



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
**COMMISSION ON WATER RESOURCE MANAGEMENT**  
P.O. BOX 621  
HONOLULU, HAWAII 96809

STAFF SUBMITTAL

COMMISSION ON WATER RESOURCE MANAGEMENT

April 17, 2014  
Honolulu, Hawaii

Application for a Stream Channel Alteration Permit (SCAP.3918.3)  
City and County of Honolulu, Department of Design and Construction  
Kāneʻohe/Kailua Wastewater Conveyance and Treatment Facilities  
Kāwā Stream, Kāneʻohe, Oʻahu (TMK:1-4-5-030:001 por.)

APPLICANT:

Glenn Okita, Project Manager  
Dept. of Design and Construction  
City and County of Honolulu  
650 South King Street, 11th Floor  
Honolulu, HI 96813

LANDOWNER:

Jerry Appleby, Lead Pastor  
Windward Church of the Nazarene  
45-232 Puaae Road  
Kāneʻohe, HI 96744

SUMMARY OF REQUEST

The City and County of Honolulu, Department of Design and Construction ("City") filed this application for a Stream Channel Alteration Permit (SCAP.3918.3) to construct a 10-foot wastewater gravity tunnel and a 30-inch diversion pipeline crossing *under* the Kāwā Stream ("Project"). The purpose is to convey partially treated wastewater from the Kāneʻohe Wastewater Pre-Treatment Facility ("WWPTF") to the Kailua Regional Wastewater Treatment Plant (WWTP). The soil under the stream will be stabilized by jet grouting before the tunnel and pipeline are excavated and installed. A temporary steel deck, to support jet grouting activities, will span the stream and will later be dismantled and removed.

LOCATION: The Kāwā Stream is located adjacent to the Kāneʻohe WWPTF (see Exhibit 1).

BACKGROUND

The Project is being done pursuant to and to comply with a 2010 U.S. EPA / State / City Consent Decree modification in consultation with the Environmental Protection Agency and the Department of Health (DOH). An Environmental Impact Statement was completed in 2011.

## DESCRIPTION

The Kāwā Stream is 2-miles long, perennial, and flows through the urban district. The watershed is 0.6 square miles with a maximum elevation of 725 feet. The stream originates on Mahinui Ridge, flows past residential neighborhoods, a school, shopping mall, along the southern boundary of the Kāneʻohe WWPTF and into Kāneʻohe Bay. At lower elevations, seeps and springs provide perennial flow to the stream channel. The stream is designated as a Class 2 inland water of the Hawaii water quality standards and discharges in Kāneʻohe Bay, which is a Class AA embayment. Previously, the stream within the project area has been dredged and straightened. However, the bed and banks remain unhardened. The channel is about 10 to 15 feet wide and up to 6-feet deep. The stream is listed as “waters not meeting Hawaii water quality standards” (Clean Water Act, Sec. 303 (d)) and as “impaired” because it does not meet standards for total suspended solids, turbidity, and nutrients.

Gravity Tunnel. The City is proposing to replace the existing 42-inch force main with a new 3-mile long, 10-foot diameter gravity tunnel from the Kāneʻohe WWPTF to the Kailua Regional WWTP (see Exhibit 2). The existing 42-inch force main is located under the stream and will be abandoned in place. The gravity tunnel is designed to be large enough to capture peak flows of wastewater and store them for later treatment. The purpose is to minimize the probability of spills and bypasses to coastal waters during storm events and offer beneficial long-term water quality impacts on coastal ecosystems. Captured flows will be treated to a secondary level and discharged through the Mokapu Outfall. The Kāwā Stream portion of the Project extends approximately 100-feet across the stream.

Most of the gravity tunnel will be constructed using a tunnel boring machine through basalt from Kāneʻohe to Kailua. However, the soil conditions under the stream are soft lagoonal deposits with a high groundwater table (see Exhibit 3). The soil below the stream will need to be stabilized and hardened by jet grouting before the tunnel can be excavated. Jet grouting will involve drilling holes into the streambed to a depth below the bottom of the proposed tunnel. As the drill is retracted, cement, water, and air are injected at high pressure into the ground. The purpose is to form a column of mixed soil and cement that will harden to provide stability and impede groundwater movement. The drill pattern may be a grid of holes along the path of the tunnel forming a solid grouted mass to tunnel through (see Exhibit 4). The tunnel will be at least 10-feet *below* the stream.

Jet grouting will be done from a temporary steel deck placed over the stream (see Exhibit 5). The temporary deck will span the stream and will have no impact to the stream. The footings are away from the stream bank. Within the stream, a temporary steel casing will be inserted from the steel deck extending to at least 5-feet below the stream invert. The jet grouting drill rod will be inserted within the steel casing to drill a borehole to the desired depth. Following construction of each grout column, the steel casing and drill rod will be moved to the next location on the steel deck to commence the jet grouting process for a new column. As the columns are constructed, all of the spoils will be pumped from the steel casing into a mud pan located around the casing, then pumped to tanks and vacuum trucks at the Kāneʻohe WWPTF.

From the Kāne‘ohe WWPTF, the spoils will be transported offsite where liquids will be allowed to evaporate and percolate. Once the soils are stabilized, the tunnel will be excavated.

Diversion Pipeline. The City also proposes to replace the existing 27-inch interceptor pipeline with a new 30-inch diversion pipeline (see Exhibit 2). The 27-inch line crosses under the stream, but has sagged over time causing operational problems. It will be abandoned in place. The new 30-inch line will be constructed by micro-tunneling and crossing the stream at an angle, extending approximately 140-feet across the stream. When installed, the 30-inch line will be approximately 5-feet *below* the stream.

Before micro-tunneling can begin, the soft and wet ground will be stabilized by jet grouting. For the 30-inch diversion pipeline, the City will create primary jet grout columns of approximately 36-inches in diameter along both sides of the proposed diversion pipeline every 15 feet. They will extend at least 2-feet deeper into the bearing stratum to provide further stability. Secondary columns of a minimum of 36-inches in diameter will extend at least 36-inches below the proposed micro-tunnel and will form an overlapping grid pattern. Both primary and secondary columns will extend a minimum of 1foot above the proposed tunnel (see Exhibit 6).

Biological Survey of Kāwā Stream. In September and October 2013, AECOS biologists conducted a field survey of the stream. The survey extended the entire length from its headwaters on Mahinui Ridge to Waikalua Loko Fishpond adjacent to Kāne‘ohe Bay.

Flora. The plants observed in the Project area and along the length of the stream are mostly introduced weedy species. None are endemic or listed as endangered or threatened. Mangroves dominate the flora, lining the banks and growing in the channel, excluding nearly all other vegetation. Streamflow is sluggish and visibility poor. The stream flows alongside (outside) the southeast wall of the Waikalua Loko Fishpond which is overgrown with mangrove. The mangrove extends inland from the shore along the estuary of the stream and has a closed-canopy of mature trees and a dense understory of roots and young trees. Upstream, the riparian flora shifts to Guinea grass, hau, Java plum, and Chinese banyan. The middle reach of the stream flows through a residential neighborhood that includes Windward City Shopping Center and Castle High School. The stream is channelized in some locations. Long shallow pools are separated by riffle or artificial drops. Further upstream is a steep-sided gulch forested with cinnamon trees. Seeps and springs add water to this gaining section of the stream. The upper reach of the stream is highly altered, graded, and grubbed.

Fauna. Aquatic species found within the stream include non-native tilapia throughout the mangroves in the project area. Native fishes typically found in estuaries, including āholehole, ‘ama‘ama, ‘o‘opu naniha, and ‘o‘opu ‘akupa have been reported in the Kāwā estuary, but only a few individual āholehole were observed. ‘O‘opu nākea have been reported, although none were seen. Non-native fish dominate the fauna throughout the warm, shallow waters of the stream. Catfish inhabit slightly deeper waters and a wide variety of other non-native fish are found throughout the stream. As designed, construction and operation of the gravity tunnel and diversion pipeline under the stream will not impede migration of native amphidromous species. No aquatic species were listed as endangered or threatened.

## ANALYSIS

### Agency Review Comments:

City and County of Honolulu, Dept. of Planning and Permitting: No response.

Department of Hawaiian Home Lands: No comments.

Department of Land and Natural Resources (DLNR), Aquatic Resources: The proposed activity is not expected to have any significant impact on the aquatic resource values in these areas. The installation and construction of the wastewater gravity tunnel will be below the bottom of the stream channel, should not disturb the stream bottom, and should not divert, stop, or interrupt the regular stream flow. Mitigation measures and best management practices should be implemented during the construction of the wastewater gravity tunnel and associated wastewater diversion pipeline traversing beneath Kāwā Stream in areas adjacent to the stream channel to minimize the potential for erosion, siltation and pollution of the aquatic environment, including: 1) lands denuded of vegetation should be planted or covered as quickly as possible to prevent erosion and the vegetation cleared along stream banks should be removed and prevented from falling into the stream environment; 2) scheduling site work during periods of minimal rainfall; and, 3) prevent construction materials, petroleum products, debris and landscaping products from falling, blowing, or leaching into the aquatic environment.

DLNR, Engineering: The project site, according to the Flood Insurance Rate Map, is located in Zones XS, AE and AEF. The National Flood Insurance Program regulates developments within these zones. The project must comply with the rules and regulations of the National Flood Insurance Program in Title 44 of the Code of Federal Regulations whenever development within a Special Flood Hazard Area is undertaken.

DLNR, Forestry and Wildlife: Not subject to their regulatory authority.

DLNR, Historic Preservation: No response.

DLNR, Land Division: No comments.

DLNR, State Parks: Not subject to their regulatory authority.

DOH, Office of Environmental Quality Control: The proposed action triggered an Environmental Impact Statement due to the use of County funds (HRS §343-5(a)). On May 23, 2011, a Final Environmental Impact Statement and Finding of No Significant Impact for the project was published in the Environmental Notice.

DOH, Clean Water Branch:

1. Any project and its potential impacts to State waters must meet the following criteria:

- a. Antidegradation policy (HAR, §11-54-1.1), which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected;
  - b. Designated uses (HAR, §11-54-3), as determined by the classification of the receiving State waters; and
  - c. Water quality criteria (HAR, §11-54-4 through §11-54-8).
2. National Pollutant Discharge Elimination System (“NPDES”) permit coverage is required for pollutant discharges into State surface waters and for certain situations involving storm water (HAR, Ch. 11-55).
- a. Discharges into Class 2 or Class A State waters can be covered under an NPDES general permit only if all of the NPDES general permit requirements are met.
  - b. All other discharges into State surface waters and discharges into Class 1 or Class AA State waters require an NPDES individual permit.
  - c. NPDES permit coverage for storm water associated with construction activities is required if the Project will result in the disturbance of one (1) acre or more of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. NPDES permit coverage is required before the start of the construction activities.

Land disturbance includes, but is not limited to clearing, grading, grubbing, uprooting of vegetation, demolition (even if leaving foundation slab), staging, stockpiling, excavation into pavement areas which go down to the base course, and storage areas (including areas on the roadway to park equipment if these areas are blocked off from public usage, grassed areas, or bare ground).

3. If the Project involves work in, over, or under waters of the United States, it is recommended that your applicant contact the Army Corp of Engineers, Regulatory Branch regarding their permitting requirements.

Pursuant to Federal Water Pollution Control Act [also known as the “Clean Water Act” (CWA)], Paragraph 401(a) (1), a Section 401 Water Quality Certification (WQC) is required for “[any applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters...” The term “discharge” is defined in CWA, Subsections 502(16), 502(12), and 502(6); Title 40 of the Code of Federal Regulations, Section 122.2; and HAR, Ch. 11-54.

4. Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 WQC are required, must comply with the State’s Water Quality Standards. Noncompliance with water quality requirements contained in HAR, Ch. 11-54, and/or permitting requirements, specified in HAR, Ch. 11-55, may be subject to penalties of \$25,000 per day per violation.

Office of Hawaiian Affairs: No response.

US Army Corps of Engineers: No response.

US Fish and Wildlife Service: No response.

University of Hawaii, Environmental Center: No response.

### Staff Review

Haw. Rev. Stat. § 174C-71(3) directs the Commission on Water Resource Management (“Commission”) to protect stream channels from alteration whenever practicable, to provide for fishery, wildlife, recreational, aesthetic, scenic, and other beneficial instream uses. Instream uses include, but are not limited to the maintenance of aquatic life and wildlife habitats; recreation; maintenance of ecosystems such as estuaries, wetlands, and stream vegetation; aesthetic values such as waterfalls and scenic waterways; navigation; hydropower; maintenance of water quality; the conveyance of irrigation and domestic water supplies to downstream points of diversion; and the protection of traditional and customary Hawaiian rights. HAR §13-169-52(c) sets out the criteria for evaluating applications

*(1) Channel alterations that would adversely affect the quantity and quality of the stream water or the stream ecology should be minimized or not be allowed.*

The proposed channel alterations involve drilling holes into the streambed to a depth below the bottom of the gravity tunnel and diversion pipeline. The holes are temporary and will close shortly after the jet grouting activity is completed. The spoils will be removed and dewatered offsite. The quantity or quality of stream water and stream ecology remains unchanged.

*(2) Where instream flow standards or interim instream flow standards have been established, no permit shall be granted for any channel alteration which diminishes the quantity or quality of stream water below the minimum established to support identified instream uses.*

The interim instream flow standard for all streams on Windward Oahu shall be that amount of water flowing in each stream on the effective date of this standard (April 19, 1989), and as that flow may naturally vary throughout the year (HAR §13-169-49.1). The identified instream uses include fish habitat and stream flow contribution to the nearshore waters of Kāne‘ohe Bay and fishpond. The quantity or quality of stream water remains unchanged.

*(3) The proposed channel alteration should not interfere substantially and materially with existing instream or non-instream uses or with channel alterations previously permitted.*

There are no wells, stream diversions or other public trust purposes in the vicinity of the proposed project. The only SCAP’s nearby consist of drainage outfalls from the golf course.

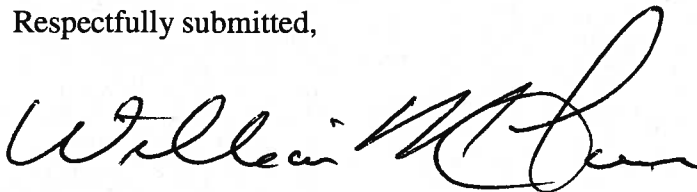
April 17, 2014

The proposed action does not appear to interfere with existing instream or non-instream uses or with channel alterations previously permitted.

RECOMMENDATION

The Commission approve the Stream Channel Alteration Permit (SCAP.3918.3) for the City and County of Honolulu, Department of Design and Construction's Kāne'ōhe/Kailua Wastewater Conveyance and Treatment Facilities for the construction of a 10-foot gravity tunnel and 30-inch diversion pipeline located under the Kāwā Stream in Kāne'ōhe, Oahu, TMK (1) 4-5-030:001 por., subject to the standard conditions in Exhibit 7.

Respectfully submitted,



WILLIAM M. TAM  
Deputy Director

Exhibits:

1. Location Map.
2. Kāne'ōhe WWPTF Sewer Tunnel Diversion Plan.
3. Geologic Profile.
4. Typical Jet Grout Column Locator Plan For Gravity Tunnel.
5. Jet Grout Column Layout Beneath Kāwā Stream.
6. Typical Profile Along Jet Grout Supported Section For Kāne'ōhe Diversion Pipeline.
7. Standard Stream Channel Alteration Permit Conditions.

APPROVED FOR SUBMITTAL:



WILLIAM J. AILA, JR.  
Chairperson

Location Map.

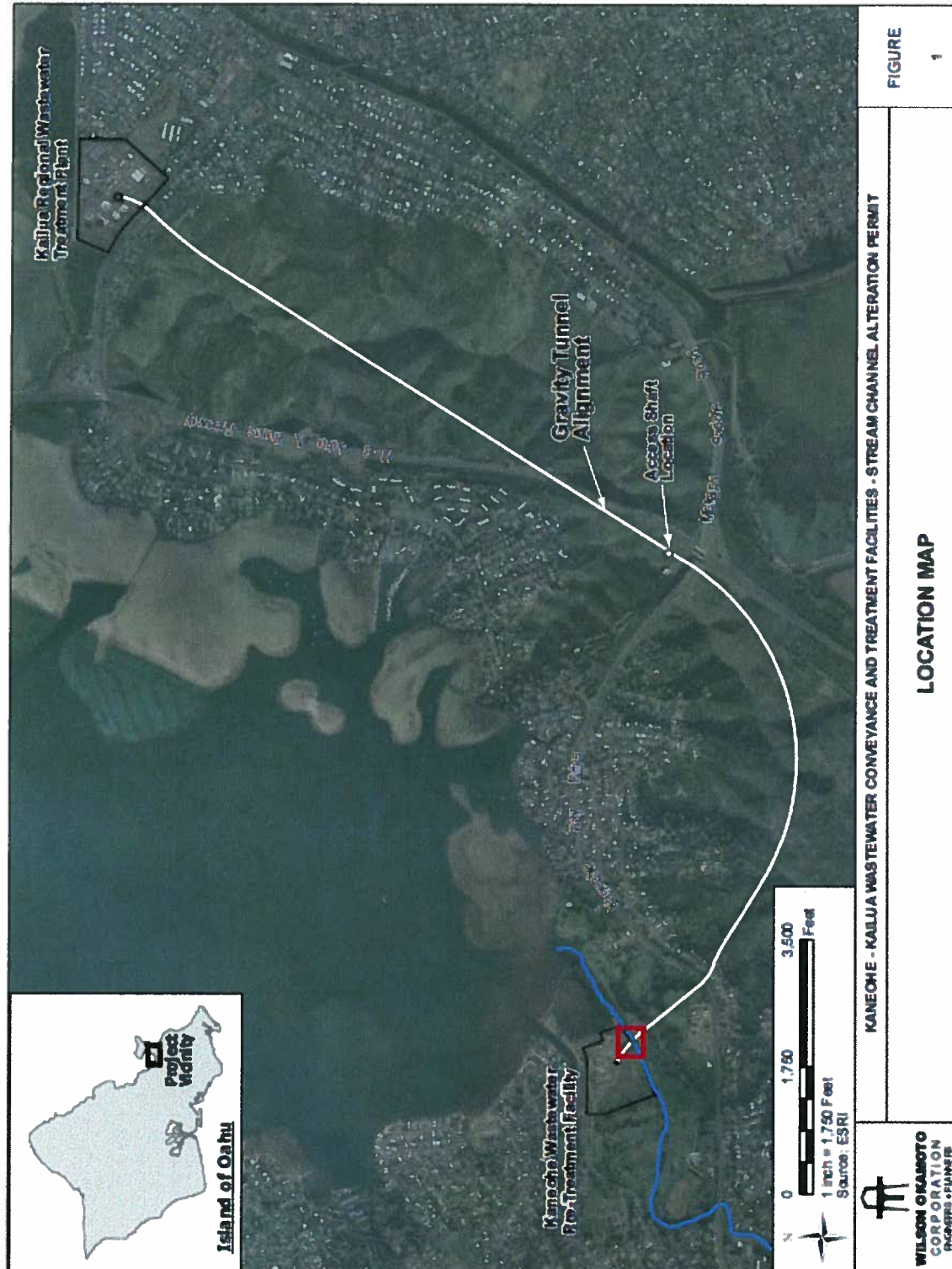


EXHIBIT 1



Kāne'ohe WWPTF Sewer Tunnel Diversion Plan.

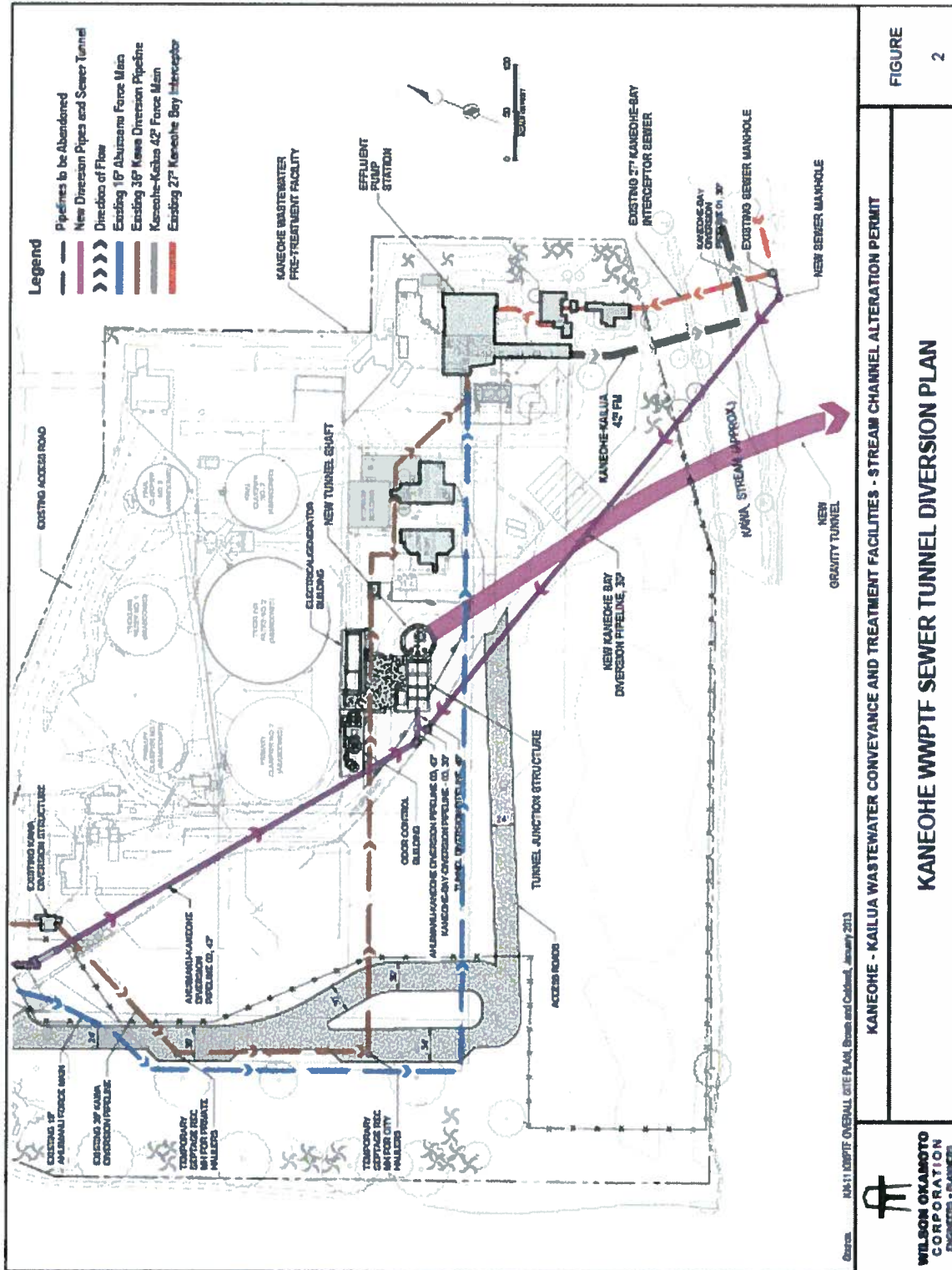


FIGURE  
2

EXHIBIT 2

Geologic Profile.

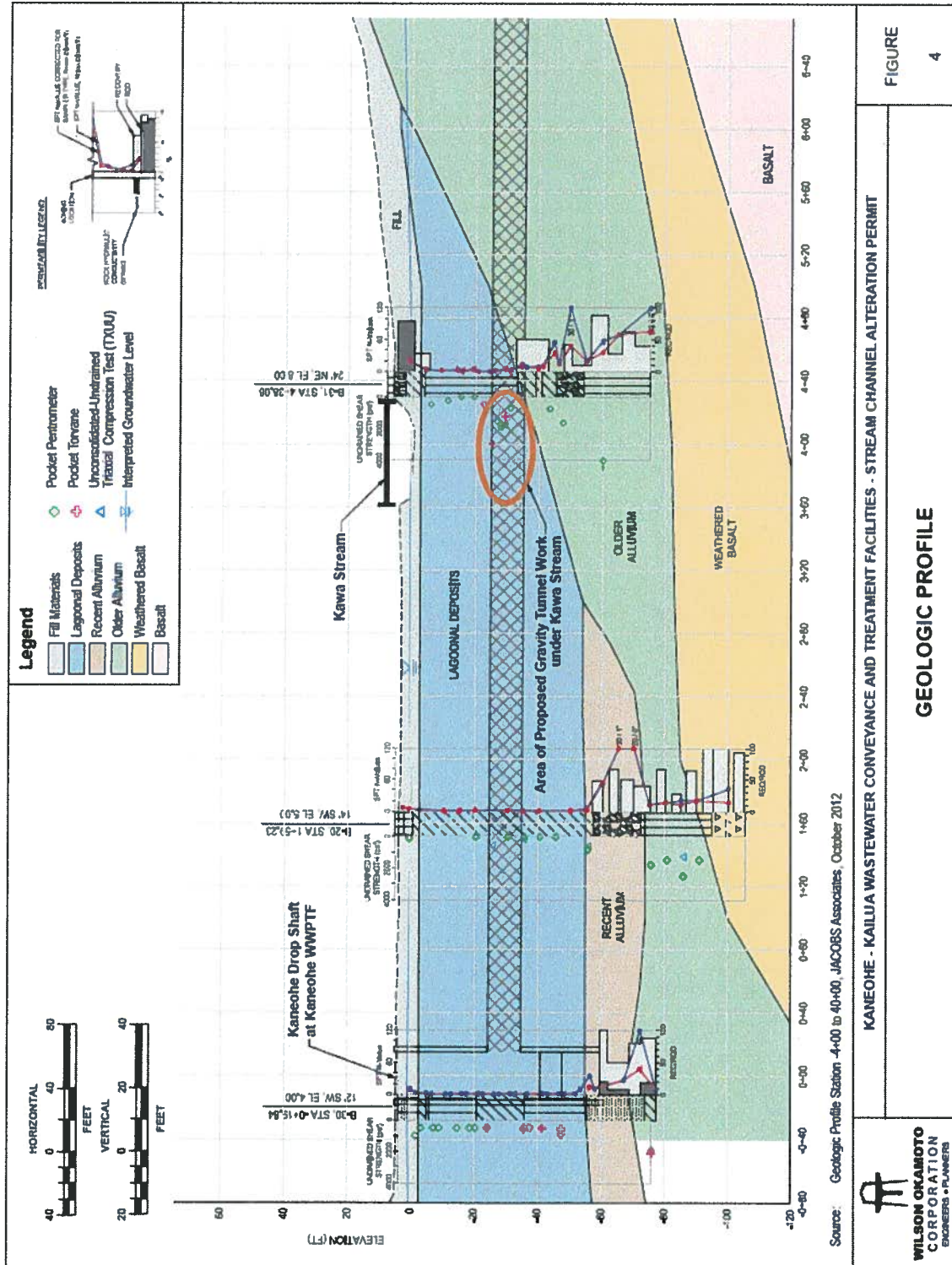


FIGURE 4

KANEHOE - KAILUA WASTEWATER CONVEYANCE AND TREATMENT FACILITIES - STREAM CHANNEL ALTERATION PERMIT

**WILSON OKAMOTO CORPORATION**  
ENGINEERS • PLANNERS

EXHIBIT 3

Typical Jet Grout Column Locator Plan For Gravity Tunnel.

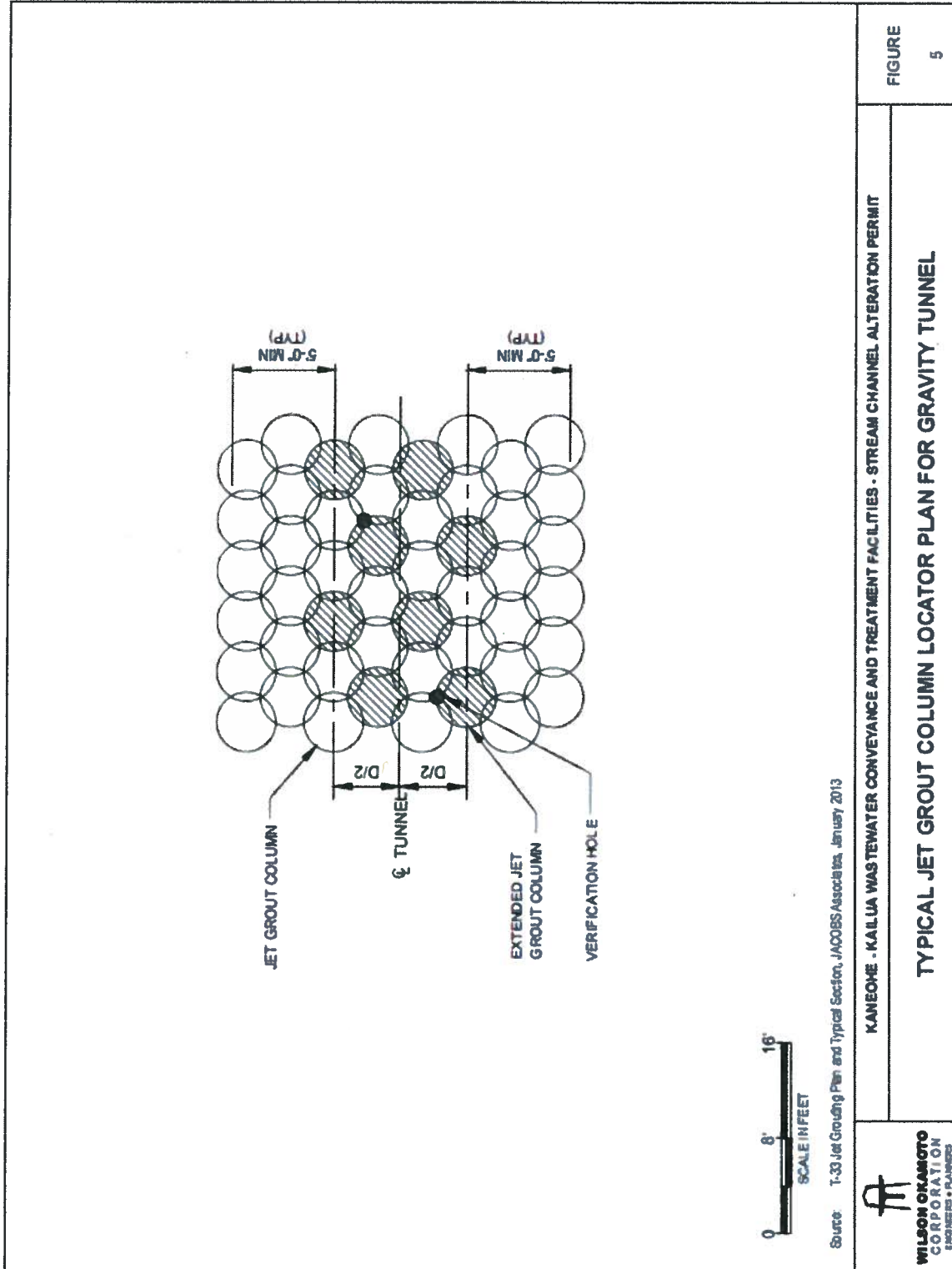


EXHIBIT 4

Jet Grout Column Layout Beneath Kāwā Stream.

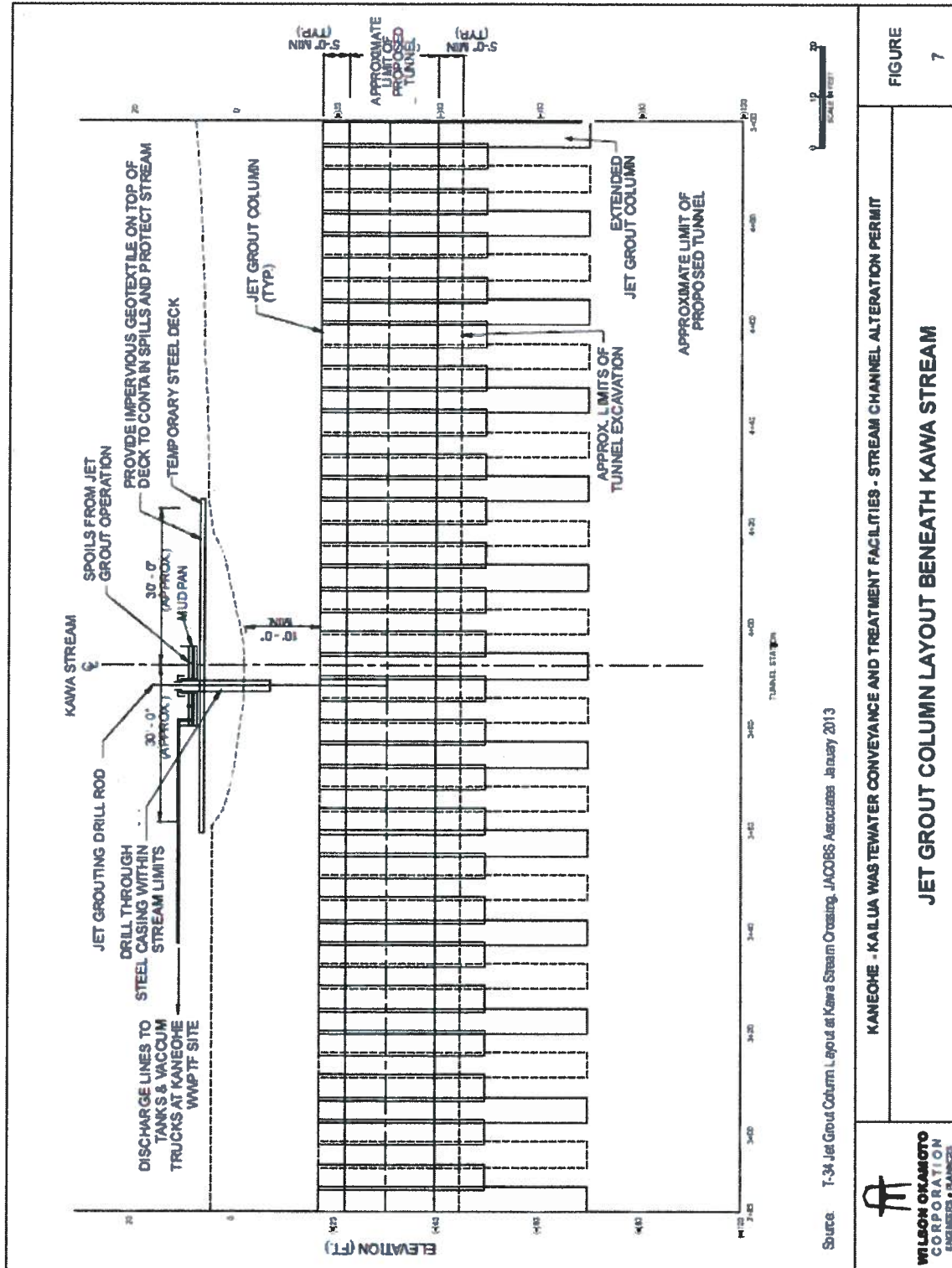


EXHIBIT 5

Typical Profile Along Jet Grout Supported Section For Kāne'ōhe Diversion Pipeline.

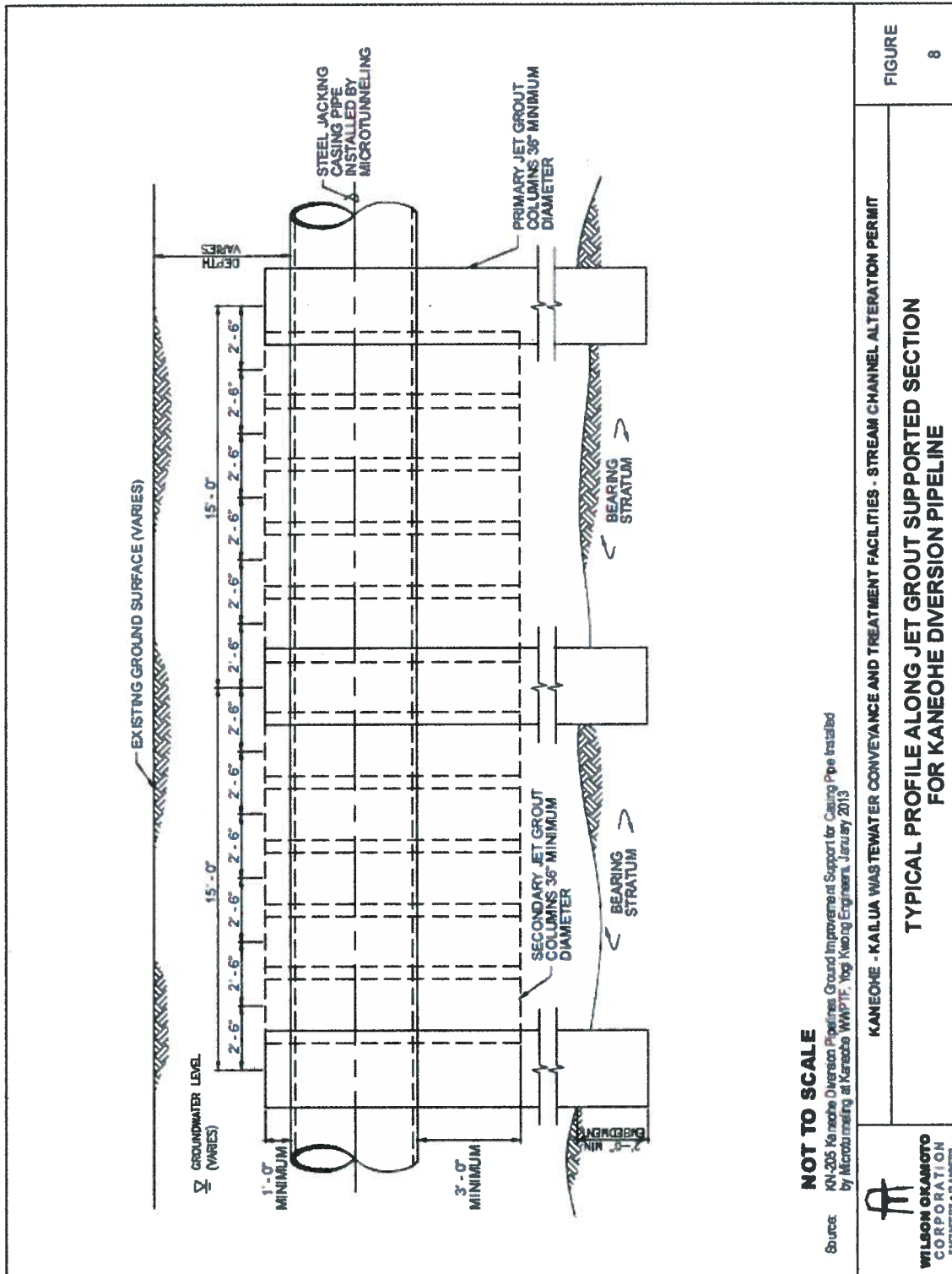


EXHIBIT 6

**STANDARD STREAM CHANNEL ALTERATION PERMIT CONDITIONS**  
(Revised 9/19/07)

1. The permit application and staff submittal approved by the Commission at its meeting on April 17, 2014, shall be incorporated herein by reference.
2. The applicant shall comply with all other applicable statutes, ordinances, and regulations of the Federal, State and county governments.
3. The applicant, his successors, assigns, officers, employees, contractors, agents, and representatives, shall indemnify, defend, and hold the State of Hawaii harmless from and against any claim or demand for loss, liability, or damage including claims for property damage, personal injury, or death arising out of any act or omission of the applicant or his successors, assigns, officers, employees, contractors, and agents under this permit or related to the granting of this permit.
4. The applicant shall notify the Commission, by letter, of the actual dates of project initiation and completion. The applicant shall submit a set of as-built plans and photos of the completed work to the Commission upon completion of this project. This permit may be revoked if work is not started within six (6) months after the date of approval or if work is suspended or abandoned for six (6) months, unless otherwise specified. The proposed work under this stream channel alteration permit shall be completed within two (2) years from the date of permit approval, unless otherwise specified. The permit may be extended by the Commission upon showing of good cause and good-faith performance. A request to extend the permit shall be submitted to the Commission no later than three (3) months prior to the date the permit expires. If the commencement or completion date is not met, the Commission may revoke the permit after giving the permittee notice of the proposed action and an opportunity to be heard.
5. Before proceeding with any work authorized by the Commission, the applicant shall submit one set of construction plans and specifications to determine consistency with the conditions of the permit and the declarations set forth in the permit application.
6. The applicant shall develop site-specific, construction best management practices (BMPs) that are designed, implemented, operated, and maintained by the applicant and its contractor to properly isolate and confine construction activities and to contain and prevent any potential pollutant(s) discharges from adversely impacting state waters. BMPs shall control erosion and dust during construction and schedule construction activities during periods of low stream flow.
7. The applicant shall protect and preserve the natural character of the stream bank and stream bed to the greatest extent possible. The applicant shall plant or cover lands denuded of vegetation as quickly as possible to prevent erosion and use native plant species common to riparian environments to improve the habitat quality of the stream environment.
8. In the event that subsurface cultural remains such as artifacts, burials or deposits of shells or charcoal are encountered during excavation work, the applicant shall stop work in the area of the find and contact the Department's Historic Preservation Division immediately. Work may commence only after written concurrence by the State Historic Preservation Division.

**EXHIBIT 7**