PURCHASE AGREEMENT
AquaDiamond Filter Retrofit – Agreement #120015-CB

THIS PURCHASE AGREEMENT is being entered into this __________ day of ____________________, 2011, by and between the CITY OF LAS VEGAS (hereinafter, "City"), a municipal corporation within the State of Nevada having its principal office at 400 Stewart Avenue, Las Vegas, Nevada 89101, and Aqua-Aerobic Systems, Inc. (hereinafter, "Company") having its principal office at 6306 North Alpine Road, Loves Park, Illinois 61111-7655..

SECTION A – Summary of Agreement

This Agreement sets forth the terms and conditions for the purchase and delivery of the Goods and Services described herein, which, upon execution of the parties forms a legally binding contract.

SECTION B – Basic Terms

B-1 Definitions

The following definitions apply to this Purchase Agreement:

(a) *"Award Date"* means the date that this becomes effective, which is entered into the first paragraph above upon execution by an authorized representative of the City.

(b) *"City"* means the City of Las Vegas.

(c) *"City Council"* means the governing body of the City.

(d) *"Company"* means the individual, partnership, limited liability company, or corporation responsible for the performance of this Purchase Agreement.

(e) *"Company Representative"* means the individual authorized to act on behalf of the Company regarding routine matters arising under or relating to this Agreement.

(f) *"F.O.B. Destination"* means the Company is responsible for paying all of the shipping charges to transport the Goods and that it assumes all risks associated with such transportation.

(g) *"Goods"* has the same definition as given under Article 2 of the Uniform Commercial Code (NRS Chapters 104 and 104A), and substitutes for common usage terms such as "materials", "goods", "equipment", "products", and "supplies".

(h) *"Prompt Payment Discount"* means a price discount offered by the Company, which applies to the Agreement price if the City elects to pay an invoice in less than its normal thirty (30) day payment cycle time.

(i) *"Purchase Agreement"* (or *"Agreement"*) means this document, incorporating the provisions of Sections A through F that obligates the Company to deliver certain Goods to the City and for the City to pay the Company upon the City's acceptance of the Goods.

(j) "*Purchase Order*" means the administrative document issued by the City to facilitate the processing of payments for the purchased Goods.

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B-2 Agreement Type

This is an Agreement for the purchase of the Goods and Services described in Paragraph B-3 below.

B-3 Pricing

(a) Payment to the Company will be made only for the actual quantities of Goods delivered and accepted.

(b) Prices and description of Goods are as follows:

(i) The Goods within the scope of this contract shall be identified as the Engineer's Submittal Data and the AquaDiamond Cloth Media Filters manufactured by the Company, which consists of the parts set forth in Aqua-Aerobic Systems proposal dated August 17, 2011; attached hereto as Exhibit A and incorporated herein as a part of this Contract.

(ii) The Services within the scope of this contract shall be identified as the mechanical and process supervisory services set forth in Aqua-Aerobic Systems proposal dated August 17, 2011; attached hereto as Exhibit A and incorporated herein as a part of this Contract. These services also include completion of the Control Panel Checklist – AquaDiamond Filter, included in Exhibit A.

(iii) Pricing Schedule:

ITEM	DESCRIPTION	QUANTITY	UNIT PRICE	TOTAL PRICE
1	Engineer's Submittal Data	Lot	-	66,426.00
2	Equipment	Lot	-	1,611,687.00
3	Service	28 Days	950.00	26,600.00
4	Per Diem	28 Days	150.00	4,200.00
5	Reimbursable Travel Expenses – Not to Exceed $7,000.00	Lot	-	7,000.00
6	Freight	Lot	-	15,210.00

(c) The prices set forth in (b) (iii), above, include all costs associated with delivering and tendering the Goods to the City, including expenses for inspection, meeting warranty requirements, and complying with all terms of this Agreement.

(d) Reimbursable Travel Expenses. If travel is required in performance of services under this Contract, reasonable travel expenses will be paid when services are performed in Las Vegas. Reimbursement is subject to certain limitations. The City will reimburse airfare up to the cost of a coach fare, with 7-day advance purchase. Reimbursement for all other expenses including, but not limited to, lodging, meals, transportation, rental cars, parking, and incidental expenses, will be paid at a per diem rate of $150.00 per day. This per diem rate will start concurrently with the first day of work performed on site at the City and end with the last day of scheduled on site work at the City. The Company must complete a minimum of six (6) hours of work for every day a per diem is paid. Company shall coordinate all travel seven (7) working days in advance with the City's Project Manager.

B-4 Taxes

The City is exempt from paying Sales and Use Taxes under the provision of Nevada Revised Statues 372.325(4), and Federal Excise Tax, under Registry Number 88-87-0003k. The price(s) set forth in Paragraph B-3 are net, exclusive of these taxes. The Company shall pay all taxes, levies, duties and assessments of every nature, which may be applicable to any Goods delivered under this Agreement. The Company agrees to defend, indemnify and hold the City harmless from any liability on account of any and all such taxes, levies, duties, assessments and deductions.

B-5 Billing and Payment

(a) The City will issue a Purchase Order, subsequent to the Award Date. The sole purpose of the Purchase Order will be to facilitate payment processing, and does not represent the ordering of any additional quantities of the Goods. Beyond what is set forth in this Agreement. The Agreement number will be reflected on the face of the Purchase Order.

(b) The Company shall submit a detailed invoice to the City after shipment of the **Goods**. All invoices should identify the following items:

(i) The date and number of the invoice;
(ii) The Contract Item against which charges are made;
(iii) Assigned Purchase Order and Agreement number; and
(iv) Provide any other information (e.g., item description, quantity) necessary to ascertain the Goods for which payment is requested.

(c) The Company shall submit a detailed invoice to the City after **Services** have been rendered. All invoices should identify the following items:

(i) The date and number of the invoice;
(ii) The Contract Item against which charges are made;
(iii) Assigned Purchase Order and Agreement number;
(iv) Performance dates covered; and
(v) Receipts for airfare.

(d) Upon delivery of the Goods or Services to the City and reconciliation of all errors, corrections and credits, payment will be made within thirty (30) calendar days. **Invoices received without a valid purchase order number will be returned unpaid.** Invoices for partial shipments must only include items actually sent in the partial shipments.

(e) Invoice(s) shall be submitted to:

Department of Finance and Business Services
City of Las Vegas
Attention: Accounts Payable
400 Stewart Avenue
Las Vegas, NV 89101

(f) No prompt discount is applicable.

B-6 Delivery Schedule (ALT – III)

(a) The Company shall deliver all Goods to the City in accordance with the following schedule:

(i) Engineer's submittals to be completed and in transit to the City within 2-4* working weeks after Company's receipt of purchase order.
(ii) Shipment of in-basin equipment (transit time excluded) to begin approximately 8-10* working weeks from Company's receipt of approved engineer's submittal data and release for manufacture.
(iii) Balance of equipment shipment from Company's factory to be completed approximately 16-18* working weeks from Company's receipt of approved engineer's submittal data and release for manufacture.

*Company closes for the Christmas Holidays December 23, 2011 through January 1, 2012.

(b) The Company shall perform all ancillary services in accordance with the following schedule:

(i) Six (6) trips and 24 days for mechanical supervision.

(ii) One (1) trip and four (4) days for process supervision.

(iii) Supervision service shall be coordinated between the Company, the City, and the City's installation contractor following installation of the goods to check for proper installation, perform equipment start-up, provide Operator training, and provide assistance during performance testing.

B-7 Delivery – F.O.B. Point

(a) The Company shall deliver the Goods, F.O.B. Destination to the following address:

Durango Hills Water Resource Center
3271 North Durango Drive
Las Vegas, Nevada, 89129

(b) The Goods are to be delivered under the following F.O.B. terms:

City is responsible for unloading shipments. Delivery of the goods sold hereunder by the carrier shall be deemed delivery to the City, and upon such delivery, title to such goods and risk of loss or damage shall be upon the City.

B-8 Partial Shipments

Partial Shipments are allowed.

B-9 Additional Delivery Instructions

The Company shall provide seven (7) days notice to the City in advance of delivery. The City reserves the right to refuse delivery if advance notice is not given. Notice shall be provided to David Mendenhall at dmendenhall@lasvegasnevada.gov or (702) 229-6188.

SECTION C – Specification/Statement of Work

C-1 General

(a) The Company shall deliver the Goods to the City under the terms and conditions set forth in this Purchase Agreement.

(b) Goods shall conform to the specification set forth in Attachments:

Identifier	Title/Text Reference	Date	Pages
Exhibit A	Section F, Exhibit A, Aqua-Aerobic Systems, Inc Proposal #42542	8/17/2011	30
Exhibit B	City of Las Vegas Department of Public Works – Environmental Division Bid No. 1.53541.02 Durango Hills Water Resource Center Process Upgrades Project Volume 2: Technical Specifications Bid Documents (Available on CD)	7/2011	944
Exhibit C	MWH Drawings Plot (Available on CD)	7/18/2011 7/19/2011 7/20/2011	164

C-2 New Goods

The Goods delivered under this Agreement must be new. New Goods are defined as Goods that are made up entirely of unused materials and/or genuine original parts. The Goods must not have been operated for any purpose other than routine operational testing, except as specifically authorized elsewhere in this Agreement. Demonstrator and reconditioned Goods are not acceptable.

C-3 Material Safety Data Sheets

(a) The Company shall provide the City with current Material Safety Data Sheets (MSDS) for all hazardous Goods delivered under this Agreement.

(b) The Company shall include an applicable MSDS with each individual shipment of hazardous goods shipped under this Agreement.

(c) Submission of MSDS materials to the City is a separate requirement from any that may be contained in the hazardous materials regulations promulgated by the Department of Transportation (49 CFR 100, et. seq.).

(d) The Company shall provide updated MSDS(s) to the City as changes are published.

(e) Inquiries regarding City MSDS requirements should be directed to the following:

City of Las Vegas, Human Resources Department
ATTN: Safety/Loss Control Officer
400 Stewart Avenue
Las Vegas, Nevada 89101

C-4 Packaging and Shipping (ALT – III)

The Company shall provide the following special packaging and shipping:

Goods shall be packaged per the Company's standard domestic shipping practices utilizing a combination of boxes, crates, pallets, and breakbulk pieces via flat-bed open top common carrier(s) to facilitate unloading of the Goods by the City.

C-5 Warranty (ALT – IV)

The Company warrants that the products and services provided shall be in full conformity with Exhibit A, Aqua-Aerobic Systems, Inc. Proposal #42542; "Warranty; Limitation of Liability; and Disclaimer" as amended herein:

(i) The Company shall make necessary adjustments and repairs to meet the requirements at no cost to the City.
(ii) If it is determined that the Aqua-Diamond filter system is unable to meet the performance capacity requirements as set forth in the City of Las Vegas Department of Public Works – Environmental Division Bid No. 1.53541.02 Durango Hills Water Resource Center Process Upgrades Project Volume 2: Technical Specifications; attached hereto as Exhibit B, due to defects in materials or workmanship, or if the filter controls are unsuitable for the ambient environment, the Company shall be provide an Aqua-Diamond filter system that does comply with the operating requirements.
(iii) The Company shall correct defective supplied work for eighteen (18) months from the date of final inspection and start-up completion.

C-6 Compliance with Laws

(a) The Company, in the performance of the obligations of this Agreement, shall comply with all applicable laws, rules and regulations of all governmental authorities having jurisdiction over the performance of this Agreement including, but not limited to, the Federal Occupational Health and Safety Act, and all state and federal laws prohibiting and/or relating to discrimination by reason of race, sex, age, religion or national origin.

(b) If a City of Las Vegas Business License is required for performance of this Agreement, the Company is expected to maintain that license throughout the term of the Agreement.

C-7 Ancillary Services

The Company shall perform the following ancillary services, in accordance with the schedule set forth in Paragraph B-6 (b), "Delivery Schedule."

SECTION D – SPECIAL CLAUSES

D-1 Legal Notice

(a) All legal notices required pursuant to the terms and conditions of this Agreement shall be in writing, unless an emergency situation dictates otherwise. Any notice required to be given under the terms of this Agreement shall be deemed to have been given when (i) received by the party to whom it is directed by hand delivery or personal service, (ii) transmitted by facsimile with confirmation of transmission, or (iii) sent by U.S. mail via certified mail-return receipt requested at the following addresses:

FOR THE CITY:
City of Las Vegas
Manager, Purchasing and Contracts
City Hall, First Floor
400 Stewart Avenue
Las Vegas, Nevada 89101-2986
Tel: (702) 229-6231
Fax: (702) 384-9964

FOR THE COMPANY:
Aqua-Aerobic Systems, Inc.
Supervisor, Contract Administration
6306 North Alpine Road
Loves Park, IL 61111-7655

(b) The parties shall provide written notification of any change in the information stated above.

(c) An original signed copy, via U. S. Mail, shall follow facsimile transmissions.

(d) For purposes of this Agreement, legal notice shall be required for all matters involving potential termination actions, litigation, indemnification, liquidated damages, change orders over $25,000, and unresolved disputes. This does not preclude legal notice for any other actions having a material impact on the Agreement.

D-2 Inspection and Acceptance

(a) The Goods will be inspected at time of delivery, by an authorized representative of the City, for workmanship, appearance, proper functioning and conformance to all other requirements of this Agreement. In the event deficiencies are detected, the deficient Goods will be rejected to make the necessary repairs, adjustments or replacements. Payment will not be made until the corrective action is completed, and the Goods are re-inspected and accepted by the City.

(b) It shall be the responsibility of the Company to arrange for the return and to pay all costs for return due to its error.

D-3 Contact Personnel

(a) The Company shall appoint a Company Representative to oversee performance of this Agreement, and notify the City in writing of the Company Representative's name, telephone number, and e-mail address. The Company Representative shall be the primary point of contact for all issues involving order fulfillment, payments, quality, and other matters arising under this Agreement. The Company Representative shall be available to discuss Agreement status or performance issues with the City as the need arise.

(b) All Company inquiries to the City should be directed to the Buyer identified on the Purchase Order.

D-4 Rules of Precedence

(a) In the event of a conflict between the specific language set forth in Sections B through E of this Agreement and any Attachment or Exhibit set forth in Section F, the specific language in Sections B through E shall prevail. Any exception to this order of precedence will be addressed through specific language elsewhere in Sections B through E.

(b) Although any omission in this Agreement may be addressed through an application of the Uniform Commercial Code (U.C.C.) Article 2, the express provisions of this Agreement prevail over the U.C.C.

D-5 Federal Funding (ALT – I)

This Agreement does not utilize Federal funds.

SECTION E – GENERAL CLAUSES

E-1 Disputes

(a) In the event of a dispute hereunder, the parties shall attempt to amicably resolve the matter through escalating levels of management. Venue for any litigation shall be in Las Vegas, Nevada. The City retains the right to have any dispute submitted to arbitration administered by the American Arbitration Association under its then current Commercial Arbitration Rules, Expedited Procedures, regardless of the amount of the claim.

(b) This Agreement shall be construed and enforced in accordance with the laws of the State of Nevada. Any action at law or other judicial proceeding for the enforcement of any provision of this Agreement shall be instituted in the Eighth Judicial Court of the County of Clark, State of Nevada.

E-2 Termination for Convenience

The City shall have the right at any time to terminate further performance of this Agreement, in whole or in part, for any reason. Such termination shall be effectuated by written notice from the City to the Company, specifying the extent and effective date of the termination. On the effective date of the termination, the Company shall terminate all work and take all reasonable actions to mitigate expenses. The Company shall submit a written request for incurred costs performed through the date of termination, and shall provide any substantiating documentation requested by the City. In the event of such termination, the City agrees to pay the Company within thirty (30) calendar days after receipt of an adequately documented written request. The City reserves the right to determine whether the costs billed by the Company through the date of termination are fair and reasonable.

E-3 Termination for Default

(a) The City may, by written notice of default to the Company, terminate this Agreement in whole or in part if the Company fails to:

   (i) Deliver the Goods or perform services within the time specified in this Agreement or any extension;

   (ii) Make progress, so as to endanger performance of this Agreement; or

   (iii) Perform any of the other provisions of this Agreement.

(b) The City's right to terminate this Agreement under (a)(ii) and (a)(iii) above may be exercised if the Company does not begin to cure such failure within ten (10) calendar days (or more if authorized by the City) after notice, specifying the failure, is provided pursuant to the Paragraph D-1, "Legal Notice" of this Agreement.

(c) If the City terminates this Agreement for default in whole or in part, it may acquire, under reasonable terms and in the manner the City considers appropriate, services or goods similar to those terminated, and the Company shall be liable to the City for any excess costs for those goods or services. However, the Company shall continue with performance of the Agreement not terminated.

(d) The Company shall not be liable for any excess costs if the failure to perform the Agreement arises from circumstances beyond the control and without the fault or negligence of the Company. These circumstances are limited to such causes as (i) acts of God or of the public enemy, (ii) acts of governmental bodies, (iii) fires, (iv) floods, (v) epidemics, (vi) quarantine restrictions, (vii) strikes, (viii) freight embargoes, and (ix) unusually severe weather. The time of performance of the Company's obligations under this Agreement shall be extended by such period of enforced delay; provided, however, that such reasonably extended time period shall not exceed sixty (60) days. If the foregoing circumstances result in a delay greater than 60 days, the City may terminate the affected portion of the Agreement pursuant to the terms of Paragraph E-3, "Termination for Convenience".

(e) Either party may terminate this Agreement, in whole or in part, if the other party becomes insolvent or bankrupt or makes an assignment for the benefit or creditors, or if a receiver or trustee in bankruptcy is appointed for the other party, or if any proceeding as a Debtor in bankruptcy, receivership, or liquidation is instituted against the other party and is not dismissed within 30 days following commencement thereof.

(f) The City retains the right to terminate for default immediately should the Company fail to maintain the required levels of insurance, fail to comply with applicable local, state, and Federal statutes governing performance of these services, or fail to comply with statutes involving health or safety.

(g) In the event that the City fails to perform any of its obligations required under this Contract, and the City does not remedy the failure after notice thereof is provided to the City by the Company pursuant to Paragraph D.1 "Legal Notice" above, the Company shall have the right to treat the failure as a claim or dispute subject to the resolution provisions of Section E-1 "Disputes" of this Contract. During the period of such resolution, the Company shall continue with its performance under the Contract.

E-4 Insurance

The Company shall procure and maintain Workers' Compensation and General Liability Insurance, at its own expense, for all work related to the performance of this Agreement.

E-5 Public Records

The City is a public agency as defined by state law. As such, it is subject to the Nevada Public Records Law (Chapter 239 of the Nevada Revised Statutes). The City's Records are public records, which are subject to inspection and copying by any person (unless declared by law to be confidential). This Agreement, all supporting documents, and proposals submitted are deemed to be public records

E-6 Indemnity

(a) The Company agrees to protect, indemnify and hold the City, its officers, employees, agents and consultants (collectively herein the "City") harmless from any and all claims, liabilities, losses, damages, suits, actions, fines, decrees and judgments including workman compensation claims, attorney fees, court costs or other expenses of any and every kind or character (collectively herein the "Liabilities") which may be recovered from or sought against the City as a result of, by reason of, or as a consequence of, and to the extent of, any negligent act or wrongful omission. on the part of the Company, its officers, employees, agents or suppliers (i) in the manufacturing or supplying (including transportation) of any materials, supplies or other products to the City, or (ii) in the performance of the terms, conditions and covenants of this Agreement . Any money due and owing the Company under this Agreement may be retained by the City for its protection. In the event no money is due and owing, the surety, if required, of the Company, may be held until all of the Liabilities have been settled and suitable evidence to that effect furnished to the City. .

(b) It is expressly agreed that the Company shall defend the City against the Liabilities and in the event that the Company fails to do so, the City shall have the right, but not the obligation, to defend the same.

E-7 Patent Indemnity

The Company hereby indemnifies and shall defend and hold harmless the City its officers, employers, agents and consultants(collectively herein the "City) representatives respectively from and against any and all claims, losses, costs, damages, and expenses, including attorney's fees, incurred by City, as a result of or in connection with any claims or actions based upon infringement or alleged infringement of any patent and arising out of the use of the equipment or materials furnished under the Agreement by the Company, or out of the processes or actions employed by, or on behalf of the Company in connection with the performance of the Agreement. The Company shall, at its sole expense, promptly defend against any such claim or action unless directed otherwise by the City or its representative; provided that the City or its representatives shall have notified the Company upon becoming aware of such claims or actions, and provided further that the Company aforementioned obligations shall not apply to equipment, materials, or processes furnished or specified by the City or its representatives.

E-8 Assignment of Contractual Rights

The Company shall not assign, transfer, convey or otherwise dispose of the Agreement or its right, title or interest in or to the same, or any part thereof, without the prior written consent of the City and any sureties.

E-9 Severability

The invalidity, illegality, or unenforceability of any provision of this Agreement or the occurrence of any event rendering any portion or provision of this Agreement void shall in no way affect the validity or enforceability of any other portion or provision of this Agreement. Any void provision shall be deemed severed from this Agreement, and the balance of this Agreement shall be construed and enforced as if this Agreement did not contain the particular portion of provision held to be void. The parties further agree to amend this Agreement to replace any stricken provision with a valid provision that comes as close as possible to the intent of the stricken provision. The provisions of this clause shall not prevent this entire Agreement from being void should a provision, which is of the essence of this Agreement, be determined void.

E-10 Audit of Records

(a) The Company agrees to maintain the financial books and records (including supporting documentation) pertaining to the performance of this Contract according to standard accounting principles and procedures. The books and records shall be maintained for a period of three (3) years after completion of this Contract, except that books and records which are the subject of an audit finding shall be retained for three (3) years after such finding has been resolved. If the Company goes out of business, the Company shall forward the books and records to the City to be retained by the City for the period of time required herein.

(b) The City, or its designated representative(s), shall have the right to inspect and audit (including the right to copy and/or transcribe) the books and records of the Company pertaining to the performance of this Contract during normal business hours. The City will provide prior written notice to the Company of the audit and inspection. If the books and records are not located within Clark County, the Company agrees to deliver them to the City, or to the address, designated by the City, within Clark County. In lieu of such delivery, the Company may elect to reimburse the City for the cost of travel (including transportation, lodging, meals and other related expenses) to inspect and audit the books and records at the Company's office. If the books and records provided to the City are incomplete, the Company agrees to remedy the deficiency after written notice thereof from the City, and to reimburse the City for any additional costs associated therewith including, without limitation, having to revisit the Company's office. The Company's failure to remedy the deficiency shall constitute a material breach of this Agreement. The City shall be entitled to its costs and reasonable attorney fees in enforcing the provisions of this Paragraph.

(c) If, at any time during the term of this Contract, or at any time after the expiration or termination of the Contract, the City or the City's designated representative(s) finds the dollar liability is less than payments made by the City to the Company, the Company agrees that the difference shall be either: (a) repaid immediately by the Company to the City or (b) at the City's option, credited against any future billings due the Company.

E-11 Independent Contractor

The Company represents that it is fully experienced and properly qualified to deliver the Goods provided for herein, and that it is properly equipped, organized, and financed to perform such work. The Company shall act as an Independent Contractor and not as the agent of the City in performing the Agreement. The Company shall maintain complete control over its employees and all of its manufacturers, suppliers, and subcontractors. Nothing contained in this Agreement shall create any contractual relationship between any such manufacturer, supplier or subcontractor and City. Company shall perform all work in accordance with its own methods subject to compliance with the Agreement.

E-12 Use By Other Government Entities

The State of Nevada and/or any political subdivisions within the State of Nevada may be granted the privilege of joining this Agreement at the option of the Company only. In the event the Company allows another governmental entity to join this Agreement, it is expressly understood that the City shall in no way be liable for the obligations of the joining governmental entity.

E-13 Waiver

Waiver of any of the terms of this Agreement shall not be valid unless it is in writing signed by each party. The failure of the City to enforce any of the provisions of this Agreement, or to require performance of any of the provisions herein, shall not in any way be construed as a waiver of such provisions or to affect the validity of any part of this Agreement, or to affect the right of the City to thereafter enforce each and every provision of this Agreement. Waiver of any breach of this Agreement shall not be held to be a waiver of any other or subsequent breach of this Agreement.

E-14 Modification/Amendment

This Agreement shall not be modified or amended except by the express written agreement of the parties, signed by a duly authorized representative for each party. Any other attempt to modify or amend this Agreement shall be null and void, and may not be relied upon by either party.

E-15 Section and Paragraph Headings

The section and paragraph headings appearing in this Agreement are inserted for the purpose of convenience and ready reference. They do not purport to define, limit or extend the scope or intent of the language of the sections and paragraphs to which they pertain.

E-16 Integration

This Agreement represents the entire and integrated agreement between the City and the Company. It supersedes all prior and contemporaneous communications, representations, and agreements, whether oral or written, relating to the subject matter of this Agreement.

E-17 Marketing Restrictions

The Company may not publish or sell any information from or about this Agreement without the prior written consent of the City. This restriction does not apply to the use of the City's name in a general list of customers, so long as the list does not represent an express or implied endorsement of the Company or its Goods.

E-18 Limitation of Funding

The City reserves the right to reduce estimated or actual quantities, in whatever amount necessary, without prejudice or liability to the City, if funding is not available or if legal restrictions are placed upon the expenditure of monies for the Goods required under this Agreement.

E-19 Changes – Fixed-Price Goods

(a) The City may at any time, by written order, and without notice to the sureties, if any, make changes within the general scope of this Agreement in any one or more of the following:

(i) Description of Goods to be provided.

(ii) Time of delivery.

(iii) Place of delivery.

(b) If any such change causes an increase or decrease in the cost of, or the time required for, performance of any part of the work under this Agreement, whether or not changed by the order, the City shall make an equitable adjustment in the Agreement price, the delivery schedule, or both, and shall modify the Agreement.

(c) The Company must assert its right to an adjustment under this clause within 30 days from the date of receipt of the written order; however, if the City decides that the facts justify, the City may receive and act upon a proposal submitted before final payment of the Agreement.

(d) If the Company's proposal includes the cost of property made obsolete or excess by the change, the City shall have the right to prescribe the manner of the disposition of the property.

(e) Failure to agree to any adjustment shall be a dispute under Paragraph E-1, "Disputes"; however, nothing in this clause shall excuse the Company from proceeding with the Agreement as mutually agreed.

(f) The Company shall provide current, complete, and accurate documentation to the City in support of any equitable adjustment. Failure to provide adequate documentation, within a reasonable time after a request from the City, will be deemed a waiver of the Company's right to dispute the equitable adjustment proposed by the City, where such equitable adjustment has a reasonable basis at the time it is determined by the City.

E-20 Counterpart Signatures

This Contract may be executed in counterparts, all such counterparts will constitute the same contract and the signature of any party to any counterpart will be deemed a signature to, and may be appended to, any other counterpart. Executed copies hereof may be delivered by facsimile or e-mail and upon receipt will be deemed originals and binding upon the parties hereto, regardless of whether originals are delivered thereafter.

SECTION F – List of Attachments/Exhibits

The following Attachments and Exhibits are hereby incorporated into this Agreement:

Identifier	Title/Text Reference	Date	Pages
Exhibit A	Aqua-Aerobic Systems, Inc. Proposal #42542**	8/17/2011	30
Exhibit B	City of Las Vegas Department of Public Works – Environmental Division Bid No. 1.53541.02 Durango Hills Water Resource Center Process Upgrades Project Volume 2: Technical Specifications Bid Documents (Available on CD)	7/2011	944
Exhibit C	MWH Drawings Plot (Available on CD)	7/18/2011 7/19/2011 7/20/2011	164

**The terms and conditions of Agreement #120015-CB prevail over the Terms and Conditions on Aqua-Aerobic Systems, Inc. Proposal #42542; pages 8-9, which are in conflict with this Agreement.

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IN WITNESS WHEREOF, the parties hereto have caused this Purchase Agreement to be executed by their duly authorized representatives.

CITY OF LAS VEGAS

KATHLEEN C. RAINEY, Manager
Purchasing and Contracts

"City"

ATTEST:

BEVERLY K. BRIDGES, MMC
City Clerk

APPROVED AS TO FORM:

Robert S. Szlovain 9-20-11

Deputy City Attorney Date

AQUA-AEROBIC SYSTEMS, INC.

Deborah K. LaVelle, Vice-President, Sales & Marketing

"Company"

EXHIBIT A

August 17, 2011

Correspondence ID#: AAL-26927
City of Las Vegas Nevada
Attn: Candice Buford
400 Stewart Avenue
Las Vegas, Nevada 89101
USA
Ph# 702-229-4729
Fax# 702-464-2506

Project: DURANGO HILLS WRC NV

RE: Aqua-Aerobic Systems' Proposal #42542 dated August 17, 2011

Dear Candice:

We are pleased to enclose our proposal for the AquaDiamond® Cloth Media Filter equipment, freight, and supervision services for the above referenced project. Our offering is our standard with the additions of Modicon style controls, 316 SS components (where available), DeZURIK valves with Limitorque actuators, and some other items as listed in our exceptions/clarifications document. Please take a moment to review our proposal notes and exception/clarifications document for Aqua-Aerobic Systems' equipment terminations and items not included in Aqua-Aerobic Systems' scope of supply.

We appreciate the opportunity to submit our proposal for this project and look forward to discussing it with you in detail. In the meantime, please feel free to contact our representative, listed below, or me, if you have any questions regarding our proposal.

Sincerely,

Eric T. Roundy

Eric Roundy
Project Applications Engineer

CC: Montgomery Watson Harza / ph#: 626/568-6274 / fx#: 626/568-6101
Roger Stephenson, PhD, PE

IES Southwest, Inc. / ph#: 480/488-3009 / fx#: 480/488-2525
Ryan Spielman

Gierlich-Mitchell, Inc. / ph#: 714/236-6070 / fx#: 714/236-6080
Ryan McCloskey and Tim Brekke

Aqua-Aerobic Systems, Inc.
William Moore / wmoore@aqua-aerobic.com

- 316 Effluent guide angle runner plates.
- 316 Influent runner plates.
- 316 Intermediate runner plates.
- 316 Effluent runner plates.

2 Electrical Festoon System installation(s) consisting of:
- 304 stainless steel festooning track C-channels.
- Festooning track hangers.
- End stops.
- End caps.
- Festooning trolleyies.
- Tow trolley(s).
- Festooning loop organizers.
- Flat electrical cable(s).
- Belden cable(s).

AquaDiamond Frame Assemblies

16 Diamond Filter Frame and Media Installation(s) each consisting of:
- Filter frame quarter panels.
- 316-L stainless steel end weldments.
- 316-L stainless steel effluent filter segment end weldment(s).
- 43'-4" OptiFiber® pile filter cloth media socks.
- Cloth will be chlorine resistant.
- 304 stainless steel filter media band clamps.
- Noryl cloth retainer bars.
- 316-L stainless steel slide support weldments.
- 316-L stainless steel filter frame supports.
- Noryl inner panel supports.
- Filter frame support bars.

AquaDiamond Drive Platform Assemblies

2 Diamond Filter Drive Platform Assembly(ies) consisting of the following:
- 316-L stainless steel chassis weldment with: Aluminum floor plates, Vacuum pipe weldment, 6" Valve adaptor weldment, 4" Valve adaptor weldment, Recirculation discharge pipe weldment, Recirculation discharge pipe outlet weldment, 4" Pipe support weldment, Pipe straps, Guide wheel box weldments, Suspension beam weldment, End shafts, Floating shaft, Floating shaft weldment, and Shaft spacers.
- 316-L Discharge pipe installation.
- Aluminum two rail, handrail assemblies with the kick plates built into the Platform Weldment. Stainless steel chains on each end of Platform.
- Pillow block bearings.
- AGMA Class I gearbox and motor assembly(ies) with 2 HP premium efficiency inverter duty, 50 deg. C., rated TEFC motor. Iron housings, covers, and flanges. Worm shaft of hardened ground and polished steel, bronze worm gear, non-compressible metal shims, units are 100% run and leak tested. Premium Chicago Rawhide Viton double lip seals with O-Rings on input and output covers, Quill seal guard.
- Platform wheel(s).
- Painted steel drive shaft coupling(s).
- 304 stainless steel Sprocket(s).
- 304 stainless steel Idler sprocket(s).
- Polyethylene skid plate(s).
- #80 stainless steel Roller chain.
- Guide wheel(s).
- Gorman Rupp model T4A60S externally mounted centrifugal backwash pump(s) with 20 HP premium efficiency inverter duty, 50 deg. C rated TEFC 3 phase motor. Pump Case is Gray Iron N.30, Impeller is Ductile Iron No. 64-45-12, Impeller shaft is 4150 Steel, Wear Plate is 1015 Steel. Pump is manufactured with Mechanical Cartridge Type, Oil Lubricated, Double Floating and Self-Aligning Seals. Silicon Carbide Rotating and Stationary Faces.

- 8 inch diameter DeZurik 100% opening, electrically operated eccentric plug valve(s) assembled and tested. Limitorque QX Valve Actuator includes compartment heater. Local pushbutton controls integral to the valve actuator.
- Valve extension(s) stainless steel.

Misc/Spare Parts

1 List of AquaDiamond Spare Parts consisting of:

- (1) 43'-4" OptiFiber® pile filter cloth media socks.
- Cloth will be chlorine resistant.
- (1) Gormann Rupp 20HP T4A60S pump repair kit.
- (3) Fuse(s), 50mA.
- (3) Fuse(s), 5A.
- (3) Fuse(s), 1A.
- (3) Fuse(s), 15A.
- (3) Fuse(s), 30A.
- (3) LED, Green lamps(s).
- (3) Incandescent lamp(s).
- (2) Cloth media repair kit(s).
- (2) Platform wheel(s).
- (1) Safety switch.
- (1) Safety switch lever.
- (1) Wooden Box for spare parts.

AquaDiamond Controls

2 Shore Mounted Control System(s) Installation consisting of:

- NEMA 4X 316-L stainless steel enclosure.
- Circuit breaker with handle.
- Fuse(s) and fuse block(s).
- 3 KVA transformer(s) with fuses.
- Circuit breaker(s).
- 115 V power line filter(s).
- GFI receptacle(s).
- Cisco Ethernet Switch(es).
- Back plane(s).
- Input module(s).
- Output module(s).
- Analog input module(s).
- Analog output module(s).
- Shielding Connection Kit.
- Power supply(ies).
- Modicon M340 processor(s).
- Modicon Magelis HMI terminal(s).
- Protective Cover.
- Terminal strip(s).
- Transient eliminator TE/110.
- Surge protector and transient eliminator TE/500.
- Shrink-on tags.
- Operator interface sun shield(s).
- Eaton D65VMLS480 Voltage Imbalance/Phase Correction.
- 28 Way Spring Terminal Block(s).
- Terminal Strip For Grounding Kit.
- Internal control panel flourescent light(s).
- Air conditioner(s).

2 Festooning System Junction Box(es) consisting of:

Weeks quoted are actual working weeks. Aqua-Aerobic will be closed for the Christmas Holidays beginning approximately December 24, through approximately January 2nd.
- Electrical wiring, interconnecting wiring, conduit, supply power, and appurtenances are to be supplied by the installing contractor/purchaser.
- Freeze protection may be required for outdoor installation in cold weather climates. All such protection, including but not limited to, heat tracing and insulation of pumps and piping shall be provided and installed by the installing contractor.
- Materials and Services not specifically described/itemized in this proposal are not included in the quoted total price, and are to be supplied by the installing contractor/purchaser.
- Aqua-Aerobic Systems, Inc. reserves the right to re-evaluate the pricing quoted prior to order acceptance if a purchase order is received after the validity date stated in this proposal, OR if the lead times stated in this proposal are exceeded. Any pricing adjustments required shall be based on a published materials cost index specific to the materials proposed.
- Field assembly of the Diamond filter frame and media components shall be provided by the installing contractor.
- Effluent weir plate must be provided and installed for each filter by the installing contractor. After final adjustment and inspection by Aqua-Aerobic Systems Field Service Representative, the Installing Contractor is to seal the effluent weir plate to prevent leakage.
- Valve labeling will be provided and installed by the Installing Contractor.
- Influent gates will be provided and installed by the Installing Contractor.
- Gates on the platform handrails will be provided and installed by the Installing Contractor.
- Supervision services included in Aqua-Aerobic Systems' proposal are based upon supply of the quantity of trips and days stated. Additional supervision services can be provided for an additional charge of $1100/day plus travel and living expenses.
- Three phase motors will be 460 volt.
- Single phase motors will be 115 volt.

The Following Notes apply to Aqua-Aerobic Systems' Proposal:

- WARRANTY AMENDMENT: Aqua-Aerobic Systems, Inc. warrants the goods provided by Aqua-Aerobic Systems, Inc. in accordance with the "Warranty; Limitation Of Liability; And Disclaimer" as amended herein:
A. Make necessary adjustments and repairs to meet the requirements at no cost to the OWNER.
B. If it is determined that the filter is unable to meet the performance and capacity requirements due to defects in materials or workmanship, or if the filter controls are unsuitable for the ambient environment, Aqua-Aerobic Systems shall be responsible to provide a filter system that does comply with the operating requirements.
C. Aqua-Aerobic Systems shall correct defective supplied WORK for eighteen (18) months from the date of Substantial Completion.

- F.O.B. JOBSITE; TITLE AND RISK OF LOSS: All prices and all shipments of goods are F.O.B. Jobsite City Location. It is the responsibility of the Buyer to unload shipments and utilizing the packing list and bill of lading provided with the shipment notate shortages/damages upon receipt of the shipments and notify Aqua-Aerobic in writing within 7 days of the shortages/damages to facilitate filing of a freight claim. Delivery of the goods sold hereunder by the carrier shall be deemed delivery to Buyer, and upon such delivery, title to such goods and risk of loss or damage shall be upon Buyer.

- TAXES: State and/or local taxes are not included in the price but will be charged unless we receive a valid resale/exemption certificate.

- PAYMENT TERMS: See pricing for engineer's submittal data price. Subject to credit approval/guarantee of payment;
Engineer's submittal data payable Net 30 days from date of transmittal.
Equipment payable Net 30 days from each shipment.
No retainage allowed.

-SCOPE OF SUPPLY NOTE: Aqua-Aerobic Systems' scope of supply and pricing is as described in this proposal including the listed Integral Documents and terms and conditions of sale. Please refer to the proposal notes for equipment terminations and items not included in the proposal which are to be provided by the Buyer or Buyer's General Construction Contractor. Engineer's submittal data will be prepared using these proposed goods and services, and the submittal approved by the Consulting Engineer will become an integral part of the scope of supply under the contract resulting from this offer. Any additions or deletions to the scope of supply will be presented as

TERMS AND CONDITIONS OF AQUA-AEROBIC SYSTEMS, INC.

Page 1 of 2

This offer and all of the goods and sales of Aqua-Aerobic Systems, Inc. are subject only to the following terms and conditions. The acceptance of any order resulting from this proposal is based on the express condition that the Buyer agrees to all the terms and conditions herein contained. Any terms and conditions in any order, which are in addition to or inconsistent with the following, shall not be binding upon Aqua-Aerobic Systems, Inc. This proposal and any contract resulting therefrom, shall be governed by and construed in accordance with the laws of the State of Illinois, without regard to conflicts of laws principles.

PAYMENT

Unless specifically stated otherwise, quoted terms are Net 30 Days from shipping date. Past-due charges are 1.5% per month and will apply only on any past-due balance. Aqua-Aerobic Systems, Inc. does not allow retainage of any invoice amount, unless authorized in writing by an authorized representative of our Loves Park, Illinois office.

DURATION OF QUOTATION

This proposal of Aqua-Aerobic Systems, Inc. shall in no event be effective more than 30 days from date thereof, unless specifically stated otherwise, and is subject to change at any time prior to acceptance.

SHIPMENT

Shipping dates are not a guarantee of a particular day of shipment and are approximate, being based upon present production information, and are subject to change per the production schedules existing at time of receipt of purchase order. Aqua-Aerobic Systems, Inc. shall not be responsible for any delay in shipment for causes beyond its control including, but not limited to, war, riots, strikes, labor trouble causing interruption of work, fires, other casualties, transportation delays, modification of order, any act of governmental authorities or acts of God. Quoted shipment dates in this proposal are approximate dates goods will be shipped and, unless agreed to in writing by Aqua-Aerobic Systems, Inc., Buyer may not postpone or delay the dates of shipment of goods from our plant or from our supplier's plants beyond the dates set forth in this proposal.

TITLE AND RISK OF LOSS

All prices and all shipments of goods are F.O.B. Aqua-Aerobic Systems, Inc.'s plant at Loves Park, Illinois unless specifically stated otherwise. Delivery of the goods sold hereunder to the carrier shall be deemed delivery to the Buyer, and upon such delivery, title to such goods and risk of loss or damage shall be upon Buyer.

TAXES

Prices quoted do not include any taxes, customs duties, or import fees. Buyer shall pay any and all use, sales, privilege or other tax or customs duties or import fees levied by any governmental authority with respect to the sale or transportation of any goods covered hereby. If Aqua-Aerobic Systems, Inc. is required by any taxing authority to collect or to pay any such tax, duty or fee, the Buyer shall be separately billed at such time for the amounts Aqua-Aerobic Systems, Inc. is required to pay.

INSURANCE

Unless the goods are sold on a CIF basis, the Buyer shall provide marine insurance for all risks, including war and general coverage.

SECURITY

If at any time the financial responsibility of the Buyer becomes unsatisfactory to Aqua-Aerobic Systems, Inc., or Aqua-Aerobic Systems, Inc. otherwise deems itself insecure as to receipt of full payment of the purchase price from Buyer hereunder, Aqua-Aerobic Systems, Inc. reserves the right to require payment in advance or security or guarantee satisfactory to Aqua-Aerobic Systems, Inc. of payment in full of the purchase price.

LIMITATION OF ACTION

No action shall be brought against Aqua-Aerobic Systems, Inc. for any breach of its contract of sale more than two years after the accrual of the cause of action thereof, and, in no event, unless the Buyer shall first have given written notice to Aqua-Aerobic Systems, Inc., of any claim of breach of contract within 30 days after the discovery thereof.

CANCELLATION CLAUSE

No acceptance of this proposal, by purchase order or otherwise, may be modified except by written consent of Aqua-Aerobic Systems, Inc. nor may it be cancelled except by prior payment to Aqua-Aerobic Systems, Inc. the following sums as liquidated damages therefore: 1) If cancellation is prior to commencement of production and prior to the assumption of any obligations by Aqua-Aerobic Systems, Inc. for any materials or component parts, a sum equal to 15% of the total purchase price; 2) If cancellation is after the commencement of production or after the assumption of any obligations by Aqua-Aerobic Systems, Inc. for any materials or component parts, a sum equal to the total of the direct, out-of-pocket expenses incurred to the date of cancellation for labor, machine time, materials and any charges made to us by suppliers for cancellation, plus 30% of the total purchase price. All charges and expenses shall be as determined by Aqua-Aerobic Systems, Inc. In the event any items are used by Aqua-Aerobic Systems, Inc. to fill a subsequent order, then upon receipt of payment for such order, Aqua-Aerobic Systems, Inc. shall pay the Buyer a sum equal to the direct out-of-pocket expenses previously charged and received from Buyer.

PROPRIETARY INFORMATION

This proposal, including all descriptive data, drawings, material, information and know-how disclosed by Aqua-Aerobic Systems, Inc. to Buyer in relation hereto is confidential information intended solely for the confidential use of Buyer, shall remain the property of Aqua-Aerobic Systems, Inc. and shall not be disclosed or otherwise used to the disadvantage or detriment of Aqua-Aerobic Systems, Inc. in any manner.

Aqua-Aerobic Systems, Inc.

Exceptions / Clarifications Document: 8/17/11

Project: DURANGO HILLS WRC NV

The following exceptions/clarifications are an integral part of Aqua-Aerobic Systems' offering:

1) Reference: Preliminary Bid Documents

Aqua's Exception/Clarification

Itemized below are some of the differences between our Proposal #42542 dated August 17, 2011 and the Preliminary Durango Hills Water Resource Center Process Upgrades Project Bid Documents dated July 2011. As we mention in our cover letter, our offering is our standard with the additions of Modicon style controls, 316 SS components (where available), DeZURIK valves with Limitorque actuators, and the following list of non-standard scope items:

* Miscellaneous Spares
* Labor inclusive warranty for 18 months after substantial completion
* Cisco Ethernet Switches
* Transient Eliminators and Surge Protectors
* Voltage Imbalance/Phase Correction
* Internal Control Panel Lights
* Panel Heaters
* Seismic Calculations
* Performance Testing Supervision

In an email on August 16, 2011 from Roger Stephenson (MWH) we understand the City of Las Vegas finds the following items acceptable:

1) Items that are not 316 stainless steel:
* Backwash Pump: Case is Gray Iron N.30, Impeller is Ductile Iron No. 65-45-12, Impeller Shaft is 4150 Steel, Wear Plate is 1015 Steel.
* Gearmotor Drive: Housing is Cast Iron, Internals are not 316 Stainless Steel.
* Festoon System Purchased Components: Track, Hangers, Brackets & Trolleys are 304 Stainless Steel.
* Filter Cloth Band Clamps are 304 Stainless Steel.
* Drive Platform Conduit Assembly is PVC Coated Steel.
* Platform Chain Drive Assembly: Chain, Sprocket & Idler are 304 Stainless Steel; the Skid Plate is Plastic.

[MWH] I believe that these non stainless items are ok. Certainly it was not our intent to get a stainless steel pump, e.g.

2) * Platform Handrailings will be 2 Rail Steel without kickplate in lieu of 3 Rail Aluminum with kickplate.

[MWH] Two-rail aluminum was supplied for Tillman. That would be acceptable, but not steel. From Tillman, it appears that aluminum was supplied.

3) * Stainless Steel Chains will be used at the end of the Platforms in lieu of Gates with spring loaded hinges and locks.

[MWH] OK. Gates will be provided in the handrail that will be installed by the contractor.

4) * A wooden box will be furnished to contain Spare Parts in lieu of the Steel Box specified.

2) Reference: Preliminary Bid Documents

Aqua's Exception/Clarification

In addition to the items approved by the City of Las Vegas the following items are not included in our scope of supply, but were mentioned in the specification. Please review the items below and let us know if changes are required. Please note that adding non-standard items could have a negative effect on our proposed delivery schedule.

Items that are not 316 stainless steel:

* Platform Wheels, Pillow Block Bearings, Drive Shaft, Drive Shaft Couplings, and Guide Wheels. Krohne Flow Meter. Travel Limit Switches. Backwash Shoe Extension Springs.

Additional Scope Items:

* As further explanation to Item #7 in MWH's 8/16/11 email:
A Modicon Quantum PLC will be used on the platform panels that communicate to a M340 Peripheral Remote I/O Adapter (MXPRA0100) on the shore panels using an Ethernet CAT5 cable. Drawing ND-001 shows remote I/O on the platform panels. This should be changed as PLC-86 and PLC-87 are located on the platform panels and the remote I/O is located on the shore panels. The communication cable is a CAT 5 cable rather than an RG11 cable. There is an OIT on each shore panel.
* Pump motor is Baldor. Pump seals are not as defined in 432000.
* Pressure Gauges will not have diaphragm seals.
* Standard testing will be performed in lieu of that outlined in the specifications (for instance see Sections 016100, 433000, and 260126). Attached is our standard Control Panel Checklist as an example.
* Flow meter will be Krohne and not that specified in Section 409102.
* Simpson Strong-Tie Adhesive Anchors will be used.
* Aqua-Aerobic Systems will attend preconstruction and progress meetings, if necessary, via teleconferencing.

Additional Items to Note:

* Drawings ID-412 and ID-413 show PSH 2-4 and PSH 3-4 on the discharge side of the filter backwash pumps. These instruments are not pressure gauges, but are vacuum gauges. These should be located on the intake side of the pumps.
* Effluent weir plate will be by the Installing Contractor.
* Valve labeling will be by the Installing Contractor.
* Influent gates will be by the Installing Contractor.
* A Cold Weather Package is available as an adder, but not included in our offering. The Cold Weather Package includes the following: conduit under the runner plates (for heat tracing by others), pump casing heaters, and temperature sensing devices.

Control Panel Checklist - AquaDiamond® Filter

1. Panel Shop/Final Shop Assembly

(Completed by Panel Shop and Production Foremen)

	N/A	OK	Rework	Rework Complete
1. Verify wiring internal to the control enclosure is per electrical engineering drawings by performing point to point termination checks and wire pull tests.				
2. Verify wiring of the platform junction boxes by performing point to point termination checks and wire pull tests.				
3. Verify all internal and field wires are clearly labeled at each termination point per electrical engineering drawings.				
4. Terminate wiring from control enclosure to all applicable field devices (i.e., float switches, control valves, limit switches, etc.) for simulation of such devices during engineering checkout. Verify such wiring by performing point to point termination checks.				
5. Verify electrical devices received agree with what is ordered per electrical engineering bill of materials by confirming vendor name, vendor model number and AASI part number.				
6. Terminate and apply power to control enclosure with specified control voltage. **NOTE: CONFIRM PROPER CONTROL VOLTAGE REQUIREMENTS PER ELECTRICAL ENGINEERING SCHEMATICS.**				
7. Confirm proper wiring and mounting of electric valve actuators by opening and closing control valves by using the "open" and "close" selector switch positions located on the face of the control enclosure. Set open and close limit switch cams so respective indicating light illuminates in the corresponding position. Verify the proper pilot light colors are used.				
8. Enclosure finish (interior and exterior) repainted wherever required (i.e., scratches, drilled holes, etc.).				
9. Verify alignment of nameplates (interior and exterior).				
10. Apply proper air pressure to all pneumatic circuits, where available.				

Electrical

(continued)

	N/A	OK	Rework Req'd	Rework Complete
10. Verify limit switch feedback for all valves and confirm external valve position indicator agrees with actual valve position.				
11. Verify rotation & operation of any motor not utilizing a VFD.				
12. Verify motor feedback for any motor not utilizing a VFD.				
13. Verify wiring and contact sense (N.O. & N.C.) of the platform End of Travel limit switches.				
14. Verify wiring and contact sense (N.C.) of the platform Low Speed limit switches.				
15. Verify wiring and contact sense (N.O.) of the Obstruction Status limit switches.				
16. Verify wiring and contact sense (N.C.) of the Obstruction Status limit switches in the hardwired Safety circuitry.				
17. Verify wiring and contact sense (N.O.) of the Travel Rail proximity switches.				
18. Verify wiring and contact sense (N.O.) of the Backwash Pump Low Vacuum switch.				
19. Verify wiring and contact sense (N.O.) of the basin High Level switch.				
20. Verify wiring of analog inputs and outputs for influent slide gate positioning and control.				
21. Verify wiring of analog inputs for backwash/solids waste flow control.				
22. Verify wiring of analog inputs for level indication.				
23. Verify wiring of other analog inputs. • influent or effluent turbidity • influent or effluent flow				
24. Verify platform is set up for the proper festoon interface. For additional reference, see document ES-7020.				

5. PLC Equipment

(Completed by Electrical Engineering)

	N/A	OK	Rework Req'd	Rework Complete
1. Power leads connected to proper terminals and device switches are set to correct supply voltage.				
2. Verify PLC battery is installed. If memory module is required, confirm installation and setup.				
3. Number and type of spare I/O is correct and in correct location. All are pre-wired to terminal strip.				
4. Verify operation of input devices through PLC including spares.				
5. Analog inputs and outputs have been simulated and verified in the PLC.				
6. Verify operation of output devices through PLC including spares.				
7. Configuration dip switches have been properly set per drawings.				
8. All PLC/module software setup (communication, calibration, etc) is complete.				
9. Program is operational when placed in "Run" mode.				
10. Verify operation of Solids Waste phase • Solids removal cycle interval initiate • Manual solids removal initiate • Verify equipment states are correct throughout the cycle • Verify flow control loop				
11. Verify operation of Backwash phases: ◦ (normal) Backwash ◦ Level 2 Backwash ◦ High Intensity Backwash ◦ Continuous Backwash • Backwash cycle interval initiate • Manual backwash cycle initiate • Basin water level initiate • Differential water level initiate • Verify equipment states are correct throughout the backwash phases • Verify waste flow control loop				
12. Verify correct backwash valve sequence versus platform direction. {Backwash Valve #1 is open when the platform is travelling toward Influent end or Effluent end?}				
13. Verify operation of Drain Down cycle.				
14. Verify Filter Reset (Home) function. Verify proper Home location (Influent or Effluent end).				
15. Verify operation of Scum Removal (if applicable).				

6. Final Check

(Completed by Panel Shop Foreman and Electrical Engineering)

	N/A	OK	Rework	Rework Complete
1. Two sets of up-to-date prints are installed in the panel: The first set in the print pocket and the second set in the bag labeled for Aqua customer service personnel.				
2. All safety and wiring channel covers are in place.				
3. All disconnects and circuit breakers are in the OFF position.				
4. Verify all wiring connections are secure and tight.				
5. Panel is free of debris and clean.				
6. Review internal and external components for shipment readiness. Secure as necessary and inform shipping of any special crating requirements.				
7. In the space below, note HMI series, rev, firmware and date code from unit label. Note PLC series, rev and date code and operating system series and firmware. Take a picture of these labels.				
8. Confirm all U.L. 508 certification requirements have been completed. • U.L. Approval Sticker placed in enclosure • Nameplate placed in enclosure providing: Incoming power requirements (voltage, phase and hertz) Full load amperage Largest motor horsepower in enclosure Enclosure assembly drawing symbol Field wiring specifications • Sticker placed in enclosure stating all fuse types and ratings				

HMI → SER: Date Code:
REV:
FRM:

PLC → SER: Date Code:
REV:
OS SER:
OS FRM:

PROCESS DESIGN REPORT

AQUA-AEROBIC SYSTEMS, INC.

DURANGO HILLS WRC NV

Design#: 42542

Option: Bid Design

Designed By: Eric Roundy on Monday, August 8, 2011

AquaDiamond Tertiary Filtration - Design Summary

DESIGN INFLUENT CONDITIONS

Pre-Filter Treatment:	Secondary		
Avg. Design Flow	= 5.00 MG/Day	= 3472.22 gpm	= (18900 m^3/day)
Max Design Flow	= 7.50 MG/Day	= 5208.3 gpm	= (28350 m^3/day)

DESIGN PARAMETERS	**Influent**	**mg/l**	**Effluent Required**	**<= mg/l**	**Effluent Anticipated**	**<= mg/l**
Avg. Total Suspended Solids:	TSSa	10	--	--	TSSa	--
Max. Total Suspended Solids:	TSSm	15	--	--	--	--
***Turbidity:**	NTU	5	NTU	2	NTU	2

*Note: Tubidity represented in Nephelometric Turbidity Units (NTU's) in lieu of mg/l.

AquaDiamond FILTER RECOMMENDATION

Qty Of Filter Units Recommended	= 2
Number Of Diamonds Per Unit	= 8
Total Filter Area Provided	= 2752.0 ft^2 = (255.67 m^2)
Filter Model Recommended	= AquaDiamond Concrete Model 1643

AquaDiamond FILTER CALCULATIONS

Filter Type:

Vertically Mounted Cloth Media Diamonds featuring automatically operated vaccum backwash and solids removal system.

Average Flow Conditions:

Average Hydraulic Loading
= Avg. Design Flow (gpm) / Recommended Filter Area (ft^2)
= 3472.2 / 2752 ft^2
= 1.26 gpm/ft^2 (0.85 l/s/m^2) at Avg. Flow

Maximum Flow Conditions:

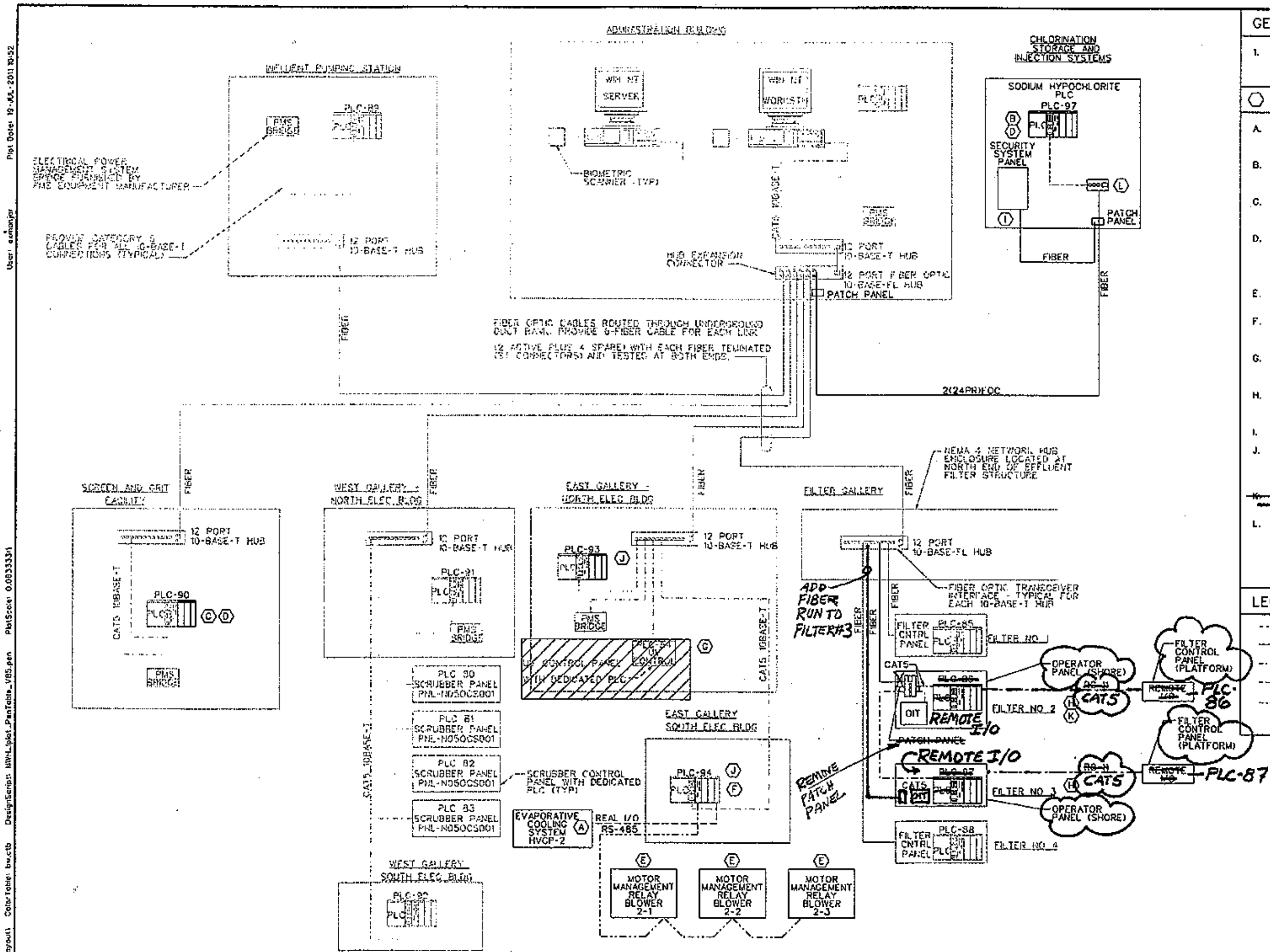
Maximum Hydraulic Loading
= Max. Design Flow (gpm) / Recommended Filter Area (ft^2)
= 5208.3 / 2752 ft^2
= 1.89 gpm/ft^2 (1.29 l/s/m^2) at Max. Flow

Solids Loading:

Solids Loading Rate
= (lbs TSS/day at max flow and max TSS loading) / Recommended Filter Area (ft^2)
= 938.3 lbs/day / 2752 ft^2
= 0.34 lbs. TSS /day/ft^2 (1.65 kg. TSS/day/m^2)

The above recommendation is based upon the provision to maintain a satisfactory hydraulic surface loading with (1) unit out of service. The resultant hydraulic loading rate at the Maximum Flow is: 3.8 gpm / ft^2 = (2.5 L/s / m^2)

= Aqua-Aerobic Supply



GENERAL SHEET NOTES

1. ALL NEW PLC HARDWARE SHALL BE FROM THE MODICON QUANTUM SERIES PLC'S.

SHEET KEYNOTES

A. NEW I/O REQUIRED FOR THE EVAPORATIVE COOLING SYSTEM SHALL BE ROUTED TO PLC 94. EXISTING SPARE I/O SHALL BE USED (REF: P&ID ID-372).

B. THE NEW SODIUM HYPOCHLORITE MODICON QUANTUM PLC SHALL ALSO BE USED TO CAPTURE SIGNALS ASSOCIATED WITH THE CONTACT TANK.

C. SIGNALS TO MONITOR AND CONTROL THE NEW MECHANICAL SCREEN CONTROL PANELS SHALL BE ROUTED TO THE EXISTING PLC 90.

D. THE NEW SODIUM HYPOCHLORITE PLC 97 AND EXISTING PLC 90 SHALL BE PROGRAMMED BY THE OWNER'S DESIGNATED SYSTEMS INTEGRATOR TO PROVIDE REMOTE MONITORING AND CONTROL OF THE SODIUM HYPOCHLORITE AND MECHANICAL SCREEN SYSTEMS RESPECTIVELY.

E. THE MOTOR MANAGEMENT RELAYS SHALL BE PROGRAMMED TO MAP DATA INTO PLC 94 FOR DISPLAY ON SCADA.

F. PLC-94 SHALL BE FURNISHED WITH AN ADDITIONAL 'NOM' COMMUNICATIONS MODULE TO ESTABLISH AN RS-485 NETWORK TO THE BLOWER MOTOR MANAGEMENT RELAYS.

G. UV SYSTEM AND ASSOCIATED CONTROLS SHALL BE DEMOLISHED AS A RESULT OF NEW SODIUM HYPOCHLORITE SYSTEM.

H. PLC 86 AND PLC 87 SHALL BE REMOVED AND REPLACED WITH NEW VENDOR PACKAGE QUANTUM MODICON PLC'S.

I. FOR SECURITY SYSTEM DIAGRAM REFER TO ND-002.

J. ADDITIONAL SIGNALS FOR THE NEW MOTORIZED FILTER INLET GATES SHALL BE ROUTED THROUGH EXISTING PLC'S 93 AND 94 AND SHALL BE PROGRAMMED BY THE OWNER'S DESIGNATED SYSTEMS INTEGRATOR.

~~K. OIT AT PLC-86 SHALL MONITOR AND CONTROL FILTER NO 2 AND FILTER NO 3.~~

L. FOLLOWING COMPONENTS SHALL BE PROVIDED:
CISCO WS-C3560-8PC-S, 8 ETHERNET 10/100 PORTS AND 1 DUAL-PURPOSE 10/100/1000 AND SFP PORT.
CISCO GBIC MODULE GLC-SX-MM.
CISCO LC/SC PATCH CALBE FOP-LCSC-MM-2

LEGEND

----------	RG-11
————	FIBER
-·-·-·-·-	RS-485
—-—-—-	REAL I/O
-··-··-	CAT5
[switch symbol]	ETHERNET SWITCH CISCO WS-C3560-8PC-S

REV	DATE	BY	DESCRIPTION

DURANGO HILLS WATER RESOURCE CENTER PROCESS UPGRADES PROJECT

MWH Las Vegas Nevada

DESIGNED P. ATKINSON
DRAWN P. ATKINSON
CHECKED L. YAISSI

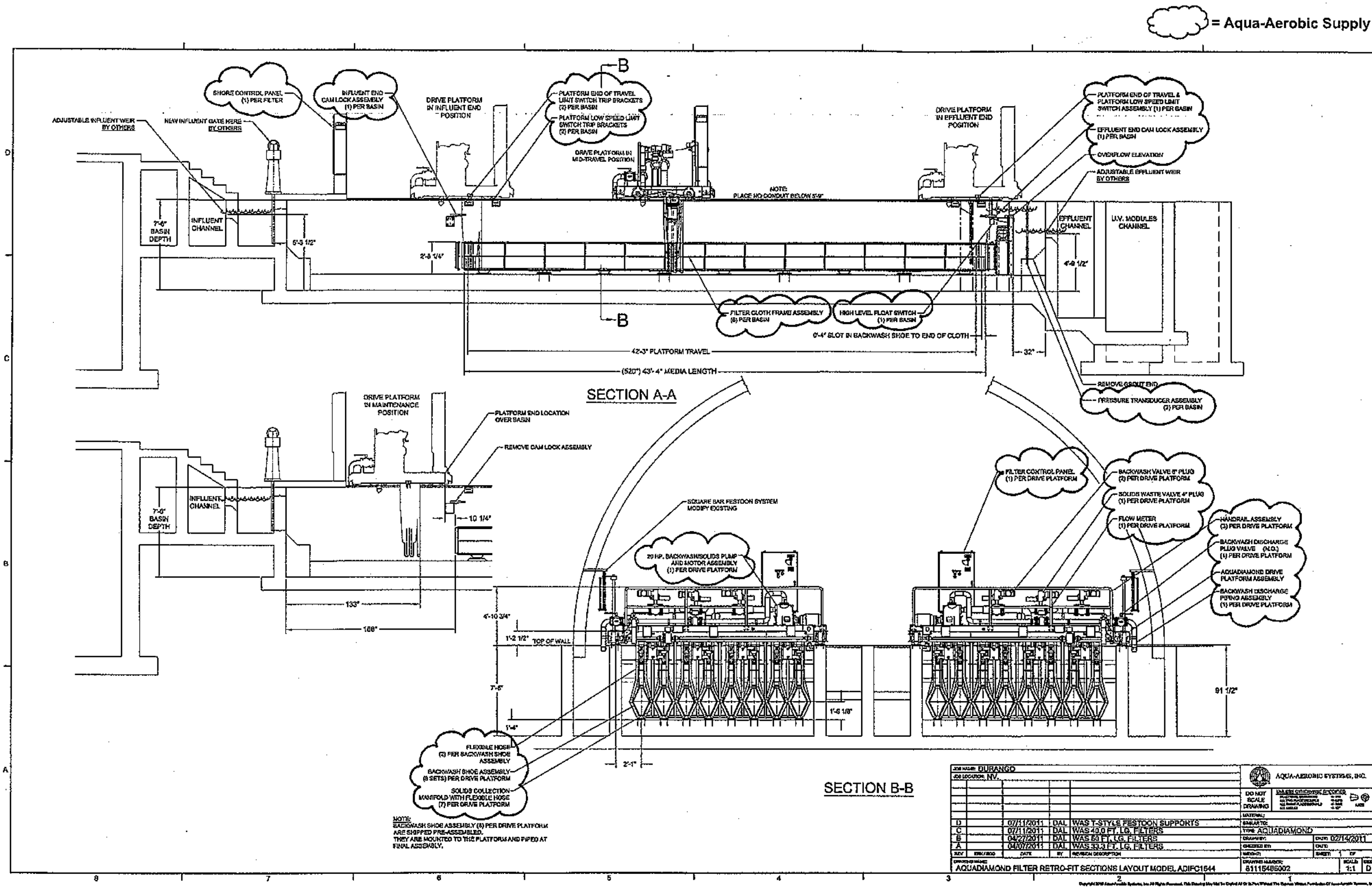
PROCESS UPGRADES PROJECT
INSTRUMENTATION
CONTROL SYSTEM BLOCK DIAGRAM

SCALE: NO SCALE
SHEET: ND-001
1007620

PHILIP M. ATKINSON No. 20250 7/20/11

WARNING 0 ½ 1 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

File: ND-001.dgn Model: Layout1 ColorTable: bw.ctb DesignScript: MWH_Lplot_PenTable_V8S.pen PlotScale: 0.0833331 User: exmonjor Plot Date: 19-JUL-2011 10:52


= Aqua-Aerobic Supply
SECTION A-A
SECTION B-B
SHORE CONTROL PANEL (1) PER FILTER
INFLUENT END CAM LOCK ASSEMBLY (1) PER BASIN
DRIVE PLATFORM IN INFLUENT END POSITION
PLATFORM END OF TRAVEL LIMIT SWITCH TRIP BRACKETS (2) PER BASIN
PLATFORM LOW SPEED LIMIT SWITCH TRIP BRACKETS (2) PER BASIN
DRIVE PLATFORM IN MID-TRAVEL POSITION
DRIVE PLATFORM IN EFFLUENT END POSITION
PLATFORM END OF TRAVEL & PLATFORM LOW SPEED LIMIT SWITCH ASSEMBLY (1) PER BASIN
EFFLUENT END CAM LOCK ASSEMBLY (1) PER BASIN
OVERFLOW ELEVATION
ADJUSTABLE EFFLUENT WEIR BY OTHERS
ADJUSTABLE INFLUENT WEIR BY OTHERS
NEW INFLUENT GATE HERE BY OTHERS
NOTE: PLACE NO CONDUIT BELOW 5'-9"
7'-6" BASIN DEPTH
INFLUENT CHANNEL
EFFLUENT CHANNEL
U.V. MODULES CHANNEL
FILTER CLOTH FRAME ASSEMBLY (8) PER BASIN
HIGH LEVEL FLOAT SWITCH (1) PER BASIN
0'-4" SLOT IN BACKWASH SHOE TO END OF CLOTH
42'-3" PLATFORM TRAVEL
(520") 43'-4" MEDIA LENGTH
REMOVE GROUT END
PRESSURE TRANSDUCER ASSEMBLY (2) PER BASIN
DRIVE PLATFORM IN MAINTENANCE POSITION
PLATFORM END LOCATION OVER BASIN
REMOVE CAM LOCK ASSEMBLY
SQUARE BAR FESTOON SYSTEM MODIFY EXISTING
20 HP. BACKWASH/SOLIDS PUMP AND MOTOR ASSEMBLY (1) PER DRIVE PLATFORM
FILTER CONTROL PANEL (1) PER DRIVE PLATFORM
BACKWASH VALVE 6" PLUG (2) PER DRIVE PLATFORM
SOLIDS WASTE VALVE 4" PLUG (1) PER DRIVE PLATFORM
FLOW METER (1) PER DRIVE PLATFORM
HANDRAIL ASSEMBLY (3) PER DRIVE PLATFORM
BACKWASH DISCHARGE PLUG VALVE (N.O.) (1) PER DRIVE PLATFORM
AQUADIAMOND DRIVE PLATFORM ASSEMBLY
BACKWASH DISCHARGE PIPING ASSEMBLY (1) PER DRIVE PLATFORM
FLEXIBLE HOSE (2) PER BACKWASH SHOE ASSEMBLY
BACKWASH SHOE ASSEMBLY (8 SETS) PER DRIVE PLATFORM
SOLIDS COLLECTION MANIFOLD WITH FLEXIBLE HOSE (7) PER DRIVE PLATFORM
TOP OF WALL
NOTE: BACKWASH SHOE ASSEMBLY (8) PER DRIVE PLATFORM ARE SHIPPED PRE-ASSEMBLED. THEY ARE MOUNTED TO THE PLATFORM AND PIPED AT FINAL ASSEMBLY.
JOB NAME: DURANGO
JOB LOCATION: NV.
D 07/11/2011 DAL WAS T-STYLE FESTOON SUPPORTS
C 07/11/2011 DAL WAS 40.0 FT. LG. FILTERS
B 04/27/2011 DAL WAS 50 FT. LG. FILTERS
A 04/07/2011 DAL WAS 33.3 FT. LG. FILTERS
AQUADIAMOND FILTER RETRO-FIT SECTIONS LAYOUT MODEL ADIFC1544
AQUA-AEROBIC SYSTEMS, INC.
DO NOT SCALE DRAWING
TYPE AQUADIAMOND
DATE 02/14/2011
81115486002
1:1 D