists
- Provide employee training in First Aid and CPR for rescue operations

Entrant

- Adhere to established procedures

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- Know Confined Space hazards
- Know signs, symptoms, and consequences of exposure
- Use personal protective equipment and monitoring instrumentation
- Enter only when trained to do so
- Enter only when appropriate safeguards are established (rescue provision)
- Advise employer of potential hazards
- Maintain constant communication with attendant
- Evacuate immediately if conditions become unsafe

Attendant (for Permit Required Confined Spaces)

- Remain outside of the Confined Space
- Be trained in rescue operations: perform non-entry rescues
- Summon help in case of an emergency
- Communication: Remain in constant communication; if out of visual range, must remain in audible contact
- Must be trained in First Aid and CPR
- Keep unauthorized persons away
- Perform monitoring as required
- Evacuate if hazards are detected
- Evacuate if signs or symptoms of overexposure occur
- Do not enter/leave area unless trained person takes over as attendant

Off-Site Rescue Teams: Should be familiar with:

- Site lay-out
- Confined Space hazards
- Emergency response
- Practice scenarios
- Response time within 5 minutes

Non-Permit Required Confined Space Entry Procedure

1. Begin filling out Non-Permit Required Confined Space Safety Checklist form. Note the location of the Confined Space; describe the work to be performed, and who

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will be performing the work.

2. Perform an initial air test and record your findings on the Safety Checklist. Make sure that the Air Monitor has been calibrated recently and a bump test has been performed. If you do not know how to do this, consult your supervisor for training.
3. Isolate any sources of energy.
4. Ventilate if necessary.
5. Test the air again after isolation and ventilation.
6. Post "Confined Space – Do Not Enter" sign, clip Safety Checklist to sign.
7. Make sure proper PPE is worn for the work to be performed in the space: hard hat, gloves, face shield, welding helmet, etc.

Permit-Required Confined Space Entry Procedure

1. Control unauthorized access
2. Post sign at point of entry: "Danger – Permit Required Confined Space, Authorized Entrants Only."
3. Blinding/Flushing of energy sources:
    a. Pipes/lines must be disconnected, blinded, or blocked off
    b. Physical locks are placed on breakers, valves, and chains
    c. Space shall be emptied, flushed, or purged of flammable or hazardous substances to the extent feasible
4. Air Testing
    a. Test air initially and periodically with calibrated monitor to determine whether dangerous and/or oxygen deficiency exists, record on Entry Permit.
    b. Eliminate ignition source introduction until the hazardous condition has been eliminated
    c. Obtain Hot Work Permit for ignition producing activities
5. Air Monitoring
    a. If a toxic atmosphere is suspected, you must test or provide adequate protection for worker if above PEL for the substance
    b. CO and H_2S are most common toxics in Confined Space entry
    c. Record testing/monitoring results on Entry Permit.
    d. Employees shall have access to the monitoring results

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e. If dangerous air contamination and/or Oxygen deficiency *does not* exist, entry into the space requires that: Air Monitoring shall be done periodically to ensure safe conditions are maintained. For example: before shift, after breaks, after lunch.

6. Retrieval Systems
    a. Approved retrieval system shall be set up and nearby (tripod).
    b. Inspect and test safety, rescue, and retrieval equipment prior to use.
    c. The retrieval system shall be attached to the workers using an approved harness and line.
    d. Wristlets may be used if it can be demonstrated that a harness is not feasible or creates a greater hazard or in addition to harness.
    e. Retrieval line must be attached to a properly rated mechanical device or fixed point outside the permit space (tripod).
    f. The mechanical device must be available to retrieve personnel from a vertical type permit space 5 or more feet deep.
    g. Lines and ropes should be configured within the space so as to not pose additional hazards to the entrant(s).
7. Entry Permit
    a. Shall authorize entry only by designated and trained workers, into a specific Confined Space and for a specific purpose.
8. Ventilation

    Recommended positive ventilation before and during all Confined Space entries.

    a. Where no fixed ventilation system exists, use a portable, explosion proof mechanical blower
    b. Place the blower intake line so that the make-up air is not taken from a contaminated environment (near running equipment, etc.)

Scaffolds

All work platforms, either temporary or permanent, including scaffolds shall provide all employees a safe surface upon which to complete their work tasks. SW Point and its subcontractors are responsible for placing all work platforms and scaffolds used on the site and are responsible for their safety. The employees will not use any platforms or scaffolds they consider unsafe.

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Purpose

Work platforms and scaffolds have a multitude of safety considerations that must be attended to, or an equipment failure with severe injuries might result from the lack of this attention. Additionally, falls from these types of work surfaces account for a large percentage of deaths and serious injuries.

Equipment maintenance, installation and fall protection are key safety practices of this scaffold policy. Scaffolds will be erected and dismantled under the direct supervision of a Qualified Person.

Definitions

Tube and Coupler Scaffold: An elevated platform assembly consisting of tubing which serves as posts, bearers, braces, ties, and runners. A base supporting the posts and special couplers which serve to connect the uprights and to join the various members.

Tubular Welded Frame Scaffold: A sectional, panel, or frame metal scaffold substantially built up of prefabricated welded sections which consist of posts and horizontal bearers with intermediate members. Panels of frames shall be braced with diagonal or cross braces.

Mobile Tubular Welded Scaffold: Tubular welded frame scaffolds mounted on heavy duty castors having locks to preclude undesirable rolling.

Handrails: Horizontal pieces of pipe installed at a height of 42 to 45 inches above the working platform to protect personnel from falls.

Midrails: Horizontal pieces of pipe installed knee high (approximately 21 inches) above the working platform to further protect personnel from falls.

Toeboards: Horizontal 1 inch by 4 inch or wider boards mounted on edge to protect from tools rolling off the deck.

Planks: Wooden planks 2 inch by 10 inch or wider used for scaffold decking at the working levels, made of Scaffold Grade (structural plank 2200 psi) lumber.

Ties and Bracing: Common construction wire used to tie scaffold to building, etc. #12 wire may be used if doubled, or a single looped #10 wire.

Cleats: Wooden "stops" attached to the bottom side of each end of the planks to prevent longitudinal movement of the planks.

Light Duty Scaffolds: 25 pounds per square foot of work platform. Medium Duty Scaffolds: 50 pounds per square foot of work platform. Heavy Duty Scaffolds: 75 pounds per square foot of work platform.

Special Duty Scaffolds: exceeding 75 pounds per square foot of work platform as

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determined by a Qualified Person or a Civil Engineer currently registered in The Bahamas and experienced in scaffold design.

Responsibility

The SW Point Supervisor, his designee or the subcontractor's designated responsible individual shall be accountable for assuring that the scaffold and all accessories comply with our policies and OSHA standards by preforming a daily inspection before employees use scaffolding/platforms.

The subcontractors' designated responsible individual will provide the SW Point Supervisor (with a JHA) and the subcontractor's employees with information related to compliance with their policies and OSHA standards before use.

Only subcontractors who employ a Qualified Person that is knowledgeable of the scaffold requirements shall be allowed to dismantle scaffolding and move it to another work area or to a storage area upon completion of the job.

The subcontractor shall be responsible for any required MoW/OSHA Scaffold Permits, when required.

Inspection Tips

The following listed items are presented to provide employees a guide for inspection of the platforms and scaffolding before usage. When an employee observes any item listed below, the employee must notify his/her supervisor and not use the platforms or scaffolds before any deficiency is corrected.

- Visually inspect a scaffold before use, especially if no one else is using it.
- Inspect all equipment components before using. Never use equipment that is damaged or deteriorated in any way.
- Avoid using rusted equipment, as its strength is not known.
- Inspect surface of proposed location for soil stability, levelness, obstructions, and electrical hazards.
- Inspect wood components for grade and strength.
- Inspect erected scaffolds regularly to be sure they are maintained in a safe condition and that the base plates have not settled.
- Ensure that maximum intended working load for each scaffold is posted in a conspicuous location at the jobsite or provided to each supervisory employee who shall have it readily available at the jobsite.

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General Requirements

- Review equipment for adequate sills for scaffold posts to distribute the load as required.
- Incomplete scaffolds will be “red” tagged by the contractor responsible (or otherwise identified). The warning tag should provide hazard warnings and PPE requirements if employee or inspectors will be required to use the scaffold. Contractor’s employees will be instructed to read warning tags before using scaffolds.
- Stationary metal scaffold legs shall rest upon manufacturer’s steel base plates, 2 inches by 10 inch scaffold grade wooden blocks (mud sill plates) are required when resting on earth to assure the safety factor of four is maintained. Base plates must always be used.
- Use adjusting screws instead of blocking to adjust to uneven conditions whenever possible.
- Plumb and level all scaffolds as the erection proceeds. Do not force braces to fit. Level the scaffold until proper fit can be made easily.
- Fasten all braces securely with manufacturer’s securement pins, not nails.
- On wall scaffolds, place and maintain anchors securely between structure and scaffold at least every 20 feet of horizontal length and every 20 feet of vertical height.
- If scaffolds are to be partially or fully enclosed, specific precautions must be taken to assure frequency and adequacy of ties securing the scaffolding due to the increased load conditions resulting from the effects of wind, snow, and ice.
- Freestanding scaffold towers must be restrained from tipping by guying or other means if it is higher than 3 times the least base dimension.
- All appropriate horizontal and diagonal braces must be installed before an employee uses the scaffold.
- Equip all planked or staged areas with guardrails 42 inches to 45 inches high, midrail approximately 21 inches high, and toeboard 4 inches in height along all open sides and ends of the scaffold platforms. The maximum deflection of the toprail when a load of 200 pounds is applied in any direction at any point on the toprail shall not exceed 3 inches.
- Scaffolds must be equipped with an access ladder or equivalent safe means of access. Use

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landing platforms with all access ladders higher than 30 feet. Offset the ladder location at each landing. Single or double cleat ladders shall not exceed 30 feet in length.

- Take appropriate precautions to ensure power lines and electrical conductors are not closer than the safe and legal distance from any scaffolding.
- All planking shall be scaffold grade as recognized by grading rules for the species of wood used.
- Platform planks shall be laid with their edges close together smooth platform will be tight, with no spaces through which tools or parts can fall. All scaffold platforms shall be at least two planks wide. Laminated planking (plywood) or equivalent strength of scaffold grade planking may be placed over planks to eliminate spaces created when the platform is built around piping or other obstructions.
- Where planking is lapped, each plank shall lap its support at least 12 inches and be secured from movement with #9 wire or equivalent as required to insure stability.
- All scaffolding accessories shall be used and installed in accordance with manufacturer's recommended procedures. Scaffolds, frames, and their components manufactured by different companies shall not be intermixed.
- Where persons are required to work or pass under the scaffold, scaffolds shall be provided with a screen between the toeboard and the guardrail extending along the entire opening consisting of #18 gauge US standard wire ½ inch mesh or the equivalent.
- The maximum intended load for each scaffold shall be posted at a conspicuous location at each jobsite or be provided to each supervisory employee who shall have it readily available at all times.

Mobile Scaffolds

- The height of rolling scaffolds must be equal to or less than three times the minimum base dimension. Outriggers may be installed to increase the minimum base dimensions.
- Locking devices must be installed on casters and locked prior to personnel using the scaffold. At least two of the casters shall be swivel type.
- Tools and material shall be removed or secured prior to moving the scaffold tower. Personnel must not be on scaffold being moved.
- Be aware of overhead power lines.

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Training of Personnel

Each jobsite shall have at least one person designated the Qualified Person to perform scaffold training and inspection.

All personnel shall participate in Awareness Training in the proper and safe use of work platforms or scaffolding. This training can be led by the Qualified Person and will include, but not be limited to the following guidelines:

- Do not climb on scaffold bracing unless it is designed and documented by the manufacturer for this purpose.
- Do not use ladders or makeshift devices on top of scaffolds to increase the height.
- Do not move rolling scaffolds with people or loose materials on them.
- Keep your weight inside the scaffold tower while working**.**
- Do not carry tools or parts in your hands or pockets when ascending the access ladder. Utilize tool belts, tool bucket, and rope or other acceptable means to raise and lower such items.
- Do not throw scrap materials down from elevated locations. Lower with rope or use other acceptable means.
- Scaffolds shall not be used for storage of material, except material currently being used.
- Do not overload scaffolds**.**
- Ladders or equivalent safe access shall be provided for employee entry onto the scaffold deck level.

Recommended Procedures

All scaffolds erected, used, loaded, and maintained should have a copy of the Manufacturer's Published Guidelines and Data covering Procedures. SW Point will provide a copy of those procedures for verification purposes. If the Manufacturer's Guidelines are not available or if deviations from the guidelines are necessary, then:

a. A Scaffold design with Drawings and Specifications should be drafted and stamped by a Qualified Person (Registered Professional Engineer) with a copy issued to us for verification purposes.

All Scaffolds and related components of the scaffold(s) should be in good, clean condition and inspected daily prior to use.

In addition to the Manufacturer's Published Procedures and/or the Qualified Person's Stamped Design, the scaffold must meet the safety requirements as published by the

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applicable Regulatory Agency such as OSHA or the Corps of Engineers, etc.

Lock Out / Tag Out

The following procedures must be followed during the servicing or maintenance of machines, to avoid the unexpected start-up of the machinery or equipment, or the release of stored energy, which could cause injury to employees.

Specific procedures will vary, depending upon (1) whether the source of hazardous energy is electrical, hydraulic, pneumatic, mechanical, thermal, or chemical, and (2) how many employees are affected. Lockout procedures describe the energy sources, location of disconnects, type of disconnects, special hazards and special safety precautions.

Only trained and authorized employees will repair, replace, or adjust equipment. No employee is permitted to remove locking devices or tags from machinery, equipment, or circuits, unless they are responsible for the initial lockout/block out and the proper procedures have been followed for re- energizing the machinery or equipment.

The following SIX STEPS are a review of basic steps for safely de-energizing equipment:

1. Clear all personnel to safety
2. Clear away tools and materials from the equipment
3. Isolate all the equipment's energy sources
4. Lockout devices and re-energize systems, following written procedures
5. Release or restrain any stored energy by grounding, blocking, bleeding down, etc.
6. Make sure that the area is clear of all personnel, and then test the equipment to make sure that it will not operate.

Restoring Equipment to Service:

1. Clear all personnel to safety
2. Make sure all equipment components are intact, including safety guards and devices
3. Remove each lockout device using the correct removal sequence
4. Make a visual check before restoring energy to make sure that everyone and everything is clear of the equipment
5. Verify that equipment controls are in neutral.

Under no circumstance should work be performed on machinery or equipment that does not have a specific policy developed to address proper Lock Out/Tag Out (LOTO) procedures.

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Dig Alert

It is required for any SW Point jobsite doing excavation in soil of any kind. The owner As-Built drawings for underground utilities will be reviewed and if necessary, the local utility companies will be notified to locate underground utilities.

Lighting and Illumination

Where the use of artificial light is required, it shall be maintained while workers are entering or leaving the area.

1. Areas requiring the continuous use of artificial light shall be inspected regularly and defective lamps replaced.
2. Temporary lights shall be equipped with guards to prevent accidental contact with the bulb. Guards are not required when the construction of the reflector is such that the bulb is deeply recessed.
3. Approved explosion proof electrical lighting shall be the only means used for artificial illumination in areas where flammable liquids, vapors, fumes, dust, or gases are present and are creating a potential explosion hazard.
4. In addition to providing the required illumination intensities, consideration should be given to the selection and placement of lights which will provide minimum glare, eliminate harsh shadows, and provide adequate illumination to work efficiently and safely.
5. Exposed empty light sockets and broken bulbs shall not be permitted.

Adequate light shall be provided throughout the building and in all work areas throughout the project, particularly passageways and stairways, and wherever necessary to avoid a hazard due to lack of light. Low voltage (12V) lighting shall be used in moist and/or other hazardous locations such as drums, tanks, and vessels. However, 120-volt lights may be used if protected by a ground-fault circuit interrupter.

Back Injury Prevention

The National Safety Council's Accident Facts reports that back injuries generate the highest frequency of disabling injuries on the job. Construction is one of the high-risk industries for lower back injury. All SW Point employees need to know how to lift correctly and what can happen if they do not.

Back Injury Statistics

One half of workers suffering from a back injury had lifted 60 pounds or less and carried the object for one minute or less. Over one-half of these injured workers had no previous back injury.

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Protection from Back Injuries

Knowing your own personal limits is an essential part of protecting yourself from back injuries. The pain and limitations from back injuries can be prevented by following these simple guidelines: The four principals of proper lifting techniques:

1. Keep the load in front of you.
2. Keep the load close.
3. Bend at the knees, keeping the pelvis tucked and lift with the legs.
4. Never twist while lifting.

Hazard Avoidance

- If the load is too heavy or awkward, get someone to help you lift it.
- If it is still too heavy, get a piece of equipment to move it.
- Make sure you have good footing and a clear path of travel.
- Set the load down using the same techniques as lifting.

Project Site Follow-Up

Back injuries are the easiest injury to prevent if the site supervisor/foreman will encourage and reinforce the following:

- Stretching and conditioning should be conducted prior to starting work.
- Back injury prevention techniques will be periodically included at weekly toolbox training meetings.
- Incorporate feedback from employees regarding suggestions toward ways to improve back safety and lifting requirements.
- Demonstrate the basic lifting techniques to workers that are lifting something wrong.

ANY BACK INJURY, NO MATTER HOW MINOR, SHOULD BE REPORTED TO YOUR PROJECT SUPERVISOR IMMEDIATELY.

Back Safety – Material Handling

Material handling is a job everyone does. It is easier and faster to do it the safe way rather than the hard, unsafe way. Proper lifting techniques must be observed when manually handling any size, shape, or weight of materials. The following safe practices will help:

- Do not move it twice if once will do. Plan your work!
- Get down close to the load (bend your knees, do not stoop).

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- Keep your back straight.
- Lift gradually, using your legs, without twisting or jerking.
- Get help for bulky or heavy loads.
- Motorized or special handling equipment shall be used to move heavy or bulky objects to prevent needless back injuries.
- Use gloves, aprons or pads when handling materials which are rough, sharp, hot, or cold, or which are covered with hazardous substances.
- When moving a load, be sure you can see where you are going. Push do not pull.
- When carrying long objects like pipe or lumber, keep the leading end close to the ground.
- Pile materials on a strong level base. Interlock so the pile will not come part. Chock around stock so it cannot roll.

Ladders

Definitions

Ladders. A ladder is an appliance usually consisting of two side rails joined at regular intervals by crosspieces called steps, rungs, or cleats, on which a person may step in ascending or descending.

Extension Ladder. An extension ladder is a non-self-supporting portable ladder adjustable in length. It consists of two or more sections traveling in guides or brackets so arranged as to permit length adjustment. Its size is designated by the sum of the lengths of the sections measured along the side rails.

Step Ladder. A step ladder is a self-supporting portable ladder, nonadjustable in length, having flat steps and a hinged back. Its size is designated by the overall length of the ladder measured along the front edge of the side rails.

Portable Ladders: Generally designed for one-person use to meet the requirements of the person, the task, and the environment. When selecting a ladder for use, consideration shall be given to the ladder length or height required, the working load, the duty rating, worker position to the task to be performed, and the frequency of use to which the ladder will be subjected.

Selection

Ladders shall be selected, and their use restricted to the purpose for which the ladder is designed. Single-rail ladders shall not be used.

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(A) Scaffolds or other worker positioning equipment shall be used when work cannot be safely done from ladders.

Portable ladders are generally designed for one-person use to meet the requirements of the person, the task, and the environment. When selecting a ladder for use, consideration shall be given to the ladder length or height required, the working load, the duty rating, worker position to the task to be performed, and the frequency of use to which the ladder will be subjected.

Ladders shall be used according to the following duty classifications:

Duty Rating	Ladder Type	Working Load
Special Duty	IAA	**375**
Extra Heavy-Duty	IA	**300**
Heavy-Duty	I	**250**
Medium-Duty	II	**225**
Light-Duty	**III**	**200**

- Except where permanent stairways, temporary stairways, suitable ramps, or runways are provided, ladders must be provided to give safe access to all elevations.
- Employees shall be instructed and required to ascend/descend ladders in the proper manner; facing the ladders and holding on the side rails with both hands, maintaining three points of contact. Material shall be raised or lowered with a line or hoisting equipment and not carried in one hand while ascending or descending.
- Manufactured ladders must conform to appropriate safety codes. (ANSIA-14.1)
- Ladders shall be inspected by a competent person for visible defects on a periodic basis and after any occurrence that could affect their safe use.
- The use of portable, metal ladders should be restricted to areas which do not pose electrical hazards.
- Extension ladders should be placed so the horizontal distance at the bottom of the ladders is not less than one quarter (1/4) of the vertical distance to the top support. Ladders shall not be used in a horizontal position as platforms, runways, scaffolds or as support for other materials.
- Extension ladders in use shall be blocked, tied, or otherwise secured to prevent movement or displacement.
- Ladders with broken or missing rungs and steps, broken or split side rails or other faulty and defective parts must not be used. When discovered with such defects,

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ladders shall be immediately withdrawn from service and marked for destruction or repair.

- Wooden Ladders shall not be painted in such a manner as to hide the grain structure, deterioration, or defects. Ladders may be kept coated with a suitable transparent preservative material. (Cross-grain in rungs, cleats and steps is not permitted.)
- The side rails and cleats or rungs of ladders must be kept clear and free of lines, hoses, cables, wires, oil, grease, and debris.
- Wood side rails must be seasoned, straight grained wood, free from shakes, checks, decay, or other defects which will impair their strength. Low density woods shall not be used.
- When not in use, all ladders should be stored under suitable cover. When stored horizontally, both ends and the middle will be supported to prevent sagging and warping of the rails.
- If a ladder is to provide the only means of access or exit from a working area for 25 or more employees, or simultaneous two-way traffic is expected, a double cleat ladder should be installed.
- Extension and Step ladders used on smooth floor or other smooth surfaces must be equipped with non-slipping bases or otherwise secured to prevent displacement.
- Extension Ladders shall be of sufficient length to project not less than three feet (36") above the landing except where such an extension would present a hazard.
- Ladders shall not be placed in passageways, doorways, driveways, or any location where they may be displaced by other work activities, unless protected by barricades or guards.
- Step ladders shall not be used as single ladders or in the partially closed position.
- The area around the top and bottom of a ladder shall be kept clear.
- Employees shall not sit, kneel, step, or stand on the, topcap or the step below the topcap of a step ladder.
- When working from a ladder, one hand should always be free to allow a firm grip on the ladder. Exception - both hands may be used when working through the rungs of a ladder.
- Always face a ladder when ascending or descending.
- Do not climb on the rear side of a stepladder.
- Planks shall not be used on the top cap or the step below the topcap of a step ladder.

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- The lashing of ladders together to increase the length of the ladder is prohibited.
- Always have free use of both hands while ascending and descending ladders.
- The side rails and cleats or rungs of ladders must be kept clear and free of lines, hoses, cables, wires, oil, grease, and debris.
- Single portable ladders over thirty feet in length shall not be used. If greater heights are to be reached, separate ladders shall be used with intermediate landing platforms provided.
- Ladders should not be used for working except for limited periods of time. Ladders are primarily for ascending or descending from one level to another. Where work requires the use of tools and materials, or the job is of considerable duration, it is advisable to use a platform stepladder, scaffold, or some other acceptable working base.
- Ladder manufacturer labels shall be legible.
- Portable ladders should be placed so that the side rails have a secure footing. The top rest should be rigid and have ample strength to support the applied load. The top of the ladder shall be nailed, or otherwise securely fastened, to prevent movement.

  Uniform step spacing shall be used and must not exceed more than twelve inches (12").

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Portable Ladder Safety Tips

Falls from portable ladders (step, straight, combination and extension) are one of the leading causes of occupational fatalities and injuries.

- Read and follow all labels/markings on the ladder.
- Avoid electrical hazards! – Look for overhead power lines before handling a ladder. Avoid using a metal ladder near power lines or exposed energized electrical equipment.
- Always inspect the ladder prior to using it. If the ladder is damaged, it must be removed from service and tagged until repaired or discarded.

3-Point Contact

- Always maintain a 3-point (two hands and a foot, or two feet and a hand) contact on the ladder when climbing. Keep your body near the middle of the step and always face the ladder while climbing (see diagram).
- Only use ladders and appropriate accessories (ladder levelers, jacks or hooks) for their designed purposes.
- Ladders must be free of any slippery material on the rungs, steps or feet.
- Do not use a self-supporting ladder (e.g., step ladder) as a single ladder or in a partially closed position.
- Do not use the top step/rung of a ladder as a step/rung unless it was designed for that purpose.

(continued on reverse)

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Tools

1. Only non-sparking tools shall be permitted in locations where sources of ignition may cause fire or explosion.
2. Tools shall be used only for the purpose for which they were designed.
3. Defective or unsafe tools shall be replaced and turned in for repair immediately. A "Do Not Use" or "Defect" tag shall be placed on such equipment and appropriate record made of determination.
4. When working overhead, unused tools shall be kept in containers or otherwise secured to prevent them from falling. Tools shall not be left in passageways, access ways, walkways or on ramps, platforms, stairways, or scaffolds where they can create a tripping hazard.
5. Throwing or dropping of tools to another area of level shall be prohibited.
6. When not in use, tools shall be stored in suitable tool rooms, toolboxes, racks, or other containers.
7. All power operated tools designed to accommodate guards shall be equipped with such guards when in use.
8. Tools must be kept clean and free from oil and grease to prevent slipping.
9. If workers prefer to furnish their own tools, your tools must be clearly marked, approved by the project manager, and must conform to the requirements demanded for satisfactory, efficient work and for safety. Lost or stolen tools are not the responsibility of SW Point.
10. The supervisor is responsible for the safe condition of tools and equipment used by employees, including tools and equipment which may be furnished by employees.

Hand Tools

Cutting Tools

1. Utility knives, window scrapers and other sharp tools shall not be carried in pockets. Keep them in your utility box or in a proper tool holder.
2. Cutting tools may not be used for any other purpose than what they are intended (e.g. screwdriver, hammer).
3. Sharpening tools should be done by qualified person. Notify your supervisor if any tools require sharpening.
4. Eye protection should be worn to prevent eye injuries from flying splinters or chips

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when using cutting or scrapingtools.

Hacksaws

1. The metal to be cut should be in a firm, secure position. A rolling piece of metal may break the brittle blade and cause an injury.
2. A sharp blade with fine teeth should be used to cut hard metal and a sharp blade with coarse teeth should be used to cut soft metal.
3. The metal in hacksaw blades is brittle and breaks easily and should not be bent or otherwise stressed so that it may break and cause injuries.
4. Do not attempt to sharpen a hacksaw blade. Get a new one. The manufacturer sharpens the blade and then hardens it.
5. Select the proper blade to cut metal to prevent breaking the blade and possible injury.
6. To start a cut safely, be sure the blade is taut on the frame. Score the cutting line with two

(2) or three (3) upstrokes.

7. To complete a cut, use pressure on the forward or cutting stroke. Stay clear of falling pieces to avoid foot injuries.
8. A coat of oil or anti-rust will protect the hacksaw when not in use.

Hammers

1. The right weight and type of hammer should be selected for each job.
2. When working with hammers where there is danger of chips or other flying objects, eye protection should be worn.
3. Use the hammer head to strike the work. It is hardened for this purpose and may be checkered or scored to prevent slipping. Grasp a hammer near the end of the handle. The hand will stand a better chance of escaping injury in case of a miss or if something gives.
4. Hold nails near the head with the thumb and forefinger to start the drive. The fingers will likely be driven away in case of a miss and not crushed.
5. Use the claws of a hammer to draw nails - not to strike objects. When withdrawing nails, use a wood block under hammerhead to lessen handle leverage.
6. A steel hammerhead may cause sparks if striking against metal. Remember, sparks may ignite flammable mixtures of air and vapors or air and explosive dusts. Special hammers made of non-sparking metals should be used when conditions described

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above are known or suspected.

7. Keep hammers free from oil and grease.
8. Hammer handles should be free of slivers and made of hickory, ash, or maple. A band of friction tape around the end of the handle will keep it from slipping out of your hand. Handles should be wedged squarely and securely into the head. A mixture of two (2) parts linseed oil and one (1) part turpentine is used to coat wooden handles.
9. Redress any hammerhead that becomes marred.

Hand Saws

1. Saw cuts and sliver injuries should receive immediate first aid attention as lumber can carry tetanus germs.
2. Keep the saw teeth sharp and properly set to prevent the saw from choking in the cut.
3. A crosscut saw has teeth angled to cut across wood grain, not with the grain.
4. A ripsaw has teeth angled to cut with the grain.
5. Start to cut slowly until the saw takes a smooth bite. Guide the saw initially with the thumb while taking one (1) or two (2) long, slow strokes to make an active groove.
6. Use a steady support to saw a piece of lumber. Stand in a position so the saw will not strike the knee or leg on a cut through.

Screwdrivers

1. Screw drivers should not be used as a chisel, pry, or wedge.
2. Screw drivers should be used in a manner such that the hand will not be punctured or will not strike the work piece in case of a slip.
3. Use the proper size and type of screwdriver for the kind of screw to be driven.
4. Screwdrivers slip when not securely held or the user is off balance. The work piece should not be held by hand. Secure the work piece with clamps or a vise.
5. While working around electrical equipment, wear protective equipment or use an insulated screwdriver to avoid shock. Use safety glasses to avoid flash burns.
6. Replace a split screwdriver. Dress a screwdriver tip if it becomes dull or chipped. Use other tools for work that a screwdriver is not designed to do.

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Sharp-Edged Tools

1. Tools with sharp edges such as saws, axes, scythes, knives, chisels, awls, wood planes and drill bit should have the cutting edge guarded or covered when in storage or being carried.
2. Sharp-edged tools should be used so that the cutting edge is stroked or pointed away from the body.
3. The piece being cut should be secured in a vise or other safe manner.
4. Keep tools sharp and properly oiled or use an anti-rust coating material. A tool in good condition helps prevent injuries.
5. Stroke sharp-edged tools away from the body.
6. Protect materials from damage by sharp edged tools.
7. Eye protection should be used when there is danger from flying objects.

Wrenches

1. The right size and type of wrench should be selected for each job.
2. Hammering on a wrench or the use of extension pipes "cheaters" is dangerous, can break the wrench and is not a safe work practice.
3. The teeth of pipe wrenches should be kept clean and sharp to avoid chips.
4. Wrenches used improperly may break, slip, or spread. Hammering a wrench may break the handle; so will extension of the handles to get more leverage. Check on other ways to do the job.
5. An adjustable wrench has more parts. Inspect the knurl pin and the adjustable jaws. Replace defective parts.
6. Workers should be positioned to avoid striking hands or body parts in case the wrench slips or falls.
7. Do not use a shim to make jaws fit. This is an unsafe practice. Get a wrench that fits.
8. When working at high levels, do not place wrenches where they can be jarred or accidentally knocked into machinery or fall on employees.
9. Use extensions and universal joints when reaching for difficult parts with a wrench. Then keep hands out of danger zones.

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Power Tools - General

1. All power tools and similar equipment shall be maintained in a safe condition.
2. Do not issue nor permit the use of unsafe tools.
3. Power tools that are designed to accommodate guards shall be equipped with such guards when in use.
4. Employees using hand and power tools and exposed to hazards of falling, flying, abrasive and splashing objects or exposed to harmful dust, fumes, mist, vapors, or gases shall be provided with, trained in their use, and required to utilize approved personal protective equipment.
5. Tools shall be used only for the purpose for which they were designed.
6. Defective or unsafe tools shall be replaced and turned in for repair immediately.

Electrical Power Tools

1. Electric power operated tools shall either be of the approved double-insulated type or grounded in accordance with the National Electric Code.
2. The use of the electric cord for hoisting or lowering electric tools is an unsafe practice and should not be permitted.
3. All handheld powered platen sanders, grinders with wheels 2-inch diameter or less, routers, planers, laminate trimmers, nibblers, shears, scroll saws and jigsaw with blade shanks 1/4 of an inch wide or less may be equipped with only a positive "on-off" control.
4. All handheld powered drills, tappers, fastener drivers, horizontal, vertical and angle grinders with wheels greater than 2 inches in diameter, disc sanders, belt sanders, reciprocating saws, saber saws and other similar operating powered tools shall be equipped with a momentary contact "on-off" control and may have a lock-on control provided that turnoff can be accomplished by a single motion of the same finger or fingers that turn it on.
5. All other handheld powered tools such as circular saws, chain saws and percussion tools without positive accessory holding means shall be equipped with a constant pressure switch that will shut off the power when the pressure is released.

Pneumatic Powered Tools

1. Hose lines shall be so placed to eliminate tripping hazards.
2. Pressure shall be shut off and exhausted from the line before disconnecting the line from any tool or connection.

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3. Safety clips, chains, wires, or other retainers shall be used to secure sections of hose together and to secure the hose to the power source and the tool to the hose in order to prevent dangerous whipping in case of disconnection or failure.
4. Compressed air shall not be used for cleaning purposes unless the pressure is reduced to 30 p.s.i. or less. This rule does not apply for concrete form mill scale, green cutting, and similar cleaning operations. Personnel involved in these operations shall be provided with adequate personal protective equipment including safety goggles or face shield, hearing protection, etc.

Pressure Reducing Regulators

1. Pressure regulators including the gauges, shall be in proper working order while in use, if not, remove from service.
2. Regulators shall be an approved type for the type of gas to be utilized.
3. The working pressure of acetylene shall not be adjusted above 15 psig as it becomes more unstable to safely use.
4. When a pressure reducing regulator is attached to a compressed gas cylinder, the cylinder valve should be opened just slightly at first so that the regulator can take on pressure slowly, after which the valve may be turned open to its normal position. If the regulator takes on pressure to suddenly it can damage the regulator and pressure gauges. The operator shall stand to the side of the glass covered gauges and not in front of them.

Hose and Hose Connections

1. Fuel gas hose and oxygen hose shall be easily distinguishable from each other. The two shall not be interchangeable.
2. Unnecessarily long lengths of hose should be avoided. The hose needs to be protected from being run over by equipment or other damage.
3. All hose shall be inspected at the start of the shift for leaks. Immersing in water under normal pressure is a method to check for leaks. Hose when worn at connection should be cut off and connections reinserted. Breaks in the hose should be cut out and a splice inserted. New connections shall be installed by a knowledgeable person using proper/approved compression fittings. Repairing hose with tape is prohibited.
4. Defective hose or hose in doubtful condition shall not be used. Hose subjected to a flashback shall be taken out of service.

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Laydown Area

The operation of a laydown yard to facilitate the construction project can often present hazards that are overlooked. Little attention may be given to the planning and day-to-day tasks for the laydown yard. This lack of attention not only creates difficulties with the storage and access of equipment, materials, and tools; but can adversely impact the overall safety and productivity of the entire worksite.

There are four main components of the laydown yard:

1. The site itself;
2. The equipment onsite;
3. The materials onsite, and;
4. The people working onsite.

The Construction Laydown Yard

Site security is the first area of concern on any site. The laydown yard should be completely enclosed by some type of fence to prevent any unauthorized entry. Nothing should be stored next to the fence. A space of several feet should be left open next to the fence so that the fence can be inspected on a regular basis. Post signs at the main entrance and at the laydown yard to direct people to check in at the main office/trailer. Unauthorized people wandering around a site can cause unnecessary damage to equipment and materials.

Equipment

Heavy Equipment on any construction project creates hazards unique to their use, and the laydown yard is no exception. Keep the laydown yard organized. Storing, maintaining and repairing equipment on site takes up space. It is best to have designated areas for these activities whenever possible to allow the most efficient use of the yard.

Materials

The physical layout of equipment and supplies is very important in eliminating many of the hazards associated with a laydown yard. A site plan should be drawn prior to anything being delivered. This plan should identify all the utilities (gas, electric and water). If there are going to be buildings onsite, they should be situated so they have the least impact on the daily operations of the laydown yard.

The types of materials stored on site will determine the hazards. Gasoline, motor oil, diesel fuel, solvents, epoxies, paints, glues may be stored onsite. Contact the local fire department to assist in setting up a laydown yard regarding flammable hazards. This will save time and

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money.

Any material that has the risk of becoming a pollutant either to the water system or the soil should be stored in an area that has secondary containment protection. In many cases, if contaminate soil is to be stockpiled onsite, a soils management plan will have to be developed. Also, any onsite storm drains should be evaluated and the proper safe guards put in place to protect them from any contaminants that could be washed into them unexpectedly.

Traffic lanes should be identified and kept clear in case of an onsite emergency. Once the traffic lanes are established and the individual storage site(s) are identified, some type of lighting plan should be developed.

People

Managing people is an important task on any project. The work environment of the laydown yard is constantly changing. This requires people to be well trained and knowledgeable in the work practices required to operate a laydown yard. Workers should be trained to use each piece of equipment they are expected to use. Fire safety, small tool use and the proper use of care of PPE are also areas in which they should be proficient.

Containers

Storage cabinets shall be designed and constructed to limit the internal temperature to not more than 325°F when subjected to a ten-minute fire test using the standard time temperature curve as set forth in Standard Methods of Fire Tests of Building Construction and Materials, NFPA No. 251-1972. All joints and seams shall remain tight and the door shall remain securely closed during the fire test.

Cabinets shall be labeled in conspicuous lettering, "**FLAMMABLE -KEEP FIRE AWAY.**"

Metal cabinets constructed in the following manner shall be deemed to comply when: The bottom, top, door and sides of cabinet shall be at least No. 18 gage sheet iron and double walled with 1 1/2-inch air space. Joints shall be riveted, welded, or made tight by some equally effective means. The door shall be provided with a three-point lock, and the door sill shall be raised at least two inches above the bottom of the cabinet.

- Approved metal storage cabinets are acceptable.
- Cabinets must be labeled in conspicuous lettering "Flammable – Keep Fire Away."
- No more than 60 gallons of flammable or 120 gallons of combustible liquids shall be stored in any one storage cabinet. Not more than three such cabinets may be in a single storage area.
- Approved safety cans must be used for handling, storage, and use of flammable liquids.

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Outdoor portable tanks shall not be nearer than 20 feet from any building. Individual portable tanks over 1,100 gallons shall be separated by a 5 foot clear area.

Overhead Electric Power Lines

General

Protection from Electric Shock

- Suitable protective equipment or devices shall be provided and used on or near energized equipment for the protection of employees where there is a recognized hazard of electrical shock or burns.
- When protective insulating equipment is used, it shall comply with the MoW/OSHA Electrical Safety Orders.
- In lieu of other protective equipment, barricades shall be used to provide protection from exposed, energized equipment.
- Before work is begun, SW Point employees shall ascertain by inquiry, direct observation, or by instruments, whether any part of an energized electric power circuit, exposed or concealed, is so located that the performance of the work may bring any person, tool, or machine into physical or electrical contact with the electric power circuit.

1. Where such circuits exist, a legible marking shall be made indicating the presence and location of the energized circuit(s), or warning signs shall be posted.
2. The SW Point supervisor/competent person shall advise employees of the location of such energized circuits, the hazards involved, and the protective measures to be taken.

Low Voltage

- Only qualified persons shall work on electrical equipment or systems.
- Only qualified persons shall be permitted to perform any function in proximity to energized overhead conductors unless means to prevent accidental contact have been provided.

High Voltage Workspace:

- The minimum depth of clear working space about electrical equipment, such as switchgear, motor controllers, etc., shall not be less than set forth in the Table 2932 unless otherwise specified in the MoW/OSHA safety orders. Clearances shall be measured from the energized parts if parts are exposed or from the enclosure front or opening if parts are enclosed.

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Minimum Depth of Clear Working Space at Electric Equipment, Over 600 Volts

Nominal	MINIMUM CLEAR DISTANCE FOR CONDITIONS					
Voltage to	Condition 1		Condition 2		Condition 3	
Ground	Feet	Meters	Feet	Meters	Feet	Meters
601-2500	3	0.9	4	1.2	5	1.5
2501-7500	4	1.2	5	1.5	6	1.8
7501-25,000	5	1.5	6	1.8	9	2.8
25,001-75kv	6	1.8	8	2.5	10	3.0
Above 75kv	8	2.5	10	3.0	12	3.7

- Where the conditions are as follows:

  Condition 1 - Exposed energized parts on one side and no energized or grounded parts on the other side of the working space, or exposed energized parts on both sides effectively guarded by suitable wood or other insulating material. Insulated wire or insulated busbars operating at not over 300 volts are not considered energized parts. Non-shielded insulated conductors shall be considered as exposed energized parts.

  Condition 2 - Exposed energized parts on one side and grounded parts on the other side. Concrete, brick, plaster, or tile walls will be considered as grounded surfaces.

  Condition 3 - Exposed energized parts on both sides of the workspace (not guarded as provided in Condition 1) with the operator between.

- Exceptions:

1. Workspace will not be required behind enclosed equipment such as dead-front switchboards or control assemblies provided there are no renewable or adjustable parts; such as fuses, switches, etc., on the back, and provided all connections are accessible from locations other than the back. Where rear access is required to work on the de-energized parts on the back of enclosed equipment, a minimum working space of 30 inches horizontally shall be provided.

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2. Minimum depth of clear working space in front of electric equipment with a nominal voltage to ground above 25,000 volts may be the same as that for 25,000 volts under Conditions 1, 2 and 3 for installations built before April 16, 1981.

Suitable space shall be provided and maintained about electrical equipment to permit ready and safe operation and maintenance of such equipment. Where energized parts are exposed, the minimum clear workspace shall not be less than 6 1/2 feet (1.98 m) high (measured vertically from the floor or platform), nor less than 3 feet (914 m) wide (measured parallel to the equipment). The depth shall be as required in subsection 2932(a). In all cases, the workspace shall be adequate to permit at least a 90-degree opening of doors or hinged panels.

If switches, cutouts, or other equipment operating at 600 volts, nominal, or less, are installed in a room or enclosure where there are exposed energized parts or exposed wiring operating at over 600 volts, nominal, the high-voltage equipment shall be effectively separated from the space occupied by the low-voltage equipment by a suitable partition, fence, or screen. However, switches or other equipment operating at 600 volts, nominal, or less, and serving only equipment within the high-voltage vault, room, or enclosure may be installed in the high-voltage enclosure, room, or vault if accessible to qualified persons only.

- The following requirements apply to the entrances to all buildings, rooms, or enclosures containing exposed energized parts or exposed conductors operating at over 600 volts, nominal:
  1. The entrances shall be kept locked unless they are always under the observation of a qualified person ; and
  2. Permanent and conspicuous warning signs shall be provided, reading substantially as follows: "DANGER - HIGH VOLTAGE - KEEP OUT."
- Pipes or ducts that are foreign to the electrical installation and that require periodic maintenance or whose malfunction would endanger the operation of the electrical system may not be located in the vicinity of service equipment, metal-enclosed power switchgear, or industrial control assemblies. Protection shall be provided where necessary to avoid damage from condensation leaks and breaks in such foreign systems.

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Passageway and Open Spaces:

- Suitable barriers or other means shall be provided to ensure that the workspace for electrical equipment will not be used as a passageway during periods when energized parts of electrical equipment are exposed.

Entrances and Access to Workspace:

- At least one entrance, not less than 24 inches wide and 6 1/2 feet high shall be provided to give access to the working space about electrical equipment.

1. On switchboard and control panels exceeding 48 inches in width, there shall be one entrance at each end of such boards unless the location of the switchboards and control panels permits a continuous and unobstructed way of exit travel, or unless the work space required in Section 2932(a) is doubled.

2. Where one entrance to the working space is permitted under the conditions described in subsection 2931(a)(1), the entrance shall be located so that the edge of the entrance nearest the switchboards and control panels is at least the minimum clear distance given in Table 2932 away from such equipment.

3. Where bare energized parts at any voltage, or insulated energized parts above 600 volts, nominal, to ground are located adjacent to such entrance, they shall be suitably guarded.

- Permanent ladders, or stairways, shall be provided to give safe access to the working space around electrical equipment installed on platforms, balconies, mezzanine floors, or in attic or roof rooms or spaces.

<u>Provisions for Preventing Accidents Due to Proximity to Overhead Lines</u>

- General. No person, firm, or corporation, or agent of same, shall require or permit any employee to perform any function in proximity to energized high-voltage lines; to enter upon any land, building, or other premises and there engage in any excavation, demolition, construction, repair, or other operation; or to erect, install, operate, or store in or upon such premises any tools,

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machinery, equipment, materials, or structures (including scaffolding, house moving, well drilling, pile driving, or hoisting equipment) unless and until danger from accidental contact with said high-voltage lines has been effectively guarded against.

- Clearances or Safeguards Required. Except where overhead electrical distribution and transmission lines have been de-energized and visibly grounded, the following provisions shall be met:

  1. Over Lines - The operation, erection, or handling of tools, machinery, apparatus, supplies, or materials, or any part thereof, over energized overhead high-voltage lines shall be prohibited.

Exception: 1 - Tower cranes (Hammerhead) installed not closer than the minimum clearances set forth in Table 2, whereon the trolley or boom travel is controlled by limit switches which will prevent carrying a load over energized overhead high-voltage lines or within a horizontal distance closer than the minimum clearances set forth in Table 2.

2. The operation, erection, handling, or transportation of tools, machinery, materials, structures, scaffolds, or the moving of any house or other building, or any other activity where any parts of the above or any part of an employee's body will come closer than the minimum clearances from energized overhead lines as set forth in Table 1 shall be prohibited.

Operation of boom-type equipment shall conform to the minimum clearances set forth in Table 2, except in transit where the boom is lowered and there is no load attached, in which case the distances specified in Table 1 shall apply.

TABLE 1

General Clearances Required from Energized Overhead High-Voltage Conductors

	Nominal voltage (Phase to Phase)		Minimum Required Clearance (Feet)
	600.....	50,000	6
over	50,000.....	345,000	10
over	345,000....	750,000	16
over	750,000....	1,000,000	20

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3. Boom-type lifting or hoisting equipment. The erection, operation or dismantling of any boom-type lifting or hoisting equipment, or any part thereof, closer than the minimum clearances from energized overhead high-voltage lines set forth in Table 2 shall be prohibited.

4. Storage. The storage of tools, machinery, equipment, supplies, materials, or apparatus under, by, or near energized overhead high-voltage lines is hereby expressly prohibited if at any time during such handling or other manipulation it is possible to bring such tools, machinery, equipment, supplies, materials, or apparatus, or any part thereof, closer than the minimum clearances from such lines as set forth in Table 1.

- The specified clearance shall not be reduced by movement due to any strains impressed (by attachments or otherwise) upon the structures supporting the overhead high-voltage line or upon any equipment, fixtures, or attachments thereon.
- Any overhead conductor shall be considered to be energized unless and until the person owning or operating such line verifies that the line is not energized, and the line is visibly grounded at the work site.

TABLE 2

Boom-type lifting, or hoisting equipment clearances required from energized overhead high-voltage lines.

	Nominal voltage (Phase to Phase)		Minimum Required Clearance (Feet)
	600……..	50,000	10
over	50,000…..	75,000	11
over	75,000…..	125,000	13
over	125,000….	175,000	15
over	175,000….	250,000	17

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Temporary Power Testing Program

Policy

It is the policy of the company to provide safe temporary power. This testing program is mandatory and shall be enforced.

Scope

This procedure shall apply on all jobsites where the company provides temporary power.

Procedure: Ground-Fault Circuit Interrupter (GFCI)

- All 120-volt, single-phase 15- and 20-ampere receptacle outlets on construction sites, which are not part of the permanent wiring of the building or structure and which are in use by employees, shall have approved GFCIs for personnel protection.
- Company employees using permanent wiring of the building or structure shall use a portable GFCI.
- Visual inspection of all electrical equipment shall be made on a daily basis by the user. If any equipment is found to be defective, it shall be “red tagged” noting the problem and the job foreman shall be notified. The job foreman shall notify the shop of the need for replacement and monitor the replacement. The job foreman shall use tool transfer sheets for all returned items noting damage on the tool transfer sheet.

Procedure: Testing Procedure

- The Job Foreman is designated to coordinate and ensure the Testing Procedure is done on a quarterly basis. An employee from the tool department will be available to assist the foremen each quarter in performing the testing and replacement of defective temp power boxes and/or cords and the immediate removal of them from service.
- Tests shall be performed on all cords, Temp Power Boxes & associated Receptacles which are not a part of the permanent wiring of the building or structure. All records of testing, replacements or repairs shall be given to the foremen with an additional copy being sent back to the shop with the timecards. The original copy of the test records shall be kept by the tool department manager.

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- Each receptacle shall be tested for correct operation using a UL Rated GFCI and circuit tester. The individual conducting the test shall first read through the manual of the tester and then proceed with the test. When the tester is plugged into the temporary power the circuit being tested should "trip", interrupting power when exposed to a 5-7mA leak. If the power is not interrupted, the test failed, and the receptacle must be taken out of service or replaced by a qualified electrician.
    - All equipment grounding conductors shall be tested for continuity and shall be electrically continuous.
- Each receptacle and attachment cap or plug shall be tested for correct attachment of the equipment grounding conductor. The equipment grounding conductor shall be connected to its proper terminal.
- All required tests shall be performed:
    1. Before first use.
    2. Before equipment is returned to service following any repairs.
    3. Before equipment is used after any incident which can be reasonably suspected to have caused damage (for example, when a cord set is run over).
    4. At quarterly intervals (approximately 3 months), except that cord sets and receptacles which are fixed and not exposed to damage shall be tested at intervals not exceeding 6 months.
        - The job foreman shall not make available or permit the use by employees of any equipment which has not met these four requirements.
        - Tests performed as required in the "1050-10-2 Temp Power Cord & Box Quarterly Testing" shall be recorded. This test record shall identify cords, Temp Power Scatter Boxes & associated Receptacles that passed the test and shall indicate the interval for which it was tested. This record shall be kept by means of color coding and logged per the quarter on the "1050-10-2 Temp Power Cord & Box Quarterly Testing".

The table below lists a color code that is to be used. Colored plastic or vinyl electrical tape

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is placed on both ends of cords & Temp Power Scatter Boxes to denote the month that the tests were performed.

Month Tested	Color of tape to apply to cord or leg of Temp Power Box
January	White for Winter
February	
March	
April	Green for Spring
May	
June	
July	Red for Summer
August	
September	
October	Orange for Fall
November	
December	

Procedure: Training

All field personnel shall be trained to identify electrical hazards and in the procedures of this program. The first Weekly Safety Meeting of every quarter shall cover this program.

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APPENDIX E – ENVIRONMENTAL MITIGATION PROJECTS

E-1 SCTLD-CORAL GENETIC RESCUE PROPOSAL IN ABACO (GGPRA)

TYRSOZ FAMILY HOLDINGS LIMITED
SUITE 925 A EUROPORT 8/9, GIBRALTAR

TYRSOZ
Family Holdings Limited

August 20, 2021

Mr. Craig Dahlgren, PhD
Executive Director
Perry Institute for Marine Science
5356 Main Street
Route 100, Suite 1
Waitsfield, VT 05673

Dear Mr. Dahlgren,

Re: SCTLD- Coral Genetic Rescue Proposal in Abaco (CGRPA)

This is to confirm our discussion regarding the above subject matter.

Tyrsoz Family Holdings Limited (Tyrsoz) is in the process of obtaining the Certificate of Environmental Clearance (CEC) for its approved development in South Abaco (the Project). Details of the Project are available in the EIA and other reports at https://www.southabacotyrsozpublicconsultation.com/index.html.
We expect to file the Environmental Management Plan (EMP) for phase 1 of the Project within the next 3-4 weeks and then hoping to obtain the CEC before the end of the year.

It is our intent to provide the Perry Institute funding to carry out the CGRPA on the following terms:

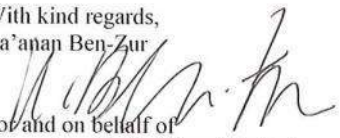
1. This is a letter of intent only. Final commitment will be upon signing an agreement which should be achievable soon after we obtain the CEC.
2. The Project will fund 100% of the capital cost necessary to establish the facility as per your proposal dated August 16th, 2021 (the Proposal) and enclosed here as Exhibit A. and not to exceed $1,050,000.
3. We will be responsible to fund the operation of the facility for up to 5 years on the basis of your proposal at a cost of no more than $400,000 a year.
4. While we can accommodate the facility at footprint of no more than 10,000 SF on our site in South West Point, the site currently is completely "greenfield", covered with vegetation, has no facilities or utilities and is serviced by a rudimentary trail. It will also be the focus of a significant construction project for a period of 2-2.5 years. Therefore, we will assist you in finding a suitable location for the facility by using our contacts with the local government and/or approaching BNT and others. If a question of costs arises, we will need to discuss and assess it then.

Funding CGRPA is a considerable financial pledge for the Project, and we are willing to do it due to our strong commitment to environmental mitigation and because of the serious nature of SCTLD.

Until a definitive agreement is signed between Tyrsoz and the Perry Institute, nothing in this letter will prevent the Perry Institute from seeking and/or obtaining partial or full funding for CGRPA from other sources.

Unless you object, we will mention our intent to fund the CGRPA along the lines of this letter in the EMP.

With kind regards,
Ra'anan Ben-Zur



For and on behalf of
Tyrsoz Family Holdings Limited.

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SCTLD Coral Genetic Rescue Proposal

Craig Dahlgren
Perry Institute for Marine Science

Overview

Coral Reefs are the most valuable ecosystem in the world on a per unit area basis and provide invaluable ecosystem services to The Bahamas, including supporting critical fisheries that provide employment, income and food security to Bahamians; support the tourism sector including a diving industry valued at over $340 million, and providing coastal protection to preserve beaches and protect coastal real estate from wave damage. Moreover, coral reefs support the greatest biodiversity of any ecosystem in The Bahamas. But coral reefs are the most threatened ecosystem in The Bahamas due to a number of local, regional and global threats. Therefore, coral reef protection and restoration has been identified as a national priority.

The greatest threat to coral reefs globally is climate change, and elevated sea temperatures have contributed significantly to declines in live coral in The Bahamas over the past half century, but Bahamian reefs face a new threat that may have equal or even greater impacts over a much shorter timeframe – Stony Coral Tissue Loss Disease (SCTLD). It is imperative that The Bahamas act immediately to mitigate damage from this disease before reefs throughout the country are forever changed.

SCTLD was first observed in Florida off Miami/Key Biscayne in 2014. Since then, it has spread throughout the entire Florida Reef Tract, affecting over 20 species of coral and driving at least one, pilar coral (*Dendrogyra cylindrus*) to become extinct in the wild (Neeley et al. 2021). The pathogen responsible for the disease remains unidentified, and treatments options are limited at present. In The Bahamas SCTLD was first identified off Grand Bahama in 2020, and has since spread to include the entire area from West End to East Grand Bahama (Dahlgren et al. 2021, Dahlgren unpublished data). It has also spread across the entire north shore of New Providence Island from Salt Cay to Clifton, and has been reported from The Berry Islands, north Eleuthera, San Salvador and Long Island. Continued monitoring of reefs off Grand Bahama show that within a year, % coral cover can decrease by >90% from the disease and studies off New Providence show that SCTLD can infect and kill some species within 2 weeks of first exposure (Dahlgren unpublished data, Pizarro, unpublished data). Unless interventions are implemented to stop the spread of the disease and save most vulnerable species, The loss of corals on Bahamian reefs is likely to be significant, with local extinctions of several reef building species, and reduction of live coral cover on reefs to <10% of reef area on average.

In response to the recent discovery of SCTLD in The Bahamas, the Government of The Bahamas created a SCTLD Task force, which includes representatives from:

- Department of Environmental Planning and Protection (DEPP)
- Department of Marine Resources (DMR, Overall lead organization)

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- Ministry of Tourism (MOT)
- Grand Bahama Port Authority (GBPA)
- Bahamas Commercial Fishers Alliance (BCFA)
- Perry Institute for Marine Science (PIMS)
- Bahamas National Trust (BNT)
- The Nature Conservancy (TNC)

This task force is mandated to identify strategies for

- Assessment and tracking the spread of SCTLD (working group led by PIMS)
- Response to SCTLD
- Research
- Communications

As part of the response to SCTLD, the task force has considered strategies to reduce the spread of the disease, strategies to treat infected corals, and strategies to rescue corals from the disease in biosecure *ex situ* facility or facilities to preserve genetics to repopulate reefs affected by SCTLD. This last approach is the focus of this document and is based on the coral rescue effort underway in Florida. Here we describe a coral genetic rescue program In Southern Abaco to serve as the rescue facility for corals around the Little Bahama Bank, including Grand Bahama where SCTLD has had dramatic impacts on coral reefs. This site is ideally situated for genetic rescue of corals as it is in an area that has not been affected by SCTLD, but is expected to be under threat from SCTLD based on the rate of spread of the disease from Grand Bahama and the observation of spread to more distant islands through vessel traffic. This site will be one node in a network of rescue facilities that may also include facilities In Nassau and several Family Islands.

Genetic Rescue

The model for genetic rescue of corals that may be used in The Bahamas is based on that of the Florida Coral Rescue Team. The goal of the Florida Coral Rescue Team is to gene bank or "rescue" corals for purposes of restoring Florida's Coral Reef[1]. Rescuing corals consists of collecting both healthy corals from ahead of the disease boundary and survivor corals that remain in areas that have already been affected by the disease, and holding these corals in land-based facilities to prevent them from becoming infected, to preserve genetic diversity, and to propagate (breed) them for restoration of Florida's Coral Reef. These rescued corals will serve as the parents of future generations of coral offspring that will be propagated to restore Florida's Coral Reef. The collection of "survivor corals" may allow for research to determine the cause of and possibly even the cure for SCTLD.

In Florida Coral Rescue efforts began in late 2018 by developing a collection plan based on preserving genetic diversity, conducting pilot collections, and developing a public-private

[1] https://myfwc.com/research/habitat/coral/disease/rescue/

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partnership with the Association of Zoos and Aquariums (AZA) to gene bank and provide longer-term care for Rescue corals. To date this program has rescued ~2,000 corals of 19 different species from 71 reef sites.

The Florida Coral Rescue efforts may serve as a model for the Bahamas and can provide guidance in terms of biosecurity requirements for facilities, guidelines for the handling and care of corals used in genetic rescue, and local targets for genetic diversity (number of unique genotypes to be rescued) but there will need to be some modifications based on local conditions. For example, an analysis of all seawater culture systems in The Bahamas indicated that none have suitable biosecurity measures to either prevent SCTLD from infecting corals in the facility or if corals in the facility become infected, prevent the release of SCTLD into the environment. As such, in The Bahamas we cannot take advantage of existing facilities to house corals and have to develop entirely new biosecure facilities. Another modification may be the species that are housed in facilities in The Bahamas. The Florida Coral Rescue Program includes many species that are of lower susceptibility to SCTLD, and do not include some of the species that have been observed to be commonly infected in The Bahamas (e.g., *D. cylindrus*), so different species may be collected and housed in the Bahamas.

Coral targets

Based on studies of corals affected off Grand Bahama and New Providence the following coral taxa should be considered high priority for genetic rescue:

- *Colpophyllia natans*
- *Dendrogyra cylindrus*
- *Dichocoenia stokesii*
- *Diploria labyrinthiformis*
- *Eusmilia fastigiata*
- *Meandrina spp.*
- *Montastrea cavernosa*
- *Mycetophelia spp.*
- *Orbicella annularis*
- *Orbicella faveolata*
- *Orbicella franksii*
- *Pseudodiploria clivosa*
- *Pseudodiploria strigosa*

All of these taxa are found in the southern Abaco area (e.g., one or more *Mycetophelia* species may be rescued if available locally). For each species, the target will be to rescue 20 colonies in total.

Whole colonies of each should be collected from outside of the diseased area and survivors (if any) within the diseased area if SCTLD is observed to spread to Abaco. Prior to being held with other colonies, each new colony being brought into the system should be held with other colonies collected from the same site for a quarantine period of at least 2 weeks and longer for

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some species that show delayed signs of disease (Pizarro et al. in prep.). Following the quarantine period, corals from outside the diseased area should be kept in a separate part of the facility from survivor corals collected from inside the diseased area.

Facility Description

Biosecurity - The coral genetic rescue facility must be biosecure with precautions put in place to prevent SCTLD from being transmitted into the facility, or if SCTLD is accidently introduced into the facility, it should not be allowed to spread within the facility or be released into the water. This may be accomplished in several ways, but the most secure way would be for the facility to be supplied with seawater from a well that extends below the island's freshwater lens and reaches salt water under the ground. This will not only reduce the risk of introducing pathogens that may cause SCTLD, but also brings in seawater that is thermally buffered to minimize thermal stress to corals. Within the facility, water should feed directly to each tank so that if SCTLD is introduced into one tank, it will not affect corals in other systems. Effluent from all tanks should then be released into a second well system at a different depth rather than released back into the sea directly to minimize risk of spreading the disease. Additional biosecurity measures, including separating corals from the outside of the diseased area of a reef vs. survivors from diseased parts of reefs; and disinfecting stations for aquarists maintaining corals so that they disinfect their hands, equipment etc. that is being moved between holding tanks. Biosecurity guidelines can be found in Appendix A.

Facility size – The facility should have holding capacity for a minimum of 20 colonies (unique genotypes) for the 15 most vulnerable coral species, plus quarantine tanks for new corals entering the system before they are mixed with others being held there. It is estimated that this would necessitate 40 fiberglass tanks (100" x 20.5" x 18") under a shade structure that occupies approximately 4,000 sq. ft. The seawater system should include two 20 HP pumps to supply water and a degassing tower to ensure water from the saltwater well is suitable for coral growth. Funds are also budgeted for all plumbing, back-up power source, and lighting for the facility. An airconditioned indoor lab space (office plus storage) is also needed for staff to work, storing equipment, and conducting larval propagation and/or other experiments.

Operations

Ideally, the facility will be positioned in close proximity to a dock, where corals from the wild may be brought for housing in the facility, but may be situated inland if suitable transportation is available. Atlantis and/or PIMS vessels and divining systems (compressor and tanks) may be used for coral collections etc. A dedicated staff of at least four aquarists should maintain the facility and the corals. These staff may be PIMS employees, Atlantis employees, those of another partner, or a combination. Existing PIMS senior science staff can provide oversight and PIMS field staff can assist with coral collections and other operational tasks on a periodic basis.

Based on estimates from Florida, we anticipate housing corals in this facility for up to 5 years to allow for conditions to be favorable for outplanting. During that time, corals will be kept alive in the facility with their growth and survival monitored. In addition, we anticipate sampling and

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experiments to be conducted that allow for genotyping of corals, zooxanthellae and microbiome, particularly for comparisons among the general population collected outside the disease zone and survivors collected from within the disease zone to determine unique attributes of the latter population. Furthermore, we anticipate conducting larval propagation to further replenish reefs with juvenile corals from crosses done in the facility. Finally, we anticipate a portion of the facility to serve as a center for education and training for Bahamian students to build capacity in The Bahamas for coral research and restoration. This may be accomplished via PIMS internship program and partnership with the Windsor School's marine Science Academy, as well as partnerships with other education organizations (e.g., University of The Bahamas, BREEF) and Atlantis.

Budget

The budget for the Coral Genetic Rescue Program is broken down into the cost to establish the facility, which is estimated to be $904,173 and annual operating costs (staff and supplies) which are estimated at $328,000 per year. A breakdown in costs for the facility is provided below. While some line items in the budget are based on similar projects in The Bahamas (e.g., saltwater well system installed by Tropic Seafood in Nassau; tanks installed by Bahamas Coral Innovation Hub on Eleuthera), but other line items are rough estimates and should be reviewed by personnel with specific experience. Operating costs are based on a supervisor with an advanced science degree and experience in coral biology and aquarium systems (salary + fringe of $75,000 per year) and four technicians being hired with salary and fringe benefits at $42,000 per year. A total budget for permits and other fees is estimated at $15,000, a fuel budget of $50,000 per year and a supply budget (consumables, maintenance, replacements, etc.) at $20,000 per year. An indirect cost recovery rate of 10% (PIMS' current rate) has been applied.

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Coral Rescue facility	Amount	No.		Total	
Water source					
Well and effluent	$ 90,000.00	1	$ 90,000		
Degassing tower	$ 36,000.00	1	$ 36,000		
20 hp pumps	$ 12,000.00	2	$ 24,000		
				$	150,000
Coral Holding Tanks & Plumbing					
Raceway	$ 1,000.00	40	$ 40,000		
PVC Pipe	$ 3.00	800	$ 2,400		
Fixtures T	$ 15.00	75	$ 1,125		
Fixtures L	$ 10.00	180	$ 1,800		
Valve	$ 50.00	75	$ 3,750		
Grates	$ 100.00	120	$ 12,000		
Other Equipment (monitoring system, etc.)			$ 35,000		
Plumbing labor			$ 25,000		
				$	121,075
Other Infrastructure					
Cement pad	$ 10.00	4200	$ 42,000		
Shade structure (40x80)	$ 16,000.00	2	$ 32,000		
Lighting	$ 100.00	50	$ 5,000		
Back-up generator	$ 6,000.00	1	$ 6,000		
Contractors			$ 75,000		
Freshwater well/RO system	$ 10,000.00	1	$ 10,000		
Office space	$ 50,000.00	1	$ 50,000		
lab supplies/equipment	$ 100,000.00	1	$ 100,000		
				$	320,000
Field operations					
Boat+ outboard(s)	$ 100,000.00	1	$ 100,000		
Dive Locker	$ 50,000.00		$ 50,000		
Dive Compressor	$ 10,000.00	1	$ 10,000		
SCUBA tanks	$ 220.00	20	$ 4,400		
Power tools & Hand tools	$ 15,000.00		$ 15,000		
Coolers/seawater tanks	$ 1,500.00		$ 1,500		
Truck	$ 50,000.00		$ 50,000		
				$	230,900
Subtotal				$	821,975
ICR				$	82,198
TOTAL				$	904,173

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E-2 "K1 DIRECT" (DISASTER RELIEF & CRISIS TEAM)

TYRSOZ FAMILY HOLDINGS LIMITED
SUITE 925 A EUROPORT 8/9, GIBRALTAR

TYRSOZ
Family Holdings Limited

October 21, 2021

Ms. Priya Thirumur
Charitable Director
K1 DIRECT" (Disaster Relief & Crisis Team)
340 Royal Poinciana Way,
Palm Beach, Florida 33480

Via- e-mail

Re: "K1 DIRECT" (Disaster Relief & Crisis Team)

Dear Ms. Thirumur,

This is to confirm our discussion regarding the above subject matter.

Tyrsoz Family Holdings Limited (Tyrsoz) is in the process of obtaining the Certificate of Environmental Clearance (CEC) for its approved development in South Abaco (the Project or Habacoa). Details of the Project are available in the EIA and other reports at https://www.southabacotyrsozpublicconsultation.com/index.html. We expect to file the Environmental Management Plan (EMP) for phase 1 of the Project within the next 3-4 weeks and then hoping to obtain the CEC before the end of the year.

It is our intent to provide "K1 DIRECT" (Disaster Relief & Crisis Team) funding to assist in your Disaster Relief Crisis Team mission on the following terms:

1. This is a letter of intent only. Final commitment will be upon signing an agreement (Agreement) which should be achievable soon after we obtain the CEC.
2. The Project will fund $250,000 a year to assist "K1 DIRECT" (Disaster Relief & Crisis Team) in carrying out their Disaster Relief Crisis Team mission in the Caribbeans, for four years commencing on the date of the Agreement.
3. The funds will be used by "K1 DIRECT" (Disaster Relief & Crisis Team) solely for ongoing activities related to the Disaster Relief Crisis Team mission in the Caribbean.
4. Habacoa will be entitled to significant collaboration with "K1 DIRECT" (Disaster Relief & Crisis Team) to highlight Habacoa's charitable contribution based on past practices by "K1 DIRECT" (Disaster Relief & Crisis Team) and subject to detailed agreement that will be laid out in the Agreement.
5. "K1 DIRECT" (Disaster Relief & Crisis Team) will engage with the Government of the Bahamas, post execution of the Agreement, to explore ways to initiate pre-disaster training and preparedness activities in the Bahamas. Habacoa will assist with the Government outreach. Should an agreement with the government on such activities ensue and require additional funding, further discussion between

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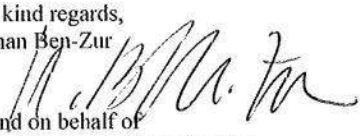
"K1 DIRECT" (Disaster Relief & Crisis Team) and Habacoa will take place to consider the potential for additional funding to cover part or all of such activities.

Funding "K1 DIRECT" (Disaster Relief & Crisis Team) is a considerable financial pledge for the Project, and we are willing to do it due to our strong commitment to social responsibility and admiration for the mission of "K1 DIRECT" (Disaster Relief & Crisis Team).
Until a definitive agreement is signed between Tyrsoz and "K1 DIRECT" (Disaster Relief & Crisis Team), nothing in this letter will prevent "K1 DIRECT" (Disaster Relief & Crisis Team) from seeking and/or obtaining partial or full funding for their activities from other sources.

Unless you object, we will mention our intent to fund the "K1 DIRECT" (Disaster Relief & Crisis Team) activities along the lines of this letter in the EMP.

With kind regards,
Ra'anan Ben-Zur



For and on behalf of
Tyrsoz Family Holdings Limited.

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APPENDIX F – SPILL REPORT FORM

Date: _____ Weather Conditions: _____
Staff on Duty: _____
Contact Information: _____

Spill Details

Type of Spill/Product: _____

Marine or Terrestrial: _____

Description of Spill Location of Spill: _____
_____

Spill Estimated Quantity: _____

Remediation Method: _____

Disposal Method: _____

Cause of Spill: _____
_____
_____

Prevention Method Employed: _____
_____

Please identify spill location on the map provided below:

Notes: _____
_____
_____
Please attach photos of spill activity.

Signed by:

(Insert Signature Here) _____
Site Safety Manager

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APPENDIX G - INCIDENT INVESTIGATION REPORT FORM

This incident (accident, illness, exposure, etc.) investigation record shall be kept on file for at least 1 year after the date of occurrence. All affected employees and applicable third parties shall be provided a copy of incident records upon request.

Incident Information	
Name(s) of Affected Employee(s):	Date of Incident:
Work Area of Affected Employee(s):	Date Investigation Began:
Describe Nature of Incident:	
Part(s) of Body Affected:	
Describe Medical Treatment Administered:	

Witness #1 Information	
Witness Name:	Phone:
Witness's Description of Incident:	
Witness Signature:	Position:

Witness #2 Information	
Witness Name:	Phone:

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Witness's Description of Incident:	
Witness Signature:	Position:

Investigation Results	
List of contributing factors/root causes:	
Was a mandatory safe work place violated?	☐Yes ☐No
Was the unsafe condition, practice or protective equipment problem corrected immediately?	☐Yes ☐No
If no, what has been done to ensure correction?	
Do additional mandatory safe work practices need to be implemented?	☐Yes ☐No
If yes, please describe safe work practice:	
List corrective actions taken and date implemented:	
Signature of Investigator:	Date:
Signature of Person Responsible for Corrective Actions:	Date:

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APPENDIX H - HAZARD ASSESSMENT CHECKLIST

Location: _____

Inspected by: _____

Date and Time: _____ Time: _____

To use this form correctly, you must look at each item and tick the appropriate box. If corrective action is required then select Yes by placing a check mark in the box (☑ Yes). If corrective action is not required then place a check mark in the No box (☑No).

If the item is not relevant to the type of project activity or phase of the project during the inspection, place a check mark in the Not Applicable box (☑ N/A).

HEALTH HAZARDS			
Chemical Hazards			
Review Safety Data Sheet (SDS) and product labels to identify chemicals in your workplace that have low exposure limits, are highly volatile, or are used in large quantities or stored in unventilated spaces. Identify activities that may result in skin exposure to chemicals.			
	Corrective Action Required	Describe Corrective Action, if necessary	List Person responsible
Chemicals are correctly labelled and stored	☐Yes ☐ No ☐N/A		
Emergency numbers are displayed	☐Yes ☐ No ☐N/A		
Adequate ventilation for fumes and dust	☐Yes ☐ No ☐N/A		
Person protective equipment and clothing are available	☐Yes ☐ No ☐N/A		
Emergency eyewash, showers are available	☐Yes ☐ No ☐N/A		
SDS are available	☐Yes ☐ No ☐N/A		
Physical Hazards			
Identify any exposures to excessive noise (areas where you must raise your voice to be heard by others), elevated heat (indoor and outdoor), or sources of radiation (radioactive materials, X-rays, or radiofrequency radiation).			
	Corrective Action Required	Describe Corrective Action, if necessary	List Person responsible
	☐Yes ☐ No ☐N/A		

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	☐Yes ☐ No ☐N/A		
	☐Yes ☐ No ☐N/A		

BIOLOGICAL HAZARDS			
Determine whether workers may be exposed to sources of infectious diseases, molds, toxic or poisonous plants, or animal materials (fur or scat) capable of causing allergic reactions or occupational asthma.			
	Corrective Action Required	Describe Corrective Action, if necessary	List Person responsible for Corrective Action
Do workers work garbage, soils, waste?	☐Yes ☐ No ☐N/A		
Is there a possibility of cuts, abrasions?	☐Yes ☐ No ☐N/A		
	☐Yes ☐ No ☐N/A		

ERGONOMIC HAZARDS			
Examine work activities that require heavy lifting, work above shoulder height, repetitive motions, or tasks with significant vibration.			
	Corrective Action Required	Describe Corrective Action, if necessary	List Person responsible for Corrective Action
Is there high rates of repetitive motion?	☐Yes ☐ No ☐N/A		
Are workers exposed to vibrations?	☐Yes ☐ No ☐N/A		
Do workers have to maintain the same position for extended periods of time?	☐Yes ☐ No ☐N/A		
Is there adequate space around machines?	☐Yes ☐ No ☐N/A		
Are worked involved in manual lifting, carrying, pushing, pulling?	☐Yes ☐ No ☐N/A		

QUALITATIVE EXPOSURE ASSESSMENTS			
When possible, using air sampling or direct reading instruments.			
	Corrective Action Required	Describe Corrective Action, if necessary	List Person responsible for Corrective Action

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	☐Yes ☐ No ☐N/A		
	☐Yes ☐ No ☐N/A		

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