Southland Engineering

2200 Business Way, Suite 100
Riverside, CA 92501
(951) 788-8488
FAX (951) 788-8538

Civil Engineering | Land Planning | Land Surveying

November 14, 2011

United States Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, CA 94105

This letter is written on behalf of Stone Valley Materials, LLC, in response to a letter dated November 3, 2011 from your agency requesting information relating to the String fellow Superfund Site. An answer has been provided for each question identified on pages 8, 9 and 10 of said letter.

1. The full legal name of the company is:
   Stone Valley Materials, LLC
   3500-B Pyrite
   Riverside, CA 92509
   (951) 681-7830

   A. Chris Van Veldhuizen, President of Stone Valley Materials, LLC
   B. Stephen Vander Hart, VP of Operations of Stone Valley Materials
   (Both individuals have served in these roles since the company started operations January 4, 2010)

2. The individual responsible for environmental matters and day to day operations at the Company's site is Stephen Vander Hart. The area of their responsibility is limited to only the area covered by the lease agreement between Riverside Mining Ltd. and Stone Valley Materials, LLC.

3. Stone Valley Materials, LLC is an active limited liability company, as shown on file with the California Secretary of State.

4. Stone Valley Materials, LLC was organized on October 1, 2009, as shown on file with the California Secretary of State. (see Exhibit "A" for Articles of Organization)

5. Business Structure consists of the following: Stone Valley Materials, LLC and Stone Valley Building Materials LLC. Stone Valley Materials is the operator at the site while Stone Valley Building Materials is a material brokerage company which handles transportation and logistics and has nothing to do with operations at the site.

6. Stone Valley Materials, LLC is a limited liability company, as shown on file with the California Secretary of State and attached is a copy of the Articles of Organization (See Exhibit "A")

7. Stone Valley Materials, LLC operates under its full legal name and has no fictitious business name (fbn).

8. Names of Officers are as shown below:
   Chris Van Veldhuizen, President and Managing Member (b) (6)
   2062 S. Almond
   Ontario, CA 92660
   (909) 544-9395

   Natasha Van Veldhuizen, Vice President and Managing Member (b) (6)
   2062 S. Almond
   Ontario, CA 92660
   (909) 544-9395

9. As shown on the Lease Agreement, Stone Valley Materials, LLC only leases a portion of the property currently owned by Riverside Mining Ltd. (See Exhibit "B")

10. Stone Valley Materials, LLC does not and has not owned any of the property in question and has not subleased or sold any of the property owned by Riverside Mining Ltd.

11. Stone Valley Materials, LLC has operated at this site since January 2010. Operations include drilling, blasting, mining, crushing, screening, stockpiling, load and transporting granite material. Stone Valley Materials, LLC maintains and repairs their own equipment in the on-site shop. Stone Valley Materials, LLC operates an office and scale(s) on-site.

12. Riverside Mining Limited is owner of the property and was the mine operator of the site from January 2006 through January 3, 2010.
    Paul J. Hubbs Construction was owner of the property and operator of the mine from 1978 through December 2005.

13. A map of the mining boundary and areas mined is attached as Exhibit "C".
    A copy of the lease agreement between Stone Valley Materials, LLC and Riverside Mining Ltd. Is attached as Exhibit "B".

14. A scaled site plan (Exhibit "D") and building layout (Exhibit "E") is provided. The location of all chemicals and waste storage is shown on Exhibit "E".

15. Operations include drilling, blasting, mining, crushing, screening, stockpiling, load and transporting granite material. Stone Valley Materials, LLC maintains and repairs their own equipment in the on-site shop. Stone Valley Materials, LLC operates an office and scale(s) on-site. A list of all chemicals and hazardous materials used by Stone Valley Materials, LLC is shown on Exhibit "F"

16. Material Safety Data Sheets (MSDS) are provided for each chemical used and/or stored on-site. See Exhibit "G".

17. A copy of the Business Emergency Plan (BEP) and Hazardous Materials Inventory Forms are attached as Exhibit "H".

18. Stone Valley Materials, LLC has no knowledge of any leaks, spills or release of chemicals or hazardous materials.

19. A copy of the annual report to the Regional Water Quality Control Board is attached and provides the water sampling requested. (See Exhibit "I")

20. Stone Valley Materials, LLC does not have a wash plant or perform dewatering on site.

21. A copy of the quarry plan is attached as Exhibit "J".

22. A copy of the records from California Drilling and Blasting is provided as Exhibit "K". Their records include the MSDS for any chemicals, blasting components and explosives within Exhibit "K".

23. There are no known substances used on-site that contain perchlorate.

24. Waste Materials from Stone Valley Materials, LLC's quarry include:
    Waste Oils that are picked up on an "as needed" basis.
    Greasy Rags are picked up when the waste oils are picked up.
    A copy of the manifest from Titan Consolidated Industries and is attached as Exhibit "L".

25. State and Federal Permits are as follows:
    WDID/NOI for the General Industrial Storm Water Permit-State Water Resources Control Board
    OMR

If you have any questions or need further information, please contact me at (951) 788-8488.

Sincerely,

Southland Engineering

Lisa A. Merritt, President

List of Exhibits:

Exhibit "A"	Articles of Organization
Exhibit "B"	Lease Agreement
Exhibit "C"	Areas mined by Stone Valley Materials, LLC
Exhibit "D"	Scaled Site Plan
Exhibit "E"	Building Layout/Chemical and Waste Locations
Exhibit "F"	List of Chemicals and/or Hazardous Materials
Exhibit "G"	Material Safety Data Sheets (MSDS)
Exhibit "H"	Business Emergency Plan (BEP)
Exhibit "I"	Annual Report to the Regional Water Quality Control Board
Exhibit "J"	Reclamation Plan
Exhibit "K"	Drilling and Blasting Report, Map and MSDS
Exhibit "L"	Waste Oil Hauler Manifest

IRS DEPARTMENT OF THE TREASURY
INTERNAL REVENUE SERVICE
CINCINNATI OH 45999-0023

Date of this notice: 10-07-2009

Employer Identification Number:
27-1072960

Form: SS-4

Number of this notice: CP 575 G

STONE VALLEY MATERIALS LLC
NATASHA VAN VELDHUIZEN SOLE MBR
2062 S ALMOND AVE
ONTARIO, CA 91762

For assistance you may call us at:
1-800-829-4933

IF YOU WRITE, ATTACH THE
STUB AT THE END OF THIS NOTICE.

WE ASSIGNED YOU AN EMPLOYER IDENTIFICATION NUMBER

Thank you for applying for an Employer Identification Number (EIN). We assigned you EIN 27-1072960. This EIN will identify you, your business accounts, tax returns, and documents, even if you have no employees. Please keep this notice in your permanent records.

When filing tax documents, payments, and related correspondence, it is very important that you use your EIN and complete name and address exactly as shown above. Any variation may cause a delay in processing, result in incorrect information in your account, or even cause you to be assigned more than one EIN. If the information is not correct as shown above, please make the correction using the attached tear off stub and return it to us.

A limited liability company (LLC) may file Form 8832, *Entity Classification Election*, and elect to be classified as an association taxable as a corporation. If the LLC is eligible to be treated as a corporation that meets certain tests and it will be electing S corporation status, it must timely file Form 2553, *Election by a Small Business Corporation*. The LLC will be treated as a corporation as of the effective date of the S corporation election and does not need to file Form 8832.

To obtain tax forms and publications, including those referenced in this notice, visit our Web site at www.irs.gov. If you do not have access to the Internet, call 1-800-829-3676 (TTY/TDD 1-800-829-4059) or visit your local IRS office.

IMPORTANT REMINDERS:

* Keep a copy of this notice in your permanent records. **This notice is issued only one time and the IRS will not be able to generate a duplicate copy for you.**

* Use this EIN and your name exactly as they appear at the top of this notice on all your federal tax forms.

* Refer to this EIN on your tax-related correspondence and documents.

If you have questions about your EIN, you can call us at the phone number or write to us at the address shown at the top of this notice. If you write, please tear off the stub at the bottom of this notice and send it along with your letter. If you do not need to write us, do not complete and return the stub. Thank you for your cooperation.

(IRS USE ONLY) 575G 10-07-2009 STON O 9999999999 SS-4

Keep this part for your records. CP 575 G (Rev. 7-2007)

Return this part with any correspondence so we may identify your account. Please correct any errors in your name or address.

CP 575 G

9999999999

Your Telephone Number
( ) -

Best Time to Call

DATE OF THIS NOTICE: 10-07-2009
EMPLOYER IDENTIFICATION NUMBER: 27-1072960
FORM: SS-4 NOBOD

INTERNAL REVENUE SERVICE
CINCINNATI OH 45999-0023

STONE VALLEY MATERIALS LLC
NATASHA VAN VELDHUIZEN SOLE MBR
2062 S ALMOND AVE
ONTARIO, CA 91762

State of California
Secretary of State

File # 200927510184

ENDORSED - FILED
In the office of the Secretary of State
of the State of California

OCT 01 2009

This Space For Filing Use Only

LIMITED LIABILITY COMPANY ARTICLES OF ORGANIZATION

A $70.00 filing fee must accompany this form.

IMPORTANT – Read instructions before completing this form.

ENTITY NAME (End the name with the words "Limited Liability Company," "Ltd. Liability Co.," or the abbreviations "LLC" or "L.L.C.")

1. NAME OF LIMITED LIABILITY COMPANY

Stone Valley Materials LLC

PURPOSE (The following statement is required by statute and may not be altered.)

2. THE PURPOSE OF THE LIMITED LIABILITY COMPANY IS TO ENGAGE IN ANY LAWFUL ACT OR ACTIVITY FOR WHICH A LIMITED LIABILITY COMPANY MAY BE ORGANIZED UNDER THE BEVERLY-KILLEA LIMITED LIABILITY COMPANY ACT.

INITIAL AGENT FOR SERVICE OF PROCESS (If the agent is an individual, the agent must reside in California and both Items 3 and 4 must be completed. If the agent is a corporation, the agent must have on file with the California Secretary of State a certificate pursuant to Corporations Code section 1505 and Item 3 must be completed (leave Item 4 blank).

3. NAME OF INITIAL AGENT FOR SERVICE OF PROCESS

Natasha Van Veldhuizen

4. IF AN INDIVIDUAL, ADDRESS OF INITIAL AGENT FOR SERVICE OF PROCESS IN CALIFORNIA

ADDRESS	CITY	STATE	ZIP CODE
2062 S Almond Ave,	Ontario	CA	91762

MANAGEMENT (Check only one)

5. THE LIMITED LIABILITY COMPANY WILL BE MANAGED BY:

- [ ] ONE MANAGER
- [ ] MORE THAN ONE MANAGER
- [X] ALL LIMITED LIABILITY COMPANY MEMBER(S)

ADDITIONAL INFORMATION

6. ADDITIONAL INFORMATION SET FORTH ON THE ATTACHED PAGES, IF ANY, IS INCORPORATED HEREIN BY THIS REFERENCE AND MADE A PART OF THIS CERTIFICATE.

EXECUTION

7. I DECLARE I AM THE PERSON WHO EXECUTED THIS INSTRUMENT, WHICH EXECUTION IS MY ACT AND DEED.

SIGNATURE OF ORGANIZER

September 30, 2009
DATE

Business Filings Incorporated, Mark Williams, A.V.P.
TYPE OR PRINT NAME OF ORGANIZER

RETURN TO (Enter the name and the address of the person or firm to whom a copy of the filed document should be returned.)

8. NAME

FIRM

ADDRESS

CITY/STATE/ZIP

OFFICE OF THE SECRETARY OF STATE

State of California
Secretary of State

I, DEBRA BOWEN, Secretary of State of the State of California, hereby certify:

That the attached transcript of 1 page(s) has been compared with the record on file in this office, of which it purports to be a copy, and that it is full, true and correct.

IN WITNESS WHEREOF, I execute this certificate and affix the Great Seal of the State of California this day of

OCT 06 2009

DEBRA BOWEN
Secretary of State

OPERATING LEASE AGREEMENT

THIS OPERATING LEASE AGREEMENT (this "**AGREEMENT**") is made and entered into this ____ day of December, 2009 (the "Effective Date"), by and between **RIVERSIDE MINING LIMITED, ("RML")** a California limited partnership licensed to conduct business in, and in good standing in the state of California , or affiliates, and **STONE VALLEY MATERIALS, INC ("SVM")** a California limited liability company licensed to conduct business in, and in good standing in the state of California. RML and SVM are sometimes referred to collectively herein as the "PARTIES" and individually as the "PARTY."

THE PURPOSE of this AGREEMENT shall be a written and acknowledged instrument of the relationship between the PARTIES and the responsibilities, each to the other.

RECITALS

WHEREAS, RML is the holder of fee title to certain mineral PROPERTIES in Riverside County with mining boundary and mining plan as defined by Southland Engineering and has intention, at some future and to be determined date, to become the fee title holder of certain other mineral PROPERTIES to be acquired through purchase, exchange or otherwise; and that RML is the holder of Reclamation Permit No 123 operating under California Mine ID No 91-33-0062; and,

WHEREAS, the PARTIES wish to consummate an OPERATING LEASE AGREEMENT whereby, for agreed upon compensation, SVM agrees to conduct mining operations on such PROPERTIES under RML's presently valid and lawful mining permits and rights, and future to be acquired, valid and lawful mining permits and rights; and,

WHEREAS, RML agrees to convey to SVM the right to the use of certain assets including certain crushing, production, material handling and weigh equipment, authority to operate under quarry leases and licenses as applicable (if any), that are owned or leased by RML;

NOW, THEREFORE, for and in consideration of the mutual promises, covenants, representations, warranties, and obligations contained herein, the PARTIES agree as follows:

1. Operational: The PARTIES agree that; **(a)** SVM shall have the unrestricted use of certain of RML's certain owned assets and equipment, including **i)** riprap plant; and, **ii)** rock crushing plant; and, **iii)** one excavator with a breaker; and, **iv)** water truck; and, **v)** weighing and scale plant; and, **vi)** on site use of an office trailer; and, **(b)** that: **i)** it is recognized that certain of the equipment does not have current air quality compliance certification and that it is not incumbent upon SVM nor an obligation of SVM to attain or provide such certification; and **ii)** that SVM at its own expense, shall at times maintain the equipment in good and safe operating condition and shall pay for all labor, fuel, lubrication, materials, parts and supplies of every nature and kind required to operate and maintain the equipment to ensure that such RML owned equipment remains in similar operating order to that in which it was received; and, **(c)** that SVM shall be responsible for the daily cost of operating such equipment, including Liability and Worker's Compensation insurance and the wages & salaries of operating personnel who shall be employees of SVM; and, **(d)** that SVM shall, from time to time, provide and operate, certain additional mining and material handling equipment; and, **(e)** that ownership of such additional equipment that SVM provides shall at all times remain that of SVM, its associates, assigns, contractors and related third parties; and, **(f)** that the consummation of this AGREEMENT is neither an obligation nor a commitment on the part of SVM to fulfill any existing purchase orders or contracts for product on the books of RML and that any decision to fulfill any such existing purchase orders or contracts shall be individually agreed upon between the PARTIES on an individual basis; and,

(g) that SVM shall provide RML with evidence of current insurance coverage.

2. Consummation Fee: The PARTIES agree that as an act of good faith that RML shall be paid a Consummation Fee in the total amount of $200,000.00 (Two Hundred Thousand Dollars) payable in installments by bank to bank wire transfer, company check or as otherwise agreed; and that, **(a)** such payment of this Consummation Fee obligation shall be made at the rate of $8 (Eight Dollars) per ton, in addition to a royalty of 20% (as provided for in Section 3. Royalty Fee, below) for each and every ton of any and all rip rap as sold ex-quarry by SVM until RML has been paid the Consummation Fee in full totaling $200,000.00 (Two Hundred Thousand Dollars) without deduction, holdback or reserve, and that, **(b)** with each such Consummation Fee installment that SVM shall provide RML with a current accounting of Consummation Fee status showing balance of Consummation Fee paid to date together with remaining Consummation Fee balance outstanding; and that, **(c)** the terms of the Consummation Fee obligation as contained and provided in this Section herein, shall have been deemed unconditionally fulfilled and that such Consummation Fee obligation shall be unconditionally released immediately upon SVM having paid and RML being in receipt of Consummation Fee payments in the total of $200,000.00.

3. Royalty Fee: The PARTIES agree that RML shall be paid a Royalty Fee of twenty percent (20%) of the gross sale price of materials mined by SVM on RML'S real property ("Royalty Fee"); and that, **(a)** Royalty Fee is payable on a "Calendar Monthly" basis with disbursement to take place on or before the 15th of the month of the following "Calendar Month"; and that, **(b)** the meaning of "Calendar Month" shall be the commonly accepted understandings of a Calendar Month being the months of January through December inclusive; and that, **(c)** each monthly disbursement of Royalty Fee shall be made by bank to bank wire transfer or by company check sent via mail or overnight delivery; and that, **(d)** the method of each disbursement whether by mail, bank to bank wire transfer or overnight delivery may be freely interchanged by verbal agreement between the PARTIES at their convenience; and that, **(e)** SVM shall provide RML with the applicable Calendar Monthly Schedule of Revenues upon which each monthly Royalty Fee disbursement is based; and that, **(f)** SVM shall provide RML with an Annual Schedule of Tonnage, Revenues & Royalties due no later than January 31st of the following year for the preceding year; and that **(g)** SVM shall keep just and true Books of Account with respect to revenues and tonnages produced by mining operations conducted by the company on the PROPERTY; and that, **(h)** such Books of Account shall be maintained at SVM's principal office in California; and that, **(i)** RML and its duly authorized representatives, shall at all reasonable times have access to such Books of Account as well as any information required to reconcile or audit such Books of Account; and that, **(j)** RML may, solely at its' own expense, perform, or cause to have performed, an audit of such Books of Account at such reasonable time that does not impinge upon the uninterrupted performance and continued mining operations conducted on the PROPERTY by SVM.

4. Estimated Tonnage under this Agreement: The PARTIES agree that, **(a)** this AGREEMENT shall provide for the removal of currently permitted and mineable reserves estimated to be in excess of three million five hundred thousand (3,500,000) tons plus or minus including current inventory, provided that there shall not be an obligation on SVM to mine and remove material, that in its sole determination is not economically feasible; and, **(b)** The PARTIES agree that absent there being an invocation of Force Majeure as defined in Section 11 Force Majeure herein, or events beyond the control of RML or SVM, that SVM operations output shall maintain a minimum annual base tonnage of one hundred thousand (100,000) tons; and, **(c)** The PARTIES agree that SVM shall maintain a continuous presence and conduct active mining operations on the property with the exception of temporary suspension of operations due to excess and unsold inventory or as required for maintenance and capital improvement or as caused by the invocation of Force Majeure; and, **(d)** The PARTIES agree that SVM shall assist and guide RML in attaining the permitting of future additional tonnage for the continuance of mining operations at an undetermined future date; and,

(e) The PARTIES agree that that this AGREEMENT is neither an obligation upon RML to obtain such permitted future additional tonnage nor an obligation upon SVM for the future mining of such permitted future additional tonnage if such mining is not economically feasible, or shall be precluded by regulatory bodies.

5. Permits: The PARTIES agree; **(a)** that SVM shall have the unencumbered right and ability to conduct unimpeded mining operations under valid and existing permits and financial assurances and bonding that shall remain under the ownership and responsibility of RML; and, **(b)** that SVM shall mine within the mining boundaries as defined by the mining plan of Southland Engineering; and, **(c)** that SVM shall conduct mining operations in accordance with the mining plan of Southland Engineering; and, **(d)** that SVM shall, to the extent that such is practical assist RML to help ensure that inspections shall be conducted and reports filed as proscribed and required by applicable regulatory bodies.

6. Indemnification by SVM MATERIALS, INC: SVM unconditionally agrees to indemnify, defend and hold RML harmless from and against any and all liens, claims, causes of action, damages, liabilities and expenses whatsoever arising out of or related to SVM's continued operations on the PROPERTY; provided, however, the indemnity shall not apply to the extent of RML's sole gross negligence.

7. Certificate of Insurance: SVM shall deliver a certificate of insurance to RML evidencing that SVM and its contractors, associates, assigns, agents and representatives have in place: **(a)** Automotive Liability Insurance of no less than $1,000,000.00 per occurrence and Commercial General Liability Insurance to include PROPERTY, operations and subcontractors with limits of no less than $1,000,000.00 per occurrence with RML being named as an additional insured; and, **(b)** Workers' Compensation as applicable, meeting at least the minimum requirements of the laws of the State of California, and Employer's Liability.

8. Indemnification by RIVERSIDE MINING LIMITED: (a) RML agrees to unconditionally indemnify, defend and hold SVM harmless from and against any and all liens, claims, obligations, causes of action, damages, liabilities and expenses whatsoever, that shall remain the continued responsibility of the RML as fee simple owner of the PROPERTY and owner of the applicable Mining Permits; and that, **(b)** RML agrees to unconditionally indemnify, defend and hold SVM harmless from and against any and all arguments, disputes, delays of production, litigation, lawsuits, liens, claims, obligations, causes of action, damages, liabilities and expenses associated with, related to, or arising from, or originating from any union agreements whatsoever, including that SHORT FORM COLLECTIVE BARGAINING AGREEMENT WITH THE INTERNATIONAL UNION OF OPERATING ENGINEERS LOCAL UNION NO 12 executed on 27th April 2007, by and between Pyrite Services, Inc ("PSI") and the International Union of Operating Engineers, Local Union No 12.

9. Indemnification against Intercompany Relationship: (a) RML declares that it does not share common ownership with PSI and that each entity conducts business operations as separate operating legal entities licensed to conduct business in, and in good standing with the State of California; and that, **(b)** RML has the legal authority to enter into this AGREEMENT without the consent of PSI; and that, **(c)** RML declares that by entering into this AGREEMENT, that no obligations or liabilities of any nature whatsoever that may exist between RML and PSI and any other unnamed or associated parties are transferred or are implied as being transferred in consummating this AGREEMENT with SVM; and that, **(d)** RML unconditionally and without reserve, indemnifies SVM against such occurrence, including all legal costs and damages.

10. Commercial Development: The PARTIES agree that RML shall retain the fiduciary responsibility for all reclamation obligations relating to the PROPERTY and that SVM shall have no fiduciary responsibility for reclamation, that this agreement is not an agreed or implied consent by SVM for any

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reclamation performance, and that upon reclamation RML intends to commercially develop the PROPERTY and that SVM is not a PARTY to, nor a beneficiary of, the future commercial development of the PROPERTY.

11. Force Majeure: The PARTIES agree that the occurrence of such events that fall within the definition of Force Majeure, to the extent that they shall effect the performance of any or all of the terms and conditions provided for under this AGREEMENT, shall be automatic cause for temporary or permanent waiver of the performance of any or all of the impacted terms and conditions provided for under this AGREEMENT and, or of any or all of the obligations contained in any or all of the clauses and provisions herein; and that Force Majeure may be invoked upon the occurrence of such events that shall impact temporarily or permanently the economic continuance of SVM conducting mining operations; and that the invocation of Force Majeure of itself, shall not be cause alone for the termination of this AGREEMENT. The PARTIES further agree that Force Majeure shall include; **(a)** acts of God, landslides, lightning, earthquakes, fires, explosions, all adverse or inclement weather, floods; or **(b)** declaration or determination of hazardous material, hazardous waste, or any toxic or environmental declaration or determination affecting production; or, **(c)** acts of a public enemy, wars, riots or civil disturbances; or **(d)** labor disputes, strikes, work slowdowns, work stoppages; or **(e)** orders or judgments of any federal state or local court, administrative agency or governmental; or environmental body, or **(f)** any other similar cause or event, including a change in law, regulation, ordinance or permit provided that the forgoing is outside the reasonable control of the PARTIES.

12. Risk of Loss: Risk of loss of the PROPERTY shall always remain upon RML.

13. Eminent Domain: The PARTIES agree that Eminent Domain action CASE No RIC 492860, State of California vs Riverside Mining Limited concerns a certain 33 acre parcel not included in the mining permit and not designated for mining and that such legal action does not impinge upon the ability of SVM to conduct mining operations. If, during the course of this AGREEMENT that any part of the permitted mining portion of the PROPERTY is taken under eminent domain, or that it receives notice that any part of the permitted mining portion of the PROPERTY may be subject to being taken under eminent domain, that RML shall notify SVM in writing of the taking, or the notice of the intent of taking, within five (5) calendar days, in which event SVM shall have the option to: **(a)** without recourse by RML to terminate this AGREEMENT and all obligations therein if SVM determines that such eminent domain action shall negatively affect its ability to economically continue mining operations; or **(b)** forgoing indemnification by RML, to continue with this AGREEMENT.

14. Conditions to SVM MATERIALS, INC Obligation: SVM's obligation to Consummate this AGREEMENT is subject to the satisfaction as of the Consummation Date of the following conditions and any other conditions contained in this AGREEMENT. ("Consummation Date" shall be the date upon which this AGREEMENT is executed by the affixing of the signatures of the PARTIES.) RML shall use commercially reasonable efforts to cause these conditions to be satisfied as of the Consummation Date; and that, **(a)** all warranties and representations set forth herein being true and correct as of the Consummation Date; and that, **(b)** upon Consummation of this AGREEMENT that SVM shall have the ability, at it's sole option, to as soon as it shall determine such to be practical, to commence mining operations, on PROPERTY in compliance with all governmental mining regulations with no unreasonable restrictions; and that, **(c)** no action, suit, or proceeding before any court or any governmental body or authority, pertaining to the activities contemplated by this AGREEMENT or to its Consummation, shall have been instituted or threatened; and that, **(d)** the PARTIES agree to the conducting of a PROPERTY "fly over" analysis, to establish a baseline for what shall be responsibility of SVM, prior to the commencement of mining activity by SVM, the cost of such "fly over" analysis to be split 50/50 between the PARTIES; and that, **(e)** the PARTIES agree that unless otherwise agreed between the PARTIES, that there shall be a minimum baseline sale price ("BASELINE SALE PRICE")

of i) Riprap @ $10 per ton; and, ii) small aggregates @ $4 per ton; and, iii) royalty sales @ $3.50 per ton; and that, **(f)** SVM shall not sell material below BASELINE SALE PRICE to one party after which that party sells such material for additional profit shared with SVM; and that, **(g)** SVM may import material from off site, to be blended with mined material to produce additional product lines such as Stabilizer and washed sand to manufacture Con/Mix; and that, **(h)** the PARTIES agree that large dirt importation requirements will be discussed and agreed upon before hand between the PARTIES; and that, **(i)** SVM shall not process any other material on the site and shall not import material from off site specifically for the purposes of "recycling"; and that, **(j)** the PARTIES agree that SVM shall pay annual fees required to maintain the good standing of MSHA, OSHA and Riverside County agencies; and that, **(k)** the PARTIES agree that upon approval of the required permitting, that an Asphalt Plant may be installed on the site subject to Agreement between the PARTIES as to the monthly lease structure and material pricing structure.

15. Conditions to RIVERSIDE MINING LIMITED's Obligation: RML declares under this AGREEMENT: **(a)** That to the best of RML's knowledge, with the exception of Eminent Domain action CASE No 492860, State of California vs Riverside Mining Limited concerning a certain 33 acre parcel not included in the mining permit, not designated for mining and that does not impinge upon the ability of SVM to conduct mining operations, that there is no action pending by any governmental authority which might result in the PROPERTY (or any portion thereof or interest therein) being taken by condemnation or conveyed in lieu thereof and, to RML's knowledge, no such action is threatened; and that, **(b)** to the best of RML's knowledge, RML is in compliance with all applicable federal, state, and local laws (including common law) relating to the protection of the environment as in effect on or before the date of this AGREEMENT including, the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. section 9601, et seq. ("CERCLA"), the Resource Conservation and Recovery Act of 1976, as amended, 42 U.S.C. section 6901, et seq., the Clean Air Act, as amended, 42 U.S.C. section 7401, et seq., the Federal Water Pollution Control Act, as amended, 33 U.S.C. section 1251, et seq., and the Oil Pollution Act of 1990, 33 U.S.C. section 2701, et seq., and the statutes, regulations, rules, and orders of all agencies responsible for supervision and enforcement of environmental and mining laws of California ("Environmental Law(s)"); and that, **(c)** to the best of RML's knowledge, RML has not incurred and has not received notice of, any claims, liabilities, losses, costs, damages, or expenses (including attorneys' fees) with respect to the PROPERTY or operations on the PROPERTY arising under any Environmental Laws; and that, **(d)** to the best of RML's knowledge, there are no pending or, to RML's knowledge, threatened claims, demands, notices of violation or liability, actions, suits, proceedings, hearings, or investigations against RML with respect to the PROPERTY or operations on the PROPERTY under any Environmental Laws, and no aspect of the PROPERTY or operations on the PROPERTY is subject to any outstanding injunction, judgment, order, decree, ruling, or charge under any Environmental Laws; and that, **(e)** to the best of RML's knowledge, RML has not received any notice that RML or its predecessors in title with respect to the PROPERTY or operations on the PROPERTY is, or may be a potentially responsible party under the CERCLA or any analogous state law in connection with any site actually or allegedly containing or used for the treatment, storage, or disposal of hazardous substances. For the purposes of this AGREEMENT, (i) "hazardous substances" means substances defined as **(A)** "hazardous substances" in the CERCLA, as amended (42 U.S.C. Sections 9601 et seq.) together with the regulations enacted pursuant to such act; and, **(B)** "hazardous wastes" in the Resource Conservation and Recovery Act of 1976 (42 U.S.C. Sections 6901 et seq.) together with the regulations enacted pursuant to such act, and (ii) "Hazardous Substances Laws" shall mean any federal, state or local law, ordinance, regulation or guideline regulating or imposing liability or standards of conduct concerning any Hazardous Substances; and that, **(f)** to the best of RML's knowledge, RML has complied in all material respects with all applicable laws, ordinances, and regulations of all government bodies, including, but not limited to, OSHA and CALOSHA, respecting its previous and present conducting of mining activity and ownership of the PROPERTY and operations on the PROPERTY; and that,

(g) there are no existing or outstanding union contracts, agreements, obligations, liens, encumbrances or restrictions that preclude RML from entering into this AGREEMENT; and that,

(h) there are no existing or outstanding union contracts, agreements, obligations, liens, encumbrances or restrictions that may preclude SVM from entering into this AGREEMENT, or that may preclude SVM from freely conducting any and all mining operations contemplated and provided for under this AGREEMENT; and that **(i)** there are no existing or outstanding contracts, purchase orders, agreements, obligations, liens, encumbrances or restrictions whatsoever that preclude RML from entering into this AGREEMENT; and that, **(j)** there are no existing or outstanding contracts, purchase orders, agreements, obligations, liens, encumbrances or restrictions whatsoever that may preclude SVM from entering into this AGREEMENT, or that may preclude SVM from freely conducting any and all mining operations contemplated and provided for under this AGREEMENT; and that, **(k)** RML is not obligated by and is neither party to, nor is signatory to any union agreements whatsoever, including that SHORT FORM COLLECTIVE BARGAINING AGREEMENT WITH THE INTERNATIONAL UNION OF OPERATING ENGINEERS LOCAL UNION NO 12 executed on 27th April 2007, by and between PSI and the International Union of Operating Engineers, Local Union No 12; and that, **(l)** in accordance with the terms and conditions contained in ARTICLE IV of such SHORT FORM COLLECTIVE BARGAINING AGREEMENT WITH THE INTERNATIONAL UNION OF OPERATING ENGINEERS LOCAL UNION NO 12 executed on 27th April 2007, by and between PSI and the International Union of Operating Engineers, Local Union No 12, that RML has on record that PSI has issued formal written notice to the International Union of Operating Engineers, Local Union No 12, of its termination of such Agreement; and that, **(m)** PSI has provided a copy of such written notice to RML and that RML shall forthwith, provide a copy of such written notice to SVM.

16. Notices to Parties: Any notice required or permitted by this AGREEMENT given by one PARTY to the other shall be in writing. Any notices will be delivered to the receiving PARTY at the address for the receiving PARTY set forth below by **i)** reputable traceable overnight courier, (UPS or FedEx) in which event such notice shall be deemed received on the next business day after its deposit with said courier; **ii)** by email transmission, in which event it shall be effective upon acknowledgment of receipt of electronic transmission; and, **iii)** by personal delivery, in which event it shall be effective when delivered personally.

Riverside Mining Limited: 3500 Pyrite Street	Riverside Mining Limited Riverside, CA 92509 Attn: Nanu Patel Email: boloram@sbcglobal.net Attn: Ashish Patel Email: hashmang@gmail.com
Stone Valley Materials, LLC:	Stone Valley Materials, LLC 2062 S. Almond Ave Ontario, CA 91762 Attn: Chris Van Veldhuizen Email: stonevalleymaterials@gmail.com

CKM Materials, Inc:	CKM Materials, Inc 42540 Rio Nedo Temecula, CA 92590 Attn: Todd K. Close Email: todd@murrietadevelopmentcompany.net
Ronald Semler:	Ronald Semler 32111 Mulholland Highway Malibu, CA 90265 Attn: Ronald Semler Email: rhs@associated-ind.com
Aggregate Investments:	Aggregate Investments 2950 Buskirk Road, Suite 300 Walnut Creek, CA 94597 Attn: Robert Marshall Email: agginvestment@gmail.com

17. Recognition of AGGREGATE INVESTMENTS: The PARTIES acknowledge that; **(a)** AGGREGATE INVESTMENTS ("AGI") has been instrumental and central to the consummation of this AGREEMENT; and that, **(b)** as a result of the work of AGI on their behalf, that the PARTIES may recognize significant financial benefit; and that, **(c)** AGI shall be party to all such information shared between SVM and RML; and that, **(d)** SVM and RML and AGI shall be bound by the same signed Confidentiality Agreements; and that, **(e)** either PARTY may freely communicate via AGI and that such communications shall be considered as being communicated each to the other; and that, **(f)** RML has no obligation under this AGREEMENT to AGI.

18. Assignability: The PARTIES agree that they intend, individually and collectively, to be legally bound by this AGREEMENT. All of its terms and conditions will extend to and be binding upon the PARTIES to this AGREEMENT and upon their respective heirs, executors, administrators, personal representatives, successors and assigns; and that, **(a)** SVM shall have the right to assign all or part of this agreement and the performance of the contractual duties and the rights and obligations as are contained herein, to associates, affiliates, assigns or successors, provided that SVM has the prior approval of RML of such assignment; and that, **(b)** the execution of this AGREEMENT by RML constitutes an approval for SVM to assign the contractual rights and obligations under this AGREEMENT to a corporation or partnership, owned by SVM, or their current members, shareholders or partners, licensed to conduct business in, and in good standing in the State of California, solely formed to conduct the mining operations provided for and contemplated in this AGREEMENT; and that, **(c)** such corporation or partnership shall be formed within 120 (one hundred and twenty) days of the execution of this AGREEMENT by the PARTIES; and that, **(d)** upon formation, SVM shall provide RML with a Notification of Assignment and documentation that such corporation or partnership is licensed to conduct business in, and is in good standing in the State of California.

19. Interpretation: This AGREEMENT constitutes the entire contract between the PARTIES and there are no other understandings, oral or written, relating to the sale and purchase of the assets or operations on the PROPERTY. This AGREEMENT may not be changed, modified or amended, in whole or in part, except in writing, signed by all PARTIES. Wherever used in this AGREEMENT, the singular will include the plural, the plural the singular, and the use of any gender will be applicable to all genders. paragraph headings are inserted for convenience only and will not form part of the text of this AGREEMENT.

20. Governing Law: This AGREEMENT and all of the rights and duties of the PARTIES arising from or relating in any way to the subject matter of this AGREEMENT or the transactions contemplated by this AGREEMENT, shall be governed, construed and enforced in accordance with the laws of the State of California.

21. Counterparts, Facsimile and Electronically Transmitted Signatures: This AGREEMENT may be executed in any number of counterparts, each of which when executed shall be deemed to be an original and all of which when taken together shall constitute one and the same AGREEMENT. The PARTIES agree to accept facsimile and/or electronically transmitted signatures as original signatures

22. Amendments: This AGREEMENT may be amended from time to time only by an instrument in writing signed by the PARTIES to this AGREEMENT.

23. Covenant not to Compete: The PARTIES agree that upon consummation of this AGREEMENT, that RML and RML's Principals shall not be in the aggregate mining business in the Riverside California area or anywhere within a 60 mile radius of the Riverside California area, or anywhere within a 60 mile radius of any other aggregate mining operation of SVM for a period of five (5) years from the date when the RML's Principals are no longer employed by or consulting with RML.

24. Arbitration: The PARTIES agree that any controversy or claim arising out of, or relating to this AGREEMENT, or the breach thereof, that is unable to be resolved between the PARTIES, prior to litigation, shall be submitted to arbitration conducted by an independent arbitrator acceptable to both PARTIES, administered and conducted according to the rules and procedures of the American Arbitration Association in accordance with its Commercial Arbitration Rules, such arbitration to be conducted in Riverside County in the State of California.

IN WITNESS WHEREOF, the PARTIES hereto have executed this AGREEMENT Signed by RML and SVM on this 20th day of December 2009.

RIVERSIDE MINING LIMITED,
a California limited partnership
By: Rockhard Exploration, Inc
a California corporation
Its: General Partner

By: _____
Name: Nanu Patel
Its: President

SVM MATERIALS, LLC,
a California limited liability company

By: _____
Name:
Its: Managing Member

MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding ("MOU") is entered into as of December 20th, 2009, by and between Riverside Mining Limited, a California limited partnership ("RML"), and Stone Valley Materials, LLC, a California limited liability company (SVM"). RML and SVM may be referred to individually as a "Party" and collectively as the "Parties".

The Parties have agreed the terms of an Operating Lease Agreement ("Lease Agreement") for the operation of the mine located on real property owned by RML, locat4ed at 3500 Pyrite Road, Riverside, California ("Property"). A copy of the Lease Agreement is attached hereto and incorporated herein.

The loan evidenced by the first deed of trust secured by the Property is currently in default, although RML and the lender have entered into a forbearance agreement and RML is in compliance with that forbearance agreement.

The holder of the first deed of trust does not wish RML to enter into the Lease Agreement until the default under the terms of its note and deed of trust is fully cured; however, RML wishes to use the revenue generated by the Lease Agreement to cure, at least in part, said default and meet its obligations under the forbearance agreement.

NOW, THERFORE, the Parties agree as follows:

1. Commencing January 1, 2010, SVM shall be permitted to commence mining operations on the Property in accordance with the terms of the Lease Agreement.
2. The Parties agree that they will execute the Lease Agreement no later than February 28, 2010, and until such time of execution, the Parties agree that they will comply strictly with the terms of the Lease Agreement as if it were a fully executed and binding agreement.
3. This MOU shall be governed by the laws of the State of California, and the Parties agree to jurisdiction in the Superior Court of the State of California, County of Riverside.

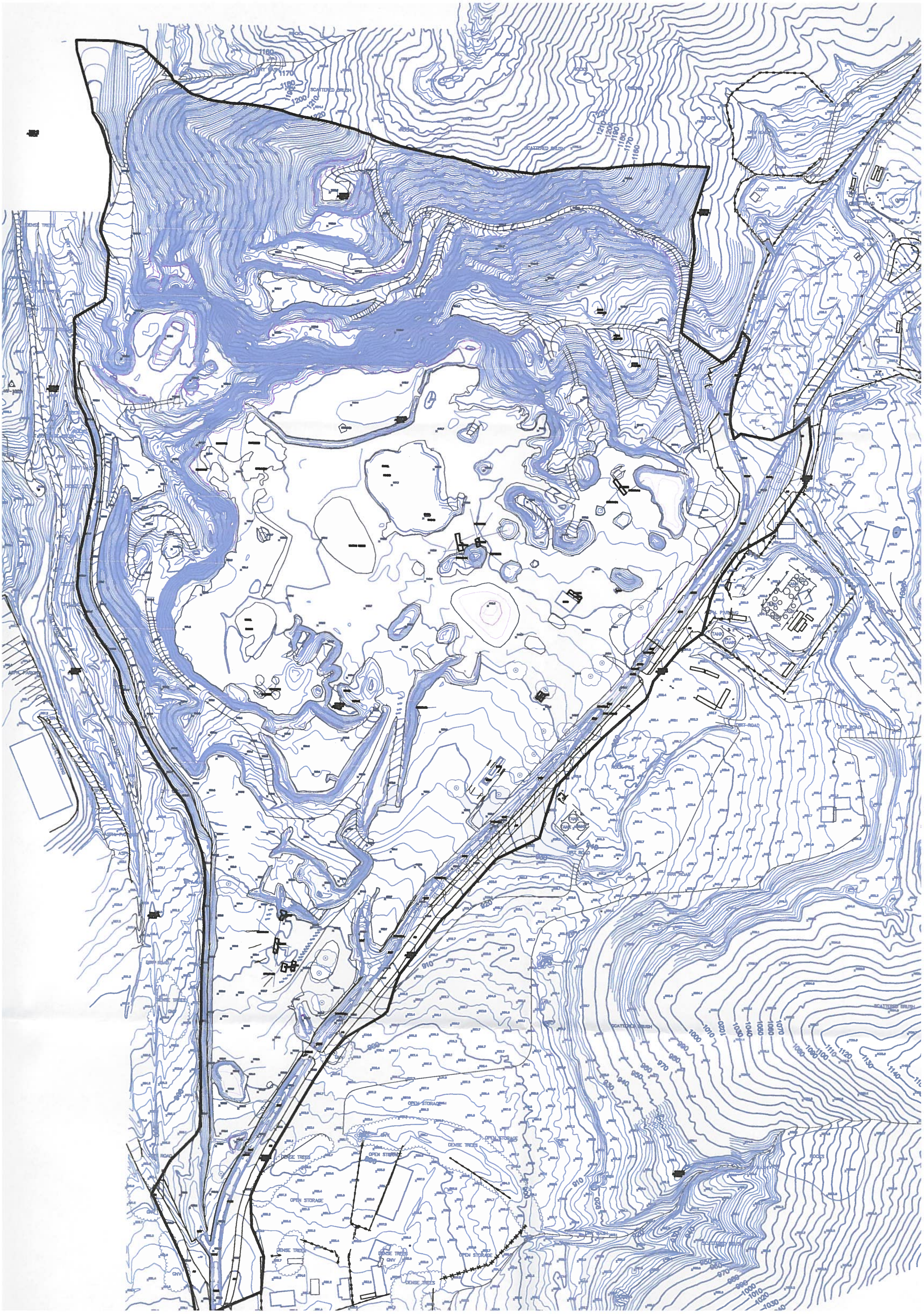
IN WITNESS WHEREOF, the Parties hereto have caused this MOU to be executed on the day and date first written above.

RIVERSIDE MINING LIMITED, a California limited partnership
By: Rockhard Exploration, Inc., a California corporation
Its: General Partner

By: Nanu Patel
Its: President

STONE VALLEY MATERIALS, LLC, a California limited liability company

By:
Its: Managing Member


1160
1170
1180
1200
1210
1220
SCATTERED BRUSH
ROCKS
1210
1200
1190
1180
1170
1160
SCATTERED BRUSH
ROCKS
CONC
DENSE TREES
TANK
TANK
TANK
TANK
TANK
DIRT ROAD
DIRT ROAD
DIRT ROAD
ROCK PILE
940
930
920
910
900
890
OPEN STORAGE
DENSE TREES
OPEN STORAGE
DENSE TREES
OPEN STORAGE
DENSE TREES
OPEN STORAGE
GNV
GNV
DENSE TREES
SCATTERED BRUSH
1000
1010
1020
1030
1040
1050
1060
1070
1080
1090
1100
1110
1120
1130
1140
990
980
970
960
950
940
930
920
910
SCATTERED BRUSH
ROCKS
SCATTERED BRUSH
950
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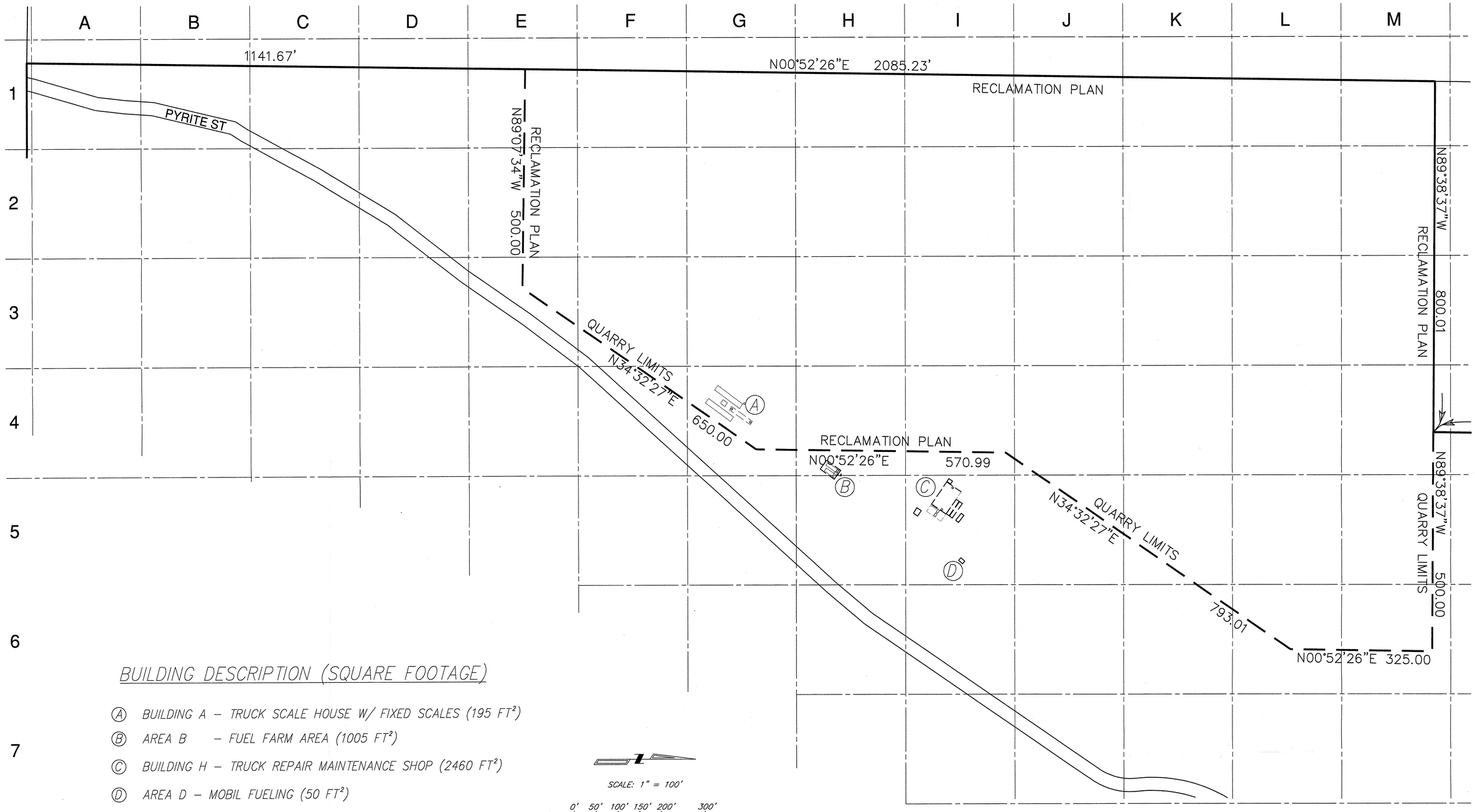
1000
1010
1020
1030



BUILDING DESCRIPTION (SQUARE FOOTAGE)

- (A) BUILDING A – TRUCK SCALE HOUSE W/ FIXED SCALES (195 FT^2)
- (B) AREA B – FUEL FARM AREA (1005 FT^2)
- (C) BUILDING H – TRUCK REPAIR MAINTENANCE SHOP (2460 FT^2)
- (D) AREA D – MOBIL FUELING (50 FT^2)

DATE	BY	MARK	REVISIONS	APPR.	DATE

ENGINEER | COUNTY

DESIGNED BY | DRAWN BY | CHECKED BY

RECOMMENDED FOR APPROVAL

DATE

CHECKED BY

DATE

SEAL COUNTY

SEAL: REGISTERED PROFESSIONAL ENGINEER ALLEN W. MARTIN No. C 38463 EXP. 3-31-09 CIVIL STATE OF CALIFORNIA

APPROVED BY DATE

R.C.E. NO. EXP. DATE

PREPARED UNDER THE SUPERVISION OF DATE

ALLEN W. MARTIN
R.C.E. NO. 38463 EXP. DATE 3-31-13

Southland Engineering
2200 BUSINESS WAY, Ste. 100
RIVERSIDE, CA. 92501
(951) 788-8488

SCALE 1"=100'

DATE

BENCHMARK

BUSINESS EMERGENCY PLAN
BUILDING LAYOUT
AND SITE PLAN

FOR PYRITE QUARRY MINE

W.O. 10102

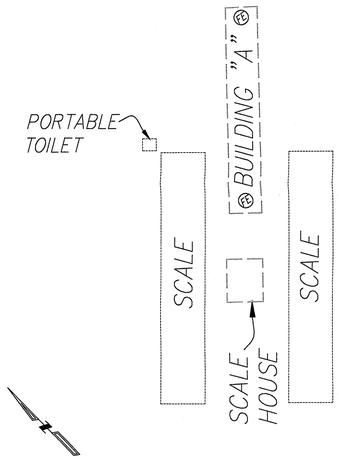
SHEET NO. 1 OF 1 SHTS.

FILE NO.

EXHIBIT "A"

BUILDING A:
TRUCK SCALE HOUSE
AND FIXED SCALES

HAZARDOUS MATERIALS RPT. QTY'S
NO HAZARDOUS MATERIALS OBSERVED
FE = FIRE EXTINGUISHER



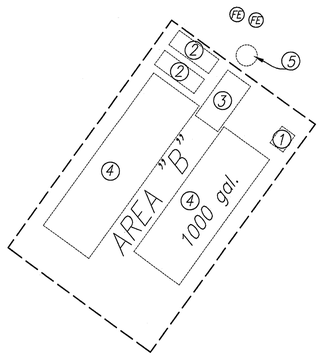
SCALE: 1" = 20'

BUILDING A

EXHIBIT "B"

AREA B:
TANK YARD FOR
VEHICLE FUELING

HAZARDOUS MATERIALS RPT. QTY'S
1 PUMP
2 MOTOR OIL MISC. – (2) ±500 GAL. TANKS
3 WASTE OIL – 700 GAL.
4 FUEL TANKS – (2) ±4000 GAL.
5 OIL RAGS – 55 GAL. DRUM
FE= FIRE EXTINGUISHER



SCALE: 1" = 10'

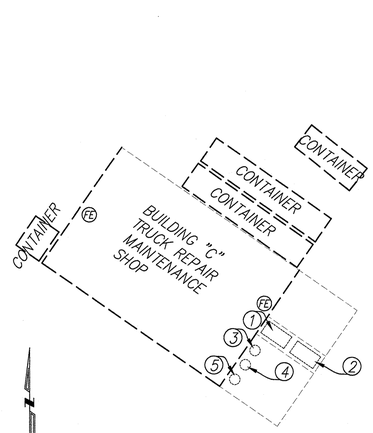
AREA B

EXHIBIT "C"

BUILDING C:
TRUCK REPAIR
MAINTENANCE SHOP

CONTAINERS:
SPARE PARTS
MECHANIC'S STORAGE

HAZARDOUS MATERIALS RPT. QTY'S
1 WASTE OIL – 700 GAL.
2 WASTE OIL – 700 GAL.
3 USED OIL FILTERS – 55 GAL. DRUM
4 USED OIL FILTERS – 55 GAL. DRUM
5 FLOOR SWEEP – 55 GAL. DRUM
FE= FIRE EXTINGUISHER



SCALE: 1" = 20'

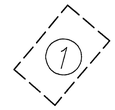
BUILDING C

EXHIBIT "D"

AREA D:
MOBIL FUELING

CONTAINERS:
FUEL TANK

HAZARDOUS MATERIALS RPT. QTY'S
1 FUEL TANK ~ 350 GAL.



SCALE: 1" = 10'

AREA D

		DATE	BY	MARK		APPR.	DATE	
		ENGINEER			REVISIONS		COUNTY	
		DESIGNED BY			DRAWN BY		CHECKED BY	

RECOMMENDED FOR APPROVAL
DATE
CHECKED BY
DATE

SEAL COUNTY

SEAL
REGISTERED PROFESSIONAL ENGINEER
ALLEN W. MARTIN
No. C 38463
EXP. 3-31-09
CIVIL
STATE OF CALIFORNIA

APPROVED BY DATE
R.C.E. NO. EXP. DATE
PREPARED UNDER THE SUPERVISION OF DATE
ALLEN W. MARTIN
R.C.E. NO. 38463 EXP. DATE 3-31-13

Southland Engineering
2200 BUSINESS WAY, Ste. 100
RIVERSIDE, CA. 92501
(951) 788-8488

SCALE
DATE
BENCHMARK

BUSINESS EMERGENCY PLAN
BUILDING LAYOUT
AND SITE PLAN

FOR PYRITE QUARRY MINE
W.O. 10102

SHEET NO. 2 OF 2 SHTS.
FILE NO.

LIST OF IDENTIFYING OUR MINE'S HAZARDOUS CHEMICALS

COMPANY GENERATED NO.	CHEMICAL/COMMON/TRADE NAME	WORK AREA WHERE USED
1-A	ACETYLENE	SERVICE TRUCK/SHOP
2-A	ACID-BATTERY	EQUIPMENT
3-A	ANTI-SIEZE LUBRICANT	SERVICE TRUCK
4-A	ANTI FREEZE	SERVICE TRUCK/SHOP
1-B	BRAKE CLEANER	SERVICE TRUCK/SHOP
2-B	BASALT	PIT/PLANT
3-B	BATTERY CLEANER	SERVICE TRUCK
4-B	BELT DRESSING	SERVICE TRUCK
1-C	CARBURETOR CLEANER	SERVICE TRUCK/SHOP
1-D	DIESEL FUEL #2	EQUIPMENT/PIT/PLANT
1-E	ELECTRODE/WELDING	SERVICE TRUCK
1-F	FIRE EXTINGUISHER ABC	EQUIPMENT/PIT/PLANT OFFICE/SHOP
1-G	GRANITE	PIT/PLANT
2-G	GASOLINE	SERVICE TRUCK/FUEL TRUCK
		/EQUIPMENT
3-G	GREASE	SERVICE TRUCK/EQUIPMENT
1-H	HYDRAULIC OIL	EQUIPMENT/SHOP
2-H	HAND CLEANER	SERVICE TRUCK/SHOP
1-O	OIL/GEAR	SERVICE TRUCK/PIT/SHOP/
		EQUIPMENT
2-O	OIL/MOTOR 15W-40	EQUIPMENT/SERVICE TRUCK
3-O	OXYGEN	SERVICE TRUCK/SHOP
4-O	OIL/USED	EQUIPMENT/
		WASTE OIL STATION
1-P	PAINT/AEROSOL SPRAY	SERVICE TRUCK/SHOP
2-P	POWER STEERING FLUID	SERVICE TRUCK/EQUIPMENT
1-S	SAND & GRAVEL	PIT/PLANT
2-S	STARTER FLUID	SERVICE TRUCK
1-T	THREADLOCKER 50MI	SERVICE TRUCK
2-T	THREADLOCKER 50MI RED	SERVICE TRUCK

HAZARDOUS MATERIALS BUSINESS EMERGENCY PLAN

AND

CHEMICAL INVENTORY FORM

FOR

STONE VALLEY MATERIALS
3940 PYRITE STREET
RIVERSIDE, CA 92509
(951) 681-7830

BY

SOUTHLAND ENGINEERING
2200 BUSINESS WAY, #100
RIVERSIDE, CA 92501
(951) 788-8488

May 23, 2011

UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS MATERIALS

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

X ADD ☐DELETE ☐REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
STONE VALLEY MATERIALS

CHEMICAL LOCATION 201
AREA B- FUEL FARM AREA

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES XX NO

FACILITY ID # 1

MAP# (optional) 203
BEP 1 of 1

GRID# (optional) 204
H4, H5, I5

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
NO. 2 DIESEL

TRADE SECRET ☐ Yes X No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
DIESEL

EHS* ☐ Yes X No 208

CAS# 209
68476-34-6

*If EHS is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE X b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes X No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID X b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 10,000 GALLONS 215

FED HAZARD CATEGORIES (Check all that apply) X a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217
2000 GALLONS

MAXIMUM DAILY AMOUNT 218
8000 GALLONS

ANNUAL WASTE AMOUNT 219
0

STATE WASTE CODE 220
UN1202

UNITS* (Check one item only) X a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 222
365

STORAGE CONTAINER
X a. ABOVE GROUND TANK
☐ b. UNDERGROUND TANK
☐ c. TANK INSIDE BUILDING
☐ d. STEEL DRUM
☐ e. PLASTIC/NONMETALLIC DRUM
☐ f. CAN
☐ g. CARBOY
☐ h. SILO
☐ i. FIBER DRUM
☐ j. BAG
☐ k. BOX
☐ l. CYLINDER
☐ m. GLASS BOTTLE
☐ n. PLASTIC BOTTLE
☐ o. TOTE BIN
☐ p. TANK WAGON
☐ q. RAIL CAR
☐ r. OTHER
223

STORAGE PRESSURE ☐ a. AMBIENT ☐ b. ABOVE AMBIENT X c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☐ a. AMBIENT ☐ b. ABOVE AMBIENT X c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1 95-100 226	DIESEL FUEL NO. 2 227	☐ Yes X No 228	68476-34-6 229
2 0-5 230	RENEWABLE DIESEL 231	☐ Yes X No 232	PROPRIETARY 233
3 <1 234	NAPHTHALENE 235	☐ Yes X No 236	91-20-3 237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

NFPA HAZARD INDENTIFICATION: HEALTH__1_ FLAMMABILITY_2__ REACTIVITY__0_ SPECIAL HAZARD___ 246
HAZARD CLASS OR DIVISION #_____3____ UN#__1202_____
If EPCRA, Please Sign Here

UNIFIED PROGRAM CONSOLIDATED FORM

HAZARDOUS MATERIALS

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

X ADD ☐DELETE ☐REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
STONE VALLEY MATERIALS

CHEMICAL LOCATION 201
BUILDING C- TRUCK REPAIR/MAINTENANCE SHOP

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES XX NO

FACILITY ID # 1

MAP# (optional) 203
BEP 1 of 1

GRID# (optional) 204
I-5

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
GREASE

TRADE SECRET ☐ Yes X No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
LUBRICATING GREASE

EHS* ☐ Yes X No 208

CAS# 209
9002-84-0

*If EHS is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE X b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes X No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID X b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 500 GALLON 215

FED HAZARD CATEGORIES (Check all that apply) X a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217
100 GALLONS

MAXIMUM DAILY AMOUNT 218
300 GALLONS

ANNUAL WASTE AMOUNT 219
0

STATE WASTE CODE 220

UNITS* (Check one item only) X a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 222
365

STORAGE CONTAINER
☐ a. ABOVE GROUND TANK ☐ e. PLASTIC/NONMETALLIC DRUM ☐ i. FIBER DRUM ☐ m. GLASS BOTTLE ☐ q. RAIL CAR
☐ b. UNDERGROUND TANK ☐ f. CAN ☐ j. BAG ☐ n. PLASTIC BOTTLE X r. OTHER
☐ c. TANK INSIDE BUILDING ☐ g. CARBOY ☐ k. BOX ☐ o. TOTE BIN
☐ d. STEEL DRUM ☐ h. SILO ☐ l. CYLINDER ☐ p. TANK WAGON 223

STORAGE PRESSURE ☐ a. AMBIENT ☐ b. ABOVE AMBIENT X c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☐ a. AMBIENT ☐ b. ABOVE AMBIENT X c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1 80-96 226	POLYTETRAFLUOROETHYLENE 227	☐ Yes X No 228	9002-84-0 229
2 230	Product formulation is proprietary 231	☐ Yes ☐ No 232	233
3 234	Oil mist 235	☐ Yes x No 236	237
4 238	No ingredients are known to be hazardous under normal usage 239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

NFPA HAZARD INDENTIFICATION: HEALTH 1 FLAMMABILITY 1 REACTIVITY 0 SPECIAL HAZARD___ 246
HAZARD CLASS OR DIVISION # 312 UN#_____
If EPCRA, Please Sign Here

UNIFIED PROGRAM CONSOLIDATED FORM

HAZARDOUS MATERIALS

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

X ADD ☐DELETE ☐REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
STONE VALLEY MATERIALS

CHEMICAL LOCATION 201
BUILDING C- TRUCK AND MAINTENANCE SHOP

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES XX NO

FACILITY ID # 1

MAP# (optional) 203
BEP 1 of 1

GRID# (optional) 204
I-5

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
ENGINE OIL 1- ENG1

TRADE SECRET X Yes ☐ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
MOTOR OIL

EHS* ☐ Yes X No 208

CAS# 209
MIXTURE

*If EHS is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE X b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes X No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID X b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 700+/- GALLONS 215

FED HAZARD CATEGORIES (Check all that apply) X a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217
300 GALLONS

MAXIMUM DAILY AMOUNT 218
500 GALLONS

ANNUAL WASTE AMOUNT 219
100 GALLONS

STATE WASTE CODE 220

UNITS* (Check one item only) X a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 222
365

STORAGE CONTAINER
☐ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM
☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO
☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER
☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON
☐ q. RAIL CAR ☐ r. OTHER
223

STORAGE PRESSURE ☐ a. AMBIENT X b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☐ a. AMBIENT X b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1 70-95 226	HIGHLY REFINED MINERAL OIL (C15-C50) 227	☐ Yes X No 228	9002-84-0 229
2 230	Product formulation is proprietary 231	☐ Yes ☐ No 232	233
3 234	235	☐ Yes x No 236	237
4 238	No ingredients are known to be hazardous under normal usage 239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

NFPA HAZARD INDENTIFICATION: HEALTH 0 FLAMMABILITY 1 REACTIVITY 0 SPECIAL HAZARD___ 246
HAZARD CLASS OR DIVISION # 312 UN#_____
If EPCRA, Please Sign Here

UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS MATERIALS

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

X ADD ☐DELETE ☐REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
STONE VALLEY MATERIALS

CHEMICAL LOCATION 201
BUILDING C- TRUCK REPAIR/MAINTENANCE SHOP

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES XX NO

FACILITY ID # 1

MAP# (optional) 203
BEP 1 of 1

GRID# (optional) 204
I-5

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
ACETYLENE

TRADE SECRET ☐ Yes X No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
ETHYNE

EHS* ☐ Yes X No 208

CAS# 209
74-86-2

*If EHS is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) X a. PURE ☐ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes X No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☐ b. LIQUID X c. GAS 214

LARGEST CONTAINER 150 CF 215

FED HAZARD CATEGORIES (Check all that apply) X a. FIRE X b. REACTIVE X c. PRESSURE RELEASE X d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
300 CF	300 CF	0	UN1001

UNITS* (Check one item only) ☐ a. GALLONS XX b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 222
365

STORAGE CONTAINER
☐ a. ABOVE GROUND TANK ☐ e. PLASTIC/NONMETALLIC DRUM ☐ i. FIBER DRUM ☐ m. GLASS BOTTLE ☐ q. RAIL CAR
☐ b. UNDERGROUND TANK ☐ f. CAN ☐ j. BAG ☐ n. PLASTIC BOTTLE ☐ r. OTHER
☐ c. TANK INSIDE BUILDING ☐ g. CARBOY ☐ k. BOX ☐ o. TOTE BIN
☐ d. STEEL DRUM ☐ h. SILO X l. CYLINDER ☐ p. TANK WAGON 223

STORAGE PRESSURE ☐ a. AMBIENT ☐ b. ABOVE AMBIENT X c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☐ a. AMBIENT ☐ b. ABOVE AMBIENT X c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1 100 226	ACETYLENE 227	☐ Yes X No 228	74-86-2 229
2 230	231	☐ Yes ☐ No 232	233
3 234	235	☐ Yes ☐ No 236	237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

NFPA HAZARD INDENTIFICATION: HEALTH 1 FLAMMABILITY 4 REACTIVITY 3 SPECIAL HAZARD___ 246
HAZARD CLASS OR DIVISION # 2.1 UN#____1001_____
If EPCRA, Please Sign Here

UNIFIED PROGRAM CONSOLIDATED FORM

HAZARDOUS MATERIALS

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

X ADD ☐ DELETE ☐ REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
STONE VALLEY MATERIALS

CHEMICAL LOCATION 201
BUILDING C-TRUCK REPAIR/MAINTENANCE SHOP

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES XX NO

FACILITY ID # 1

MAP# (optional) 203
BEP 1 of 1

GRID# (optional) 204
I-5

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
WASTE OIL

TRADE SECRET ☐ Yes X No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
WASTE OIL

EHS* ☐ Yes X No 208

CAS# 209

*If EHS is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☐ b. MIXTURE X c. WASTE 211

RADIOACTIVE ☐ Yes X No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID X b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 700+/- GALLONS 215

FED HAZARD CATEGORIES (Check all that apply) X a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217
200 GALLONS

MAXIMUM DAILY AMOUNT 218
500 gallons

ANNUAL WASTE AMOUNT 219
2400 GALLONS

STATE WASTE CODE 220

UNITS* (Check one item only) X a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 222
365

STORAGE CONTAINER
X a. ABOVE GROUND TANK
☐ b. UNDERGROUND TANK
☐ c. TANK INSIDE BUILDING
☐ d. STEEL DRUM
☐ e. PLASTIC/NONMETALLIC DRUM
☐ f. CAN
☐ g. CARBOY
☐ h. SILO
☐ i. FIBER DRUM
☐ j. BAG
☐ k. BOX
☐ l. CYLINDER
☐ m. GLASS BOTTLE
☐ n. PLASTIC BOTTLE
☐ o. TOTE BIN
☐ p. TANK WAGON
☐ q. RAIL CAR
☐ r. OTHER
223

STORAGE PRESSURE ☐ a. AMBIENT X b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☐ a. AMBIENT X b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1 70-95 226	HIGHLY REFINED MINERAL OIL (C15-C50) 227	☐ Yes X No 228	9002-84-0 229
2 230	231	☐ Yes ☐ No 232	233
3 234	235	☐ Yes x No 236	237
4 238	No ingredients are known to be hazardous under normal usage 239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

NFPA HAZARD INDENTIFICATION: HEALTH 0 FLAMMABILITY 1 REACTIVITY 0 SPECIAL HAZARD___ 246
HAZARD CLASS OR DIVISION # 312 UN#_____
If EPCRA, Please Sign Here

UNIFIED PROGRAM CONSOLIDATED FORM

HAZARDOUS MATERIALS

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

X ADD ☐ DELETE ☐ REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
STONE VALLEY MATERIALS

CHEMICAL LOCATION 201
BUILDING C- TRUCK AND MAINTENANCE SHOP

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES XX NO

FACILITY ID # 1

MAP# (optional) 203
BEP 1 of 1

GRID# (optional) 204
I-5

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
HYDRAULIC OIL

TRADE SECRET X Yes ☐ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
MOTOR OIL

EHS* ☐ Yes X No 208

CAS# 209
MIXTURE

*If EHS is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE X b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes X No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID X b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 300+/- GALLONS 215

FED HAZARD CATEGORIES (Check all that apply) X a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
200 GALLONS	300 GALLONS	20 GALLONS	

UNITS* (Check one item only) X a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 222
365

STORAGE CONTAINER
☐ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM
☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO
☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER
☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON
☐ q. RAIL CAR ☐ r. OTHER
223

STORAGE PRESSURE ☐ a. AMBIENT X b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☐ a. AMBIENT X b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1 70-95 226	HIGHLY REFINED MINERAL OIL (C15-C50) 227	☐ Yes X No 228	9002-84-0 229
2 230	Product formulation is proprietary 231	☐ Yes ☐ No 232	233
3 234	235	☐ Yes x No 236	237
4 238	No ingredients are known to be hazardous under normal usage 239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

NFPA HAZARD INDENTIFICATION: HEALTH 0 FLAMMABILITY 1 REACTIVITY 0 SPECIAL HAZARD___ 246
HAZARD CLASS OR DIVISION # 312 UN#_____
If EPCRA, Please Sign Here

UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS MATERIALS

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

X ADD ☐ DELETE ☐ REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
STONE VALLEY MATERIALS

CHEMICAL LOCATION 201
BUILDING C- TRUCK REPAIR/MAINTENANCE SHOP

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES XX NO

FACILITY ID # 1

MAP# (optional) 203
BEP 1 of 1

GRID# (optional) 204
I-5

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
ANTIFREEZE

TRADE SECRET ☐ Yes X No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
ANTIFREEZE/COOLANT

EHS* ☐ Yes X No 208

CAS# 209

*If EHS is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE X b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes X No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID X b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 300 GALLON 215

FED HAZARD CATEGORIES (Check all that apply) ☐ a. FIRE ☐ b. REACTIVE X c. PRESSURE RELEASE X d. ACUTE HEALTH X e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
300 GALLONS	300 GALLONS	0	UN3082

UNITS* (Check one item only) X a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 222
365

STORAGE CONTAINER
☐ a. ABOVE GROUND TANK
☐ b. UNDERGROUND TANK
☐ c. TANK INSIDE BUILDING
☐ d. STEEL DRUM
X e. PLASTIC/NONMETALLIC DRUM
☐ f. CAN
☐ g. CARBOY
☐ h. SILO
☐ i. FIBER DRUM
☐ j. BAG
☐ k. BOX
☐ l. CYLINDER
☐ m. GLASS BOTTLE
☐ n. PLASTIC BOTTLE
☐ o. TOTE BIN
☐ p. TANK WAGON
☐ q. RAIL CAR
☐ r. OTHER
223

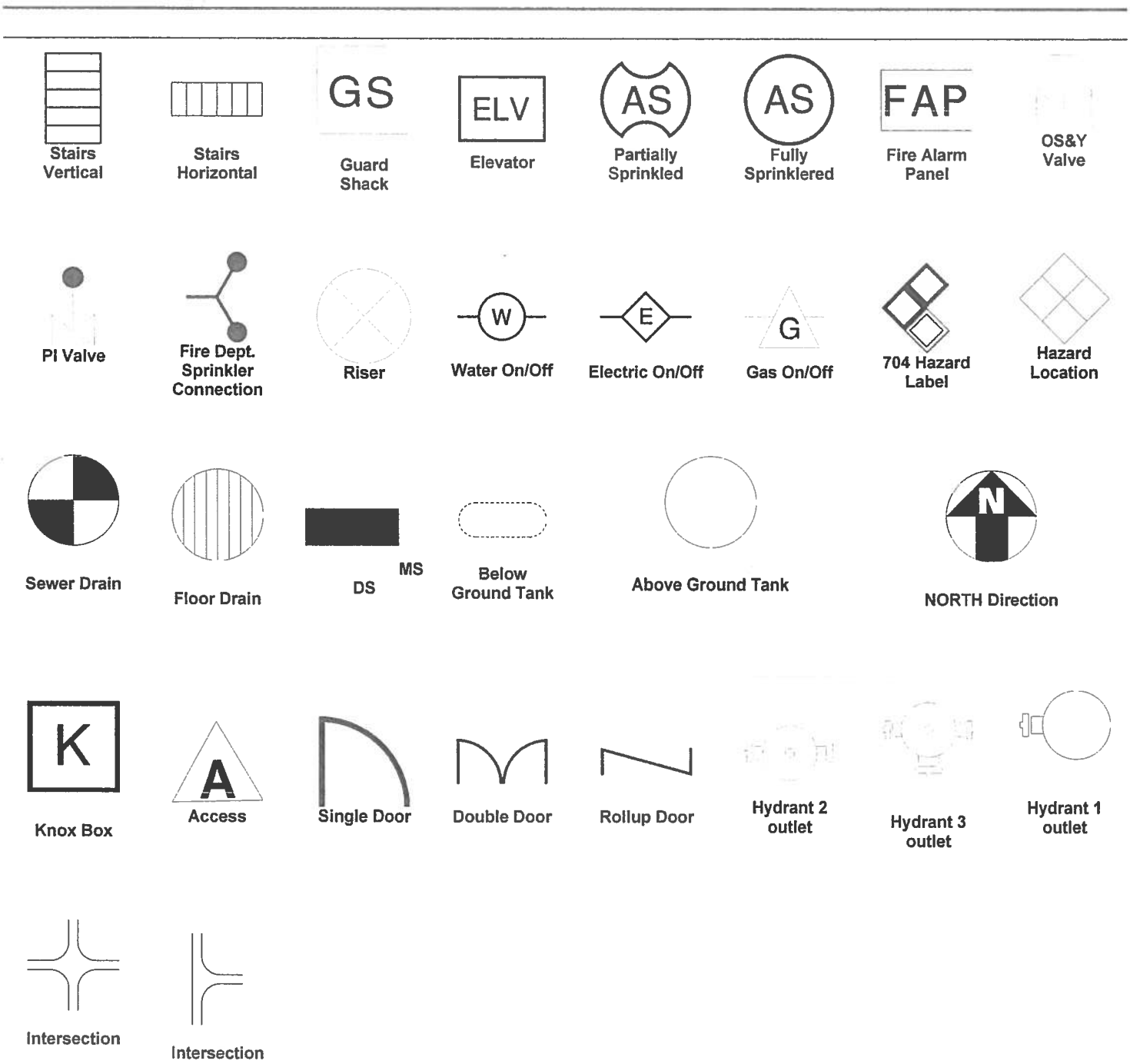
STORAGE PRESSURE ☐ a. AMBIENT X b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☐ a. AMBIENT X b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1 80-96 226	ETHYLENE GLYCOL 227	☐ Yes X No 228	107-21-1 229
2 0-8 230	DIETHYLENE GLYCOL 231	☐ Yes X No 232	111-46-6 233
3 >1 234	WATER 235	☐ Yes X No 236	7732-18-5 237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

NFPA HAZARD INDENTIFICATION: HEALTH 2 FLAMMABILITY 1 REACTIVITY 0 SPECIAL HAZARD___ 246
HAZARD CLASS OR DIVISION # 9 UN#____3082_____
If EPCRA, Please Sign Here


Stairs Vertical
Stairs Horizontal
GS
Guard Shack
ELV
Elevator
AS
Partially Sprinkled
AS
Fully Sprinklered
FAP
Fire Alarm Panel
OS&Y Valve
PI Valve
Fire Dept. Sprinkler Connection
Riser
W
Water On/Off
E
Electric On/Off
G
Gas On/Off
704 Hazard Label
Hazard Location
Sewer Drain
Floor Drain
DS
MS
Below Ground Tank
Above Ground Tank
N
NORTH Direction
K
Knox Box
A
Access
Single Door
Double Door
Rollup Door
Hydrant 2 outlet
Hydrant 3 outlet
Hydrant 1 outlet
Intersection
Intersection

Revised (6/06)

POST FOR EMPLOYEES

HAZARDOUS MATERIALS BUSINESS EMERGENCY PLAN: EMERGENCY NOTIFICATION

During an emergency involving a release or a threatened release of a hazardous material you must notify appropriate agencies. Information you should be prepared to supply includes:

1. Name and telephone number of the reporting party;
2. Name and address of business;
3. Time and Type of release (e.g., damaged containers, malfunctioning equipment, etc.);
4. Name and quantity of material(s) involved.
5. Extent and number of injuries;
6. Actions taken or being taken to mitigate or reduce emergency;
7. Potential hazards of human health or the environment surrounding the business.

AGENCY NOTIFICATION:

Fire Department 911
Ambulance/paramedic 911
Police/Sheriff.....911

Hospital Riverside Community Hospital Phone # (909) 788-3000

Primary Facility Emergency Contact Person
Name Stephen Vander Hart Phone # (909) 544-9395

Hazardous Materials Management Division ..... (909) 358-5055
CDF/Banning Fire Service ..... (909) 922-3210
City of Corona Fire Department ..... (909) 736-2220
City of Riverside Fire Department ..... (909) 826-5321

California Office of Emergency Services .... (800) 852-7550
National Response Center ..... (800) 424-8802
Poison Control Center ..... (800) 876-4766
Hazardous Materials Cleanup Contractor ..... (909) 350-3252

Name of Contractor (if applicable): Western Refining Wholesale

Hazard Communication Program

Mine Name PYRITE QUARRY **ID #** 04-04680

Program Implementation

General Overview

This program applies to all employees, contractors and their employees while at our mine site, and any other person who could be exposed to a hazardous chemical at our mine site. We will provide information about the hazardous chemicals to each of these groups who will work with or may encounter them. Our primary objective is to provide necessary information to keep people safe on our mine site and prevent accidental exposure to these chemicals.

In case of an accidental spill or exposure:

Follow the First Aid and Spill procedures specified on the Material Safety Data Sheet (MSDS).
Call the emergency number on the MSDS, 9-1-1 if necessary, and contact STEPHEN VANDER HART (company official's name) at (b) (6) (phone #).

A current copy of this Program and MSDS will be available at OFFICE and _____. A free first copy of this material will be provided to any employee if requested. A reasonable fee for additional copies may be assessed.

Specific Elements

I. Hazard Determination

Each chemical brought on mine property and each chemical produced on mine property will be evaluated to determine if it is hazardous. If any of the following criteria apply, the chemical will be determined to be hazardous.

- ☐ The chemical has a warning label or a MSDS indicating it as being hazardous.
- ☐ The mixture of chemicals produced at the mine contains at least 1% of a hazardous chemical or 0.1% of a carcinogen.
- ☐ Scientifically valid evidence indicates the chemical to be hazardous.
- ☐ The chemical has been tested and found to be either a physical or health hazard.

- The labeling system on the containers, and
- Appropriate protective measures.

We will require this same information for hazardous chemicals brought on to our mine site by the contractor.

List Identifying Our Mine's Hazardous Chemicals

General Overview

Following is a current list of all hazardous chemicals known to be used, produced, or stored at our mine site including chemical waste. We will use a company generated number and place it at the upper right had corner of the Material Safety Data Sheet and the container Label as a method for cross referencing hazardous chemicals between this list, the MSDS, and the container Label.

The list of hazardous chemicals is compiled for the whole mine; however, the list will indicate where each chemical is used.

Specific Information

Company Generated No.	***Chemical/Common/Trade Name***	***Work Area where Used***
1-A	ACETYLENE	SERVICE TRUCK/SHOP
2-A	ACID-BATTERY	EQUIPMENT
1-B	BRAKE CLEANER	SERVICE TRUCK/SHOP
2-B	BASALT	PIT/PLANT
1-C	CARBURETOR CLEANER	SERVICE TRUCK/SHOP
1-D	DIESEL FUEL #2.	EQUIPMENT/PIT/PLANT
1-E	ELECTRODE/WELDING	SERVICE TRUCK
1-F	FIRE EXTINGUISHER ABC	EQUIPMENT/PIT/PLANT
		SHOP/OFFICE
1-G	GRANITE	PIT/PLANT
2-G	GASOLINE	SERVICE TRUCK/FUEL TRUCK
		EQUIPMENT
3-G	GREASE	SERVICE TRUCK/EQUIPMENT
		GREASE STATION
1-H	HYDRAULIC OIL	EQUIPMENT/SHOP/
1-O	OIL/GEAR	SERVICE TRUCK/PIT/
		SHOP/EQUIPMENT
2-O	OIL/MOTOR 15W-40	EQUIPMENT/SERVICE TRUCK
3-O	OXYGEN	SERVICE TRUCK/SHOP
4-O	OIL/USED	EQUIPMENT/WASTE OIL STATION
1-P	PAINT/AEROSOL SPRAY	SERVICE TRUCK/SHOP
1-S	SAND & GRAVEL	PIT/PLANT
2-S	STARTING FLUID	SERVICE TRUCK

List Identifying Our Mine's Hazardous Chemicals

General Overview

Following is a current list of all hazardous chemicals known to be used, produced, or stored at our mine site including chemical waste. We will use a company generated number and place it at the upper right had corner of the Material Safety Data Sheet and the container Label as a method for cross referencing hazardous chemicals between this list, the MSDS, and the container Label.

The list of hazardous chemicals is compiled for the whole mine; however, the list will indicate where each chemical is used.

Specific Information

Company Generated No.	***Chemical/Common/Trade Name***	***Work Area where Used***
1-W	WD-40 AEROSOL	SERVICE TRUCK/SHOP
3-A	ANTI-SIEZE LUBRICANT	SERVICE TRUCK
3-B	BATTERY CLEANER	SERVICE TRUCK
4-B	BELT DRESSING	SERVICE TRUCK
4-A	ANTIFREEZE	SERVICE TRUCK/ SHOP
		EQUIPMENT
2-H	HAND CLEANER	SERVICE TRUCK
2-P	POWER STEERING FLUID	SERVICE TRUCK /
3-S		EQUIPMENT
1-T	Threadlocker 50 Ml	Service Truck
2-T	Threadlocker 50 Ml Red	Service Truck

Material Safety Data Sheets (MSDSs)

The Material Safety Data Sheets for the Nonmetal Mining Industry were provided by the National Sand, Stone & Gravel Association. Those for Bituminous Coal were provided by Peabody Coal Company. The Mine Safety and Health Administration appreciates their assistance in the production of this publication.

You must have an MSDS for each hazardous chemical which you produce or use. The MSDS must be legible, accurate, and in English. The MSDS must also be available in the work area where your miners can be exposed. As an alternative, you may keep MSDSs in a central location as long as they're available to miners in an emergency.

What does an MSDS do?

A chemical's MSDS provides comprehensive technical and emergency information. It serves as a reference document for exposed miners, operators, health professionals, and firefighters or other public safety workers.

What do you mean by "making an MSDS available"?

"Availability" means that you cannot have obstacles that delay access to HazCom information. In emergencies, the miner must be able to get the needed information.

HazCom allows you to keep MSDSs in a way that you choose, provided that the information is available for employees. You may keep them, for example, in a 3-ring binder, on a computer database, access them through an internet MSDS library, or use a fax-on-demand service. Whether in a paper or electronic medium, you must give miners access to the MSDS. If you keep your MSDSs on a computer, you may have to show miners how they can access the HazCom information on the computer.

Do I have to prepare an MSDS for my product or the raw materials being mined or milled?

You have to prepare an MSDS for your product and the raw material if it's hazardous. Like the label, you must give a copy of the MSDS to your customer if requested. You must also make the MSDS for your products available to your miners.

What categories of information does an MSDS have to include about a hazardous chemical?

The MSDS must contain information for the following categories (or indicate if no information is available):

1. *Identity:* The chemical and common name if it is a single substance and those of the hazardous ingredients if it is a mixture. It must permit cross-referencing between the list of hazardous chemicals, the chemical's label, and the MSDS.
2. *Properties:* The physical and chemical properties, such as boiling point, melting point, vapor pressure, evaporation rate, solubility in water, pH, appearance and odor, flash point and flammability limits.
3. *Physical Hazards:* The potential for fire, explosion, and reactivity.

4. *Health Hazards:* The potential to cause an illness or injury, such as its acute and chronic health effects, the signs and symptoms of exposure, any medical conditions that are aggravated by exposure and the primary routes of entry.
5. *Carcinogenicity:* You must include information about the chemical's carcinogenicity.
6. *Exposure Limits:* You must include either the MSHA or OSHA exposure limit, if there is one, and any other limits recommended by the preparer of the MSDS, such as the ACGIH TLV or NIOSH REL.
7. *Safe Use:* Any precautions for safe use, such as appropriate hygienic practices, protective measures during repair and maintenance of contaminated equipment, and procedures for clean-up of spills and leaks.
8. *Control Measures:* Such as ventilation, process controls, restricted access, protective clothing, respirators, and goggles.
9. *Emergency Information:* Appropriate emergency procedures, such as special instructions for firefighters and first aid procedures; and the name, address, and telephone number of a contact person who can provide additional information about the hazardous chemical and the appropriate emergency procedures.
10. *Date Prepared:* The preparation or revision date of the MSDS.

I burn hazardous waste under an EPA permit. Do I have to prepare MSDSs for that hazardous waste?

No. Some mine operators have EPA permits to burn hazardous waste in their kilns or to dispose of hazardous waste in tailings. If EPA has granted you a permit to burn hazardous waste at your mine, HazCom requires you to provide exposed miners and designated representatives with access to any materials that will help them understand the hazards and know the protective measures. Often, you will receive a shipping manifest with a truck or railroad car of hazardous waste, but no MSDS.

Similarly, if your mine's waste is regulated as a hazardous waste by EPA under RCRA or CERCLA, you do not have to prepare an MSDS for it. You do, however, have to allow your miners access to any information you have that will help them understand its hazards and the necessary protective measures.

Under these types of circumstances, you must give the miner access to any information you have that—

- Indicates the waste's components;
- Describes its physical and health hazards; or
- Specifies the appropriate protective measures.

How long do I have to keep an MSDS?

You must keep a chemical's MSDS for as long as the chemical is at the mine and notify miners 3 months in advance before you dispose of the MSDS. That notice can be a verbal or written notice, an announcement in a company newsletter, part of a safety meeting, or a posting on the mine bulletin board.

What if the manufacturer changes the MSDS?

If the manufacturer changes the contents of the MSDS, then you must only keep the most current version. If the updated information makes a significant safety and health difference, you must tell your miners this new information.

SECTION 1 - PRODUCT IDENTIFICATION

Distributor : TRI-STAR INDUSTRIAL PRODUCTS	**Emergency Phone :** INFOTRAC - HOT LINE (800) 535 - 5053
Address : 12049 Regentview Ave. Downey, Ca. 90241	**Product Type :** Heavy Duty Cleaner
Trade Name : SOLVO	**Chemical Family :** Compounded Product

SECTION 2 - HAZARDOUS INGREDIENTS

CHEMICAL NAME/COMMON NAME :	CAS. NO.	% OPT.	TLV (Source)	OSHA PEL
Sodium Metasilicate (Pentahydrate).	6834-92-0		Not Determined	Not Determined
2-Butoxyethanol *	111-76-2		25ppm (SKIN:TWA)	TWA:120 MG/M3
Sodium Hydroxide	1310-58-3		2mg/m3 (CEILING)	2mg/m3 (CEILING)
Nonylphenol polyethylene glycol ether	127087-87-0		Not Determined	Not Determined

* These materials are subject to the reporting requirment under the Superfund Amendments and Reauthorization act of 1986 (SARA) Title III, section 313 and CFR part 372

** Proposition 65 ; This product contains detectable amounts of chemicals known to the State of California to cause cancer and/or birth defects or other reproductive toxicity.

SECTION 3 - PHYSICAL DATA

Boiling Point :	Specific Gravity (H2O=1) :	pH
Approximately 212'F.	1.054	12.5-13.0
Vapor Pressure (mmHg)	**Vapor Density (Air=1)**	
Not Determined	ND	
Solubility		**Evaporation Rate (ETHER=1)**
Complete in water at all ratios.		Slower

Appearance and odor : Clear, yellow liquid with a slight ethereal, odor.

SECTION 4 - FIRE AND EXPLOSION HAZARD DATA

Flash Point : Above 93 C (199.4 F) Flammable Limits : Upper--- NDA

Extinguishing Media : Use water spray or carbon dioxide, dry chemicals. Lower--- NDA

Special Firefighting Procedures : Wear self- contained breathing apparatus with full face-piece operated in the positive pressure mode when fighting fires.

Unusual Fire and Explosion Hazards : None Known

SECTION 5 - REACTIVITY DATA

Stability : STABLE -- ■ UNSTABLE -- □

Hazardous polymerization : WILL OCCUR - □ WILL NOT OCCUR - ■

Incapatability : Strong acids and oxidizing agents.

Decomposition Products : Burning may produce oxides of carbon.

Conditions to Avoid : Keep away from strong acids and oxidizing agents.

SECTION 6 - HEALTH HAZARD DATA

SYMPTOMS OF ACUTE HEALTH HAZARDS

ROUTES OF EXPOSURE EYES ■ SKIN ■ ORAL □ INHALATION □

EYES : May cause permanent damage including blindness.

SKIN : Prolonged or repeated direct skin contact can cause irritation, redding, drying and edema.

INGESTION : May cause burns to mouth, throat, and stomach

INHALATION : Generated mists may be irritating to the respiratory tract.

CHRONIC HEALTH HAZARDS : Existing dermatitis may be aggravated by overexposure.

SECTION 7 - EMERGENCY AND FIRST AID PROCEDURES

EYES : Immediately flush eyes with plenty of clear, running cool water for at least 15 minutes while holding eye lids open and apart. Seek medical attention.

SKIN : Wash off affected area with plenty of runnig water for at least 15 minutes. Wash contaminated clothing prior to reuse. If irritation persists seek medical attention.

INGESTION : Do not induce vomiting. If victim is conscious, dilute by giving two glasses of water or milk. Seek immediate medical attention.

INHALATION : If symptoms occur , remove to fresh air. Start artificial respiration if necessary. Oxygen may be administered. Seek a physician.

SECTION 8 - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION : None required under normal use conditions.

VENTILATION REQUIREMENTS : Good local and mechanical exhaust is recommended to keep below the TLV levels.

PROTECTIVE CLOTHING :

Safety glasses/Goggles	■
Gloves, Rubber or Chemical Resistant :	■
Apron :	☐
Other :	☐

Wear protective clothing appropriate to minimize contact with this product in concentrated form. (i.e.; boots, apron)

Provide nearby safety shower & eye washing facilities.

WORK/HYGIENIC PRACTICES : Wash thoroughly after handling.

SECTION 9 - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF RELEASED OR SPILLED : Dike area to prevent spread of the liquid. Pump or transfer spilled uncontaminated product into clean containers for reuse. Absorb contaminated product with an inert material and place the contaminate into an appropriate waste container for disposal.

WASTE DISPOSAL METHODS : Consult local, state and federal regulations before disposing of this material.

SECTION 10 - STORAGE AND HANDLING INFORMATION

PRECAUTIONS TO BE TAKEN FOR HANDLING AND STORAGE : Keep container closed when not in use. Avoid contact with eyes and skin. Store between 40' - 100' F. Keep away from children and pets.

ADDITIONAL INFORMATION

TRANSPORTATION DOT: CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S. (SODIUM HYDROXIDE) 8, UN3266, PGII

Contains no materials known to be on the California Proposition 65 List.

The information herein is given in good faith. No warranty expressed on implied is made. Any use of this data and information must be determined by the user to be in accordance with applicable Federal, State, and Local laws and regulations.

HMIS HAZARD RATING		
HEALTH	2	0-LEAST
FLAMMABILITY	1	1-SLIGHT
REACTIVITY	0	2-MODERATE
SPECIAL	B	3-HIGH
		4-EXTREME

NA = Not Applicable ND = Not Determined NDA = No Data Available

needed to minimize skin contact. Suitable washing,and eye flushing
facilities should be available in the work area. Contaminated clothing
should be removed and laundered before re-use.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR: Yellow liquid with a mild odor.

pH: Not determined
BOILING POINT (F) : 334 F
FREEZING POINT (F) : -8 F
SOLUBILITY IN WATER: 100%
PERCENT VOLATILE: None

SPECIFIC GRAVITY: 1.12
VAPOR PRESSURE: Less than 0.1
VAPOR DENSITY: 2.1
EVAPORATION RATE: Less than 1
VISCOSITY: Not determined

SECTION 10: STABILITY AND REACTIVITY

STABILITY: Stable
CONDITIONS TO AVOID: None known.
INCOMPATIBILITY: Normally unreactive, however, avoid strong bases at
high temperatures, strong acids, strong oxidizing agents, and materials
reactive with hydroxyl compounds.
DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide.
HAZARDOUS POLYMERIZATION: Will not occur
CONDITIONS TO AVOID: None known.

SECTION 11: TOXICOLOGICAL INFORMATION

ACUTE TOXICITY VALUES:
Ethylene Glycol: LD50 Oral Rat: 4700 mg/kg
LD50 Skin Rabbit: 9530 mg/kg

Diethylene Glycol: LD5O Oral Rat: 12,565 mg/kg
LD5O Skin Rabbit: 11,890 mg/kg

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH:
Ethylene glycol has been shown to produce dose-related teratogenic effects in rats and mice when given by gavage or in drinking water at high concentrations or dose~. Also, in a preliminary study to assess the effects of exposure of pregnant rats and mice to aerosols at concentrations 150, 1,000 and 2,500 mg/m3 for 6 hours a day throughout the period of organogenesis, teratogenic effects were produced at the highest concentrations, but only in mice. The conditions of these latter experiments did not allow a conclusion as to whether the developmental toxicity was mediated by inhalation of aerosol, percutaneous absorption of ethylene glycol from contaminated skin, or swallowing of ethylene glycol as a result of grooming the wetted coat.
In a further study, comparing effects from high aerosol concentration by whole-body or nose-only exposure, it was shown that nose-only exposure resulted in maternal toxicity (1,000 and 2,500 mg/m3) and developmental toxicity in with minimal evidence of teratogenicity (2,500 mg/m3) . The

no-effects concentration (based on maternal toxicity) was 500 mg/m3. In a further study in mice, no teratogenic effects could be produced when ethylene glycol was applied to the skin of pregnant mice over the period of organogenesis. The above observations suggest that ethylene glycol is to be regarded as an animal teratogen; there is currently no available information to suggest that ethylene glycol caused birth defects in humans. Cutaneous application of ethylene glycol is ineffective in producing developmental toxicity; exposure to high aerosol concentration is only minimally effective in producing developmental toxicity; the major route for producing developmental toxicity is perorally.

Two chronic feeding studies, using rats and mice, have not produced any evidence that ethylene glycol causes dose-related increases in tumor incidence or a different pattern of tumors compared with untreated controls. The absence of carcinogenic potential for ethylene glycol has been supported by numerous invitro genotoxicity studies showing that it does not produce mutagenic or clastogenic effects.

This products contains less than 0.5% tolytriazole which has demonstrates mutagenic activity in a bacterial test system. A correlation has been established between mutagenic activity and

carcinogenic activity for many chemicals.
Tolytriazole has not been
identified as a carcinogen or probable carcinogen by
NTP, IARC or OSHA.

SECTION 12: ECOLOGICAL INFORMATION

Ethylene Glycol: LC50 Goldfish: 5,000 mg/L/24 hr. at
20 C static
conditions.

Toxicity threshold (cell multiplication inhibition
test)
Bacterial (Pseudomonas putida) : 10,000 mg/l
Protozoa (Entosiphon sulcatum and Uronema parduczi
Chatton-Lwoff): >10,000 mg/l
Algae (Microcystis aeruginosa) : 2,000 mg/l
Green algae (Scenedesmus quandricauda) : >10,000 mg/i

SECTION 13: DISPOSAL INFORMATION

Dispose of product in accordance with all local,
state/provincial and
federal regulations

SECTION 14: TRANSPORT INFORMATION

U.S. DOT HAZARD CLASSIFICATION

PROPER SHIPPING NAME: None
UN NUMBER: None
LABELS REQUIRED: None

DOT MARINE POLLUTANTS: This product does not contains Marine Pollutants
as defined in 49 CFR 171.8.

IMDG CODE SHIPPING CLASSIFICATION

DESCRIPTION: Not Regulated

Note: IF A BULK SHIPMENT IS INVOLVED, THE FOLLOWING INFORMATION APPLIES:

U.S. DOT HAZARD CLASSIFICATION

PROPER SHIPPING NAME: Environmentally hazardous substance, liquid,
N.O.S. (Ethylene glycol)
UN NUMBER: UN3082
LABELS REQUIRED: Class 9, UN3082

SECTION 15: REGULATORY INFORMATION

EPA SARA 311/312 HAZARD CLASSIFICATION: Acute health, chronic
health

EPA SARA 313: This Product Contains the Following Chemicals
Subject to Annual Release Reporting Requirements Under SARA Title
III, Section 313 (40 CFR 372):
Ethylene Glycol 107-21-180-96%

PROTECTION OF STRATOSPHERIC OZONE: This product is not known to
contain or to have been manufactured with ozone depleting

substances as defined in 40 CFR Part 82, Appendix A to Subpart A.

CERCLA SECTION 103: Spills of this product over the RQ (reportable quantity) must be reported to the National Response Center. The RQ for this product, based on the RQ for Ethylene Glycol (96% maximum) of 5,000 lbs, is 5,208 lbs. Many states have more stringent release reporting requirements. Report spills required under federal, state and local regulations.

CALIFORNIA PROPOSITION 65 - This product may contain the following substances known to the State of California to cause Cancer and/or Reproductive Harm: 1,4-Dioxane (trace amount).

EPA TSCA INVENTORY: All of the components of this material are listed on the Toxic Substances Control Act (TSCA) Chemical Substances Inventory.

CANADIAN ENVIRONMENTAL PROTECTION ACT: All of the ingredients are listed on the Canadian Domestic Substances List.

CANADIAN WHMIS CLASSIFICATION: Class D - Division 2 - Subdivision P - (A toxic material causing other chronic effects)

EUROPEAN INVENTORY OF EXISTING COMMERCIAL CHEMICAL SUBSTANCES (EINECS) : All of the ingredients are listed on the EINECS inventory.

AUSTRALIA: All of the ingredients of this product are listed on the
Australian Inventory of Chemical Substances.

SECTION 16: OTHER INFORMATION

NFPA RATING (NFPA 704) - FIRE: 1
HEALTH: 2
REACTIVITY: 0

REVISION SUMMARY: Section 4: Notes to Physican
Section 9: Specific Gravity
Section 16: Contact Name and Address

This MSDS is directed to professional users and bulk handlers of the product.
Consumer products are labeled in accordance with Federal Hazardous Substances
Act regulations.

While Prestone Products Corporation believes that the data contained
herein are factual and the opinions expressed are those of qualified
experts regarding the results of tests conducted, the data are not to
be taken as a warranty or representation for which Prestone Products
Corporation assumes legal responsibility. They are offered for your
consideration, investigation and verification. Any use of these data
and information must be determined by the user to be in accordance
with applicable federal, state and local laws and regulations.

If more information is needed, please contact: Stan Prusakowski
Prestone Products
55 Federal Road
Danbury, CT 06610
(203)830-7865

1-A

Material Safety Data Sheet

Acetylene

Section 1. Chemical product and company identification

Product name	: Acetylene
Supplier	: AIRGAS INC., on behalf of its subsidiaries 259 North Radnor-Chester Road Suite 100 Radnor, PA 19087-5283 1-610-687-5253
Product use	: Synthetic/Analytical chemistry.
Synonym	: Ethyne; Ethine; Narcylen; C2H2; Acetylen; UN 1001; Vinylene
MSDS #	: 001001
Date of Preparation/Revision	: **6/8/2009.**
In case of emergency	: 1-866-734-3438

Section 2. Hazards identification

Physical state	: Gas.
Emergency overview	: WARNING! FLAMMABLE GAS. MAY CAUSE FLASH FIRE. MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. CONTENTS UNDER PRESSURE. Keep away from heat, sparks and flame. Do not puncture or incinerate container. May cause target organ damage, based on animal data. Use only with adequate ventilation. Keep container closed. Contact with rapidly expanding gases can cause frostbite.
Target organs	: May cause damage to the following organs: upper respiratory tract, central nervous system (CNS).
Routes of entry	: Inhalation
Potential acute health effects	
Eyes	: Contact with rapidly expanding gas may cause burns or frostbite.
Skin	: Contact with rapidly expanding gas may cause burns or frostbite.
Inhalation	: Acts as a simple asphyxiant.
Ingestion	: Ingestion is not a normal route of exposure for gases
Potential chronic health effects	: **CARCINOGENIC EFFECTS**: Not available. **MUTAGENIC EFFECTS**: Not available. **TERATOGENIC EFFECTS**: Not available.
Medical conditions aggravated by over-exposure	: Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

See toxicological information (section 11)

Section 3. Composition, Information on Ingredients

Name	CAS number	% Volume	Exposure limits
Acetylene	74-86-2	100	**NIOSH REL (United States, 6/2008).** CEIL: 2662 mg/m³ CEIL: 2500 ppm

Section 4. First aid measures

No action shall be taken involving any personal risk or without suitable training.If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus.It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Eye contact : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.

Skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.

Frostbite : Try to warm up the frozen tissues and seek medical attention.

Inhalation : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Ingestion : As this product is a gas, refer to the inhalation section.

Section 5. Fire-fighting measures

Flammability of the product : Flammable.

Auto-ignition temperature : 304.85°C (580.7°F)

Flash point : Closed cup: -18.15°C (-0.7°F).

Flammable limits : Lower: 2.5% Upper: 82%

Products of combustion : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Fire hazards in the presence of various substances : Extremely flammable in the presence of the following materials or conditions: open flames, sparks and static discharge, heat and oxidizing materials.

Fire-fighting media and instructions : In case of fire, use water spray (fog), foam or dry chemical.

In case of fire, allow gas to burn if flow cannot be shut off immediately. Apply water from a safe distance to cool container and protect surrounding area. If involved in fire, shut off flow immediately if it can be done without risk.

Contains gas under pressure. Flammable gas. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions : Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment (section 8). Shut off gas supply if this can be done safely. Isolate area until gas has dispersed.

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods for cleaning up : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see section 1 for emergency contact information and section 13 for waste disposal.

Section 7. Handling and storage

Handling : Use only with adequate ventilation. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. High pressure gas. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Keep container closed. Keep away from heat, sparks and flame. To avoid fire, eliminate ignition sources. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

Storage : Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame). Segregate from oxidizing materials. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).

Section 8. Exposure controls/personal protection

Engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Personal protection

Eyes : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Skin : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

The applicable standards are (US) 29 CFR 1910.134 and (Canada) Z94.4-93

Hands : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Personal protection in case of a large spill : Self-contained breathing apparatus (SCBA) should be used to avoid inhalation of the product.

Product name

Ethyne	**NIOSH REL (United States, 6/2008).** CEIL: 2662 mg/m³ CEIL: 2500 ppm

Consult local authorities for acceptable exposure limits.

Section 9. Physical and chemical properties

Molecular weight : 26.04 g/mole

Molecular formula : C2-H2

Melting/freezing point : Sublimation temperature: -81.8°C (-115.2°F)

Critical temperature : 35.3°C (95.5°F)

Vapor pressure : 635 (psig)

Vapor density : 0.9 (Air = 1)

Specific Volume (ft ^{3}/lb) : 14.7058

Gas Density (lb/ft ^{3}) : 0.0691

Section 10. Stability and reactivity

Stability and reactivity : The product may undergo hazardous decomposition, condensation or polymerization, react violently with water to emit toxic gases or become self-reactive under conditions of shock or increase in temperature or pressure.

Incompatibility with various substances : Extremely reactive or incompatible with oxidizing agents

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Toxicity data

Chronic effects on humans : May cause damage to the following organs: upper respiratory tract, central nervous system (CNS).

Other toxic effects on humans : No specific information is available in our database regarding the other toxic effects of this material to humans.

Specific effects

Carcinogenic effects : No known significant effects or critical hazards.

Mutagenic effects : No known significant effects or critical hazards.

Reproduction toxicity : No known significant effects or critical hazards.

Section 12. Ecological information

Aquatic ecotoxicity

Not available.

Products of degradation : Products of degradation: carbon oxides (CO, CO_2) and water.

Environmental fate : Not available.

Environmental hazards : No known significant effects or critical hazards.

Toxicity to the environment : Not available.

Section 13. Disposal considerations

Product removed from the cylinder must be disposed of in accordance with appropriate Federal, State, local regulation.Return cylinders with residual product to Airgas, Inc.Do not dispose of locally.

Section 14. Transport information

Regulatory information	UN number	Proper shipping name	Class	Packing group	Label	Additional information
DOT Classification	UN1001	ACETYLENE, DISSOLVED	2.1	Not applicable (gas).		**Limited quantity** Yes. **Packaging instruction** **Passenger aircraft** Quantity limitation: Forbidden. **Cargo aircraft** Quantity limitation: 15 kg

Acetylene						
TDG Classification	UN1001	ACETYLENE, DISSOLVED	2.1	Not applicable (gas).		**Explosive Limit and Limited Quantity Index** 0 **Passenger Carrying Ship Index** 75 **Passenger Carrying Road or Rail Index** Forbidden **Special provisions** 38, 42
Mexico Classification	UN1001	ACETYLENE, DISSOLVED	2.1	Not applicable (gas).		-

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Section 15. Regulatory information

United States

U.S. Federal regulations : **United States inventory (TSCA 8b):** This material is listed or exempted.

SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: Ethyne
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Ethyne: Fire hazard, reactive, Sudden release of pressure, Immediate (acute) health hazard

Clean Water Act (CWA) 307: No products were found.

Clean Water Act (CWA) 311: No products were found.

Clean Air Act (CAA) 112 accidental release prevention: Ethyne

Clean Air Act (CAA) 112 regulated flammable substances: Ethyne

Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

State regulations : **Connecticut Carcinogen Reporting:** This material is not listed.
Connecticut Hazardous Material Survey: This material is not listed.
Florida substances: This material is not listed.
Illinois Chemical Safety Act: This material is not listed.
Illinois Toxic Substances Disclosure to Employee Act: This material is not listed.
Louisiana Reporting: This material is not listed.
Louisiana Spill: This material is not listed.
Massachusetts Spill: This material is not listed.
Massachusetts Substances: This material is listed.
Michigan Critical Material: This material is not listed.
Minnesota Hazardous Substances: This material is not listed.
New Jersey Hazardous Substances: This material is listed.
New Jersey Spill: This material is not listed.
New Jersey Toxic Catastrophe Prevention Act: This material is not listed.
New York Acutely Hazardous Substances: This material is not listed.
New York Toxic Chemical Release Reporting: This material is not listed.
Pennsylvania RTK Hazardous Substances: This material is listed.

AIR LIQUIDE

Safety Data Sheet

1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY

MSDS Nr	001_AL
Product name	Acetylene (dissolved)
Chemical formula	C2H2
Company identification	see heading and/or footer see paragraph 16 "OTHER INFORMATION"
Emergency phone numbers	see heading and/or footer see paragraph 16 "OTHER INFORMATION"

2 COMPOSITION/INFORMATION ON INGREDIENTS

Substance/Preparation	Substance.
Components/Impurities	Contains no other components or impurities which will influence the classification of the product.
CAS Nr	00074-86-2
EEC Nr (from EINECS)	200-816-9

3 HAZARDS IDENTIFICATION

Hazards identification	Dissolved gas Extremely flammable

4 FIRST AID MEASURES

Inhalation	In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. In low concentrations may cause narcotic effects. Symptoms may include dizziness, headache, nausea and loss of co-ordination. Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.
Ingestion	Ingestion is not considered a potential route of exposure.

5 FIRE FIGHTING MEASURES

Specific hazards	Exposure to fire may cause containers to rupture/explode.
Hazardous combustion products	Incomplete combustion may form carbon monoxide.
Suitable extinguishing media	All known extinguishants can be used.
Specific methods	If possible, stop flow of product. Move away from the container and cool with water from a protected position.

	Continue water spray from protected position until container stays cool. Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire.
Special protective equipment for fire fighters	In confined space use self-contained breathing apparatus.

6 ACCIDENTAL RELEASE MEASURES

Personal precautions	Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Evacuate area. Ensure adequate air ventilation. Eliminate ignition sources.
Environmental precautions	Try to stop release.
Clean up methods	Ventilate area.

7 HANDLING AND STORAGE

Handling and storage	Ensure equipment is adequately earthed. Avoid contact with pure copper, mercury, silver and brass with greater than 70% copper. Suck back of water into the container must be prevented. Purge air from system before introducing gas. Do not allow backfeed into the container. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt. Keep away from ignition sources (including static discharges). Segregate from oxidant gases and other oxidants in store. Refer to supplier's container handling instructions. Keep container below 50°C in a well ventilated place.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protection	Ensure adequate ventilation. Wear suitable hand, body and head protection. Wear goggles with suitable filter lenses when use is cutting/welding. Do not smoke while handling product.

9 PHYSICAL AND CHEMICAL PROPERTIES

Molecular weight	26
Melting point	-80.8 °C

Boiling point	-84(s) °C
Critical temperature	35 °C
Relative density, gas	0.9 (air=1)
Relative density, liquid	Not applicable.
Vapour Pressure 20°C	44 bar
Solubility mg/l water	1185 mg/l
Appearance/Colour	Colourless gas
Odour	Garlic like
	Poor warning properties at low concentrations.
Autoignition temperature	325 °C
Flammability range	2.4-83 vol% in air.

10 STABILITY AND REACTIVITY

Stability and reactivity

Can form explosive mixture with air.

May decompose violently at high temperature and/or pressure or in the presence of a catalyst

Forms explosive acetylides with copper, silver and mercury.

Do not use alloys containing more than 70% copper.

Dissolved in a solvent supported in a porous mass.

May react violently with oxidants.

11 TOXICOLOGICAL INFORMATION

General

No known toxicological effects from this product.

12 ECOLOGICAL INFORMATION

General

No known ecological damage caused by this product.

13 DISPOSAL CONSIDERATIONS

General

Do not discharge into areas where there is a risk of forming an explosive mixture with air.

Waste gas should be flared through a suitable burner with flash back arrestor.

Do not discharge into any place where its accumulation could be dangerous.

Contact supplier if guidance is required.

14 TRANSPORT INFORMATION

Proper shipping name	Acetylene, dissolved
UN Nr	1001
Class/Div	2.1

ADR/RID Classification code	2, 4°F
ADR/RID Hazard Nr	230
Labelling ADR	Label 3: flammable gas
Other transport information	Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers ensure that they are firmly secured and: - cylinder valve is closed and not leaking - valve outlet cap nut or plug (where provided) is correctly fitted - valve protection device (where provided) is correctly fitted - there is adequate ventilation. - compliance with applicable regulations.

15 REGULATORY INFORMATION

Number in Annex I of Dir 67/548	601-015-00-0.
EC Classification	R5|R6|F+;R12
-Symbols	F+: Extremely flammable
-Risk phrases	R5 Heating may cause an explosion. R6 Explosive with or without contact with air. R12 Extremely flammable.
-Safety phrases	S9 Keep container in well ventilated place. S16 Keep away from ignition sources - No smoking. S33 Take precautionary measures against static discharges.

16 OTHER INFORMATION

Ensure all national/local regulations are observed.

Ensure operators understand the flammability hazard.

The hazard of asphyxiation is often overlooked and must be stressed during operator training.

Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.

Details given in this document are believed to be correct at the time of going to press. Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.

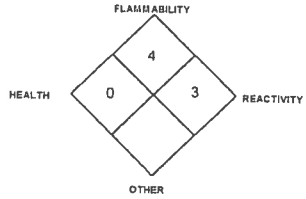
This Safety Data Sheet has been established in accordance with the applicable European Directives and applies to all countries that have translated the Directives in their national laws.

This MSDS is for information purposes only and is subject to change without notice. [Prior to purchase of products, please contact your local Air Liquide office for a complete MSDS (with Manufacturer's name and emergency phone number).]

End of document.
Number of pages :5

GAS DISSOLVED IN ACETONE

NFPA RATING



MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI and Canadian WHMIS Standards

PART I *What is the material and what do I need to know in an emergency?*

1. PRODUCT IDENTIFICATION

CHEMICAL NAME; CLASS:	**ACETYLENE - C_2H_2**
	Document Number: 001001
PRODUCT USE:	For welding, cutting, and general analytical/synthetic chemical uses.
SUPPLIER/MANUFACTURER'S NAME:	AIRGAS INC.
ADDRESS:	259 N. Radnor-Chester Road Suite 100 Radnor, PA 19087-5283
BUSINESS PHONE:	1-610-687-5253
EMERGENCY PHONE:	1-800-949-7937 International: 423-479-0293 (Call Collect)
DATE OF PREPARATION:	May 20, 1996
REVISION DATE:	September 10, 2003

2. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	mole %	EXPOSURE LIMITS IN AIR					
			ACGIH-TLV		OSHA-PEL		NIOSH	OTHER
			TWA ppm	STEL ppm	TWA ppm	STEL ppm	IDLH ppm	ppm
Acetylene	74-86-2	> 99	Acetylene is a simple asphyxiant (SA). Oxygen levels should be maintained above 19.5%.					NIOSH REL: STEL = 2500 (ceiling) Matheson maximum recommended limit for exposure: 5000 ppm
Maximum Impurities		< 1	None of the trace impurities in this mixture contribute significantly to the hazards associated with the product. All hazard information pertinent to this product has been provided in this Material Safety Data Sheet, per the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200) and State equivalent standards.					

NE = Not Established. See Section 16 for Definitions of Terms Used.

NOTE (1): ALL WHMIS required information is included in appropriate sections based on the ANSI Z400.1-1998 format. This gas has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: Acetylene is a colorless, flammable gas, with a garlic-like odor, that is dissolved in acetone. The main health hazard associated with a release of this gas is asphyxiation by displacement of oxygen. Acetylene gas poses an extreme fire hazard when accidentally released. The gas is lighter than air, and may spread long distances. Distant ignition and flashback are possible. Flame or high temperature impinging on a localized area of the cylinder of this product can cause the cylinder to explode without activating the cylinder's relief devices. Acetylene gas may decompose explosively at elevated temperatures and pressures. Acetylene can form very explosive metallic salts (such as with copper, mercury, and silver). Provide adequate fire protection during emergency response situations.

3. HAZARD IDENTIFICATION (Continued)

SYMPTOMS OF OVEREXPOSURE BY ROUTE OF EXPOSURE: The most significant route of overexposure for this gas is by inhalation. The following paragraphs describe symptoms of exposure by route of exposure.

INHALATION: At concentration below the LEL of 2.5% (25,000 ppm) this gas is essentially non-toxic. At higher concentrations, Acetylene has anesthetic effects. Symptoms of overexposure to such high concentrations may include drowsiness, dizziness, and a general feeling of weakness. Intentional inhalation of Acetylene has resulted in depressed consciousness, metabolic acidosis, hyperglycemia, ketonuria, and elevated creatinine levels.

High concentrations of this gas can cause an oxygen-deficient environment. Individuals breathing such an atmosphere may experience symptoms which include headaches, ringing in ears, dizziness, drowsiness, unconsciousness, nausea, vomiting, and depression of all the senses. The skin of a victim of overexposure may have a blue color. Under some circumstances of overexposure, death may occur. The following effects associated with various levels of oxygen are as follows:

CONCENTRATION	SYMPTOMS OF EXPOSURE
12-16% Oxygen:	Breathing and pulse rate increased, muscular coordination slightly disturbed.
10-14% Oxygen:	Emotional upset, abnormal fatigue, disturbed respiration.
6-10% Oxygen:	Nausea and vomiting, collapse or loss of consciousness.
Below 6%:	Convulsive movements, possible respiratory collapse, and death.

When administered with oxygen at concentrations of 10% or greater, Acetylene produces varying degrees of temporary narcosis.

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM

HEALTH HAZARD	(BLUE)	1
FLAMMABILITY HAZARD	(RED)	4
PHYSICAL HAZARD	(YELLOW)	3

PROTECTIVE EQUIPMENT

EYES	RESPIRATORY	HANDS	BODY
	See Section 8		See Section 8

For Routine Industrial Use and Handling Applications

See Section 16 for Definition of Ratings

OTHER POTENTIAL HEALTH EFFECTS: The gas is generally non-irritating to the skin and eyes. Acetylene is dissolved in acetone. Any skin or eye contact with the acetone component of this product may be slightly irritating to contaminated skin or eyes.

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in **Lay Terms**. Overexposure to Acetylene may cause the following health effects:

ACUTE: The most significant hazard associated with Acetylene is inhalation of oxygen-deficient atmospheres. Symptoms of oxygen deficiency include respiratory difficulty, ringing in ears, headaches, shortness of breath, wheezing, headache, dizziness, indigestion, and nausea. At high concentrations, unconsciousness or death may occur.

CHRONIC: Chronic exposure to oxygen-deficient atmospheres (below 18% oxygen in air) may affect the heart and nervous system. Refer to Section 11 (Toxicology Information) for more detailed information.

TARGET ORGANS: ACUTE: Respiratory system, central nervous system. CHRONIC: Skin, heart, central nervous system.

PART II *What should I do if a hazardous situation occurs?*

4. FIRST-AID MEASURES

RESCUERS SHOULD NOT ATTEMPT TO RETRIEVE VICTIMS OF EXPOSURE TO THIS PRODUCT WITHOUT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. At a minimum, Self-Contained Breathing Apparatus and Fire-Retardant equipment should be worn. Adequate fire protection must be provided during rescue situations. NOTE: Acetylene releases which have not spontaneously ignited must be considered extremely dangerous, and should not be approached!

Remove victim(s) to fresh air, as quickly as possible. Only trained personnel should administer supplemental oxygen and/or cardio-pulmonary resuscitation, if necessary. Victim(s) must be taken for medical attention. Rescuers should be taken for medical attention, if necessary. Take copy of label and MSDS to physician or other health professional with victim(s).

SKIN EXPOSURE: If the Acetone carrier contaminates the skin, immediately begin decontamination with running water. Minimum flushing is for 15 minutes. Remove exposed or contaminated clothing, taking care not to contaminate eyes. Victim must seek medical attention if irritation persists, or if there are other adverse health effects.

4. FIRST-AID MEASURES (Continued)

EYE EXPOSURE: If this gas contaminates the eyes, immediately begin decontamination with running water, open victim's eyes while under gently running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes. Victim must seek medical attention.

THERMAL BURNS: In the event personnel are burned as a result of an Acetylene release, trained personnel should provide first aid treatment. Get medical attention immediately.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Acute or chronic respiratory conditions may be aggravated by overexposure to Acetylene, due to the presence of the acetone carrier.

RECOMMENDATIONS TO PHYSICIANS: Administer oxygen, if necessary. Treat symptoms and eliminate exposure.

5. FIRE-FIGHTING MEASURES

FLASH POINT (Closed Cup): 0°C (32°F)

AUTOIGNITION TEMPERATURE: 305°C (581°F)

FLAMMABLE LIMITS (in air by volume, %):

Lower (LEL): 2.5%

Upper (UEL): 82%

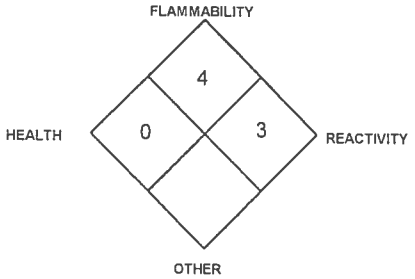
100% with substantial energy source and under certain conditions of pressure, container size and shape.

FIRE EXTINGUISHING MATERIALS: Extinguish fires of this gas by shutting-off the source of the gas. Use water spray to cool fire-exposed structures and equipment.

UNUSUAL FIRE AND EXPLOSION HAZARDS: When involved in a fire, this material ignites to produce toxic gases including carbon monoxide and carbon dioxide. Acetylene gas is extremely flammable and can readily form explosive mixtures with air over a very wide range. An explosion hazard exists in confined spaces when the gas is released. Pure Acetylene can explode under certain conditions of elevated pressure, temperature and container size. Acetylene reacts with active metals to form explosive acetylide compounds.

GAS DISSOLVED IN ACETONE

NFPA RATING



See Section 16 for Definition of Ratings

DANGER! Fires impinging (direct flame) on the outside surface of cylinders or storage vessels can be very dangerous. Direct flame exposure on the cylinder wall can cause an explosion by exothermic decomposition. The resulting fire and explosion can result in severe equipment damage and personnel injury or death over a large area around the vessel. For massive fires in large areas, use unmanned hose holder or monitor nozzles; if this is not possible, withdraw from area and allow fire to burn.

Explosion Sensitivity to Mechanical Impact: Not Sensitive.

Explosion Sensitivity to Static Discharge: Static discharge may cause this gas to ignite explosively.

SPECIAL FIRE-FIGHTING PROCEDURES: The best fire-fighting technique may be simply to let the burning gas escape from the pressurized cylinder, tank car, or pipeline. Stop the leak before extinguishing fire. If the fire is extinguished before the leak is sealed, the still-leaking gas could explosively re-ignite without warning and cause extensive damage, injury, or fatality. In this case, increase ventilation (in enclosed areas) to prevent flammable or explosive mixture formation. Structural fire-fighters must wear Self-Contained Breathing Apparatus and full protective equipment. Because of the potential for explosive rupture of cylinders of Acetylene, evacuation of non-emergency personnel is essential. Because of possible internal decomposition of Acetylene if cylinders are exposed to heat during a fire, exposed cylinders must be cooled with a water spray for an extended period to prevent possible cylinder rupture. If water is not available for cooling or protection of vessel exposures, evacuate the area. Refer to the North American Emergency Response Guidebook (Guide #116).

6. ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. In case of a release, clear the affected area and protect people. Adequate fire protection must be provided. Minimum Personal Protective Equipment should be **Level B: fire-retardant protective clothing, mechanically-resistant gloves and Self-Contained Breathing Apparatus.** Use only non-sparking tools and equipment. Locate and seal the source of the leaking gas. Protect personnel attempting the shut-off with water-spray. Allow the gas to dissipate. Monitor the surrounding area for oxygen and combustible gas levels. Combustible gas concentration must be below 10% of the LEL (LEL = 2.5%) prior to entry of any response personnel. The atmosphere must have at least 19.5 percent oxygen before personnel can be allowed in the area without Self-Contained Breathing Apparatus. Attempt to close the main source valve prior to entering the area. If this does not stop the release (or if it is not possible to reach the valve), allow the gas to release in-place or remove it to a safe area and allow the gas to be released there.

THIS IS AN EXTREMELY FLAMMABLE GAS. Protection of all personnel and the area must be maintained.

PART III *How can I prevent hazardous situation from occurring?*

7. HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting Acetylene IN YOU. Do not eat or drink while handling chemicals. Be aware of any signs of dizziness or fatigue; exposures to fatal concentrations of Acetylene could occur without any significant warning symptoms.

STORAGE AND HANDLING PRACTICES: Cylinders should be stored in dry, well-ventilated areas away from sources of heat. Compressed gases can present significant safety hazards. Store containers away from heavily trafficked areas and emergency exits. Post "No Smoking or Open Flames" signs in storage or use areas. Avoid storage for over six months and keep the smallest amount necessary on-site at any one-time. In the United States, from NFPA 51, cylinders of Acetylene stored inside buildings at the locations of use, must be limited to a total capacity of 2500 ft^3 ($70m^3$). In Canada, the limit is for a total capacity of 2160 ft^3 (60 m^3) in non-sprinklered buildings and 6130 ft^3 (170 m^3) in building with sprinkler systems. After these quantities are exceeded, a special room must be built for the storage of Acetylene. Consider installation of leak detection and alarm for storage area. Cylinders should be stored upright and be firmly secured to prevent falling or being knocked over. This will prevent acetone from being released from the cylinder. Cylinders can be stored in the open, but in such cases, should be protected against extremes of weather and from the dampness of the ground to prevent rusting.

Use non-sparking ventilation systems, approved explosion-proof equipment, and appropriate electrical systems. Keep the quantity stored as small as possible. Store away from process and production areas, away from elevators, building and room exits or main aisles leading to exits. Keep storage area clear of materials which can burn. Have appropriate extinguishing equipment in the storage area (e.g., sprinkler system, portable fire extinguishers).

It is important to note that Acetylene, in its free state, under pressure, may decompose violently. The higher the pressure, the smaller the initial force necessary to cause a reaction. Therefore, **never use the free gas outside the cylinder at pressures in excess of 15 psig.** If pressures exceeding this limit are utilized, special explosion and fire safety precautions must be implemented.

SPECIAL PRECAUTIONS FOR HANDLING GAS CYLINDERS: Protect cylinders against physical damage. Store in cool, dry, well-ventilated area, away from sources of heat, ignition and direct sunlight. Do not allow area where cylinders are stored to exceed 52°C (125°F). Isolate from halogens and oxidizers such as oxygen, chlorine, or fluorine. Use a check valve or trap in the discharge line to prevent hazardous backflow. Never tamper with pressure relief devices in valves and cylinders. Electrical equipment should be non-sparking or explosion proof. The following rules are applicable to work situations in which cylinders are being used:

Before Use: Move cylinders with a suitable hand-truck. Do not drag, slide or roll cylinders. Do not drop cylinders or permit them to strike each other. Secure cylinders firmly. Leave the valve protection cap (where provided) in-place until cylinder is ready for use.

During Use: Use designated CGA fittings and other support equipment. Do not use adapters. Do not heat cylinder by any means to increase the discharge rate of the product from the cylinder. Use check valve or trap in discharge line to prevent hazardous backflow into the cylinder. Do not use oils or grease on gas-handling fittings or equipment.

After Use: Close main cylinder valve. Valves should be closed tightly, to prevent evaporation of acetone. Replace valve protection cap. Mark empty cylinders "EMPTY".

NOTE: Use only DOT or ASME code containers designed for acetylene storage. Earth-ground and bond all lines and equipment associated with this product. Close valve after each use and when empty. Cylinders must not be recharged except by or with the consent of owner. For additional information refer to the Compressed Gas Association Pamphlet P-1, *Safe Handling of Compressed Gases in Containers*. Additionally, refer to CGA Bulletin SB-2 "*Oxygen Deficient Atmospheres*" and NFPA Bulletin 58.

For welding and brazing operations, refer to ANSI Z-49.1 "*Safety in Welding and Cutting*" and OSHA safety regulations for welding, cutting, and brazing (29 CFR 1910.252).

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT: Follow practices indicated in Section 6 (Accidental Release Measures). Make certain application equipment is locked and tagged-out safely. Purge gas handling equipment with inert gas (e.g., nitrogen) before attempting repairs.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation to ensure oxygen levels are above 19.5% in the work area. Local exhaust ventilation is preferred, because it prevents Acetylene dispersion into the work place by eliminating it at its source. If appropriate, install automatic monitoring equipment to detect the level of oxygen and the presence of potentially explosive air-gas mixtures.

RESPIRATORY PROTECTION: Maintain oxygen levels above 19.5% in the workplace. If respiratory protection is needed, use only protection authorized in the U.S. Federal OSHA Standard (29 CFR 1910.134), applicable U.S. State regulations, or the Canadian CSA Standard Z94.4-93 and applicable standards of Canadian Provinces. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (1910.134-1998).

8. EXPOSURE CONTROLS - PERSONAL PROTECTION (Continued)

EYE PROTECTION: Splash goggles or safety glasses, for protection from rapidly expanding gases and splashes of the Acetone. If necessary, refer to U.S. OSHA 29 CFR 1910.133, or Canadian Standards.

HAND PROTECTION: Wear mechanically-resistant gloves when handling cylinders of this gas. Wear chemically-resistant gloves when using this gas mixture to avoid exposure to Acetone. Neoprene gloves are recommended. If necessary, refer to U.S. OSHA 29 CFR 1910.138 or appropriate Standards of Canada.

BODY PROTECTION: Use body protection appropriate for task. Fire retardant clothing may be appropriate under some circumstances of use. Cotton clothing is recommended to prevent static build-up and discharge. If a hazard of injury to the feet exists due to falling objects, rolling objects, where objects may pierce the soles of the feet or where employee's feet may be exposed to electrical hazards, use foot protection, as described in U.S. OSHA 29 CFR.

9. PHYSICAL and CHEMICAL PROPERTIES

VAPOR DENSITY (@ 0°C): 1.1716 kg/m^3 (0.073 lb/ft^3)
SPECIFIC GRAVITY (air = 1): 0.906 .....
SOLUBILITY IN WATER @0°C (32°F) 1 atm: 1.7 vol/vol
EVAPORATION RATE (nBuAc = 1): Not applicable.
ODOR THRESHOLD (Detection): 226 ppm .....
COEFFICIENT WATER/OIL DISTRIBUTION: Not applicable.

pH: Not applicable.
FREEZING POINT (@ 10 psig): -84°C (-119°F)
BOILING POINT: -75°C (-103°F)
EXPANSION RATIO: Not applicable.
VAPOR PRESSURE (psig): 635
SPECIFIC VOLUME (ft^3/lb): 14.7

APPEARANCE AND COLOR: Colorless gas with a garlic-like, odor dissolved in acetone.

HOW TO DETECT THIS SUBSTANCE (warning properties): There are no distinct warning properties. In terms of leak detection, fittings and joints can be painted with a soap solution to detect leaks, which will be indicated by a bubble formation.

10. STABILITY and REACTIVITY

STABILITY: Acetylene is stable at standard temperatures and pressures. Gaseous acetylene may decompose violently at elevated temperatures and pressures. Acetylene must not be used at pressures greater than 15 psig. The higher the pressure, the more likely it is for a reaction to occur.

DECOMPOSITION PRODUCTS: Carbon and hydrogen. When ignited in the presence of oxygen, carbon monoxide and carbon dioxide are formed.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Mixture with air containing between 3-82% Acetylene is explosive. Contact with bleaching powder may lead to formation of explosive chloroacetylenes. Finely divided cobalt metal decomposes and polymerizes Acetylene on contact, becoming incandescent. Copper metal forms explosive compounds with Acetylene. If warmed in air or oxygen, or on impact, copper acetylides may explode in subsequent contact with Acetylene. Interaction with halogens can be violent or explosive. Contact of Acetylene with concentrated nitric acid in presence of mercury forms explosive trinitromethane or tetranitromethane if sulfuric acid is subsequently added. Mixture with nitric oxide products will ignite at +30-50°C. Mixtures with oxygen are very explosive even at very low oxygen concentrations (< 2.5%). Molten potassium ignites in Acetylene, then explodes. Silver forms explosive compounds with Acetylene. Interaction with trifluoromethyl hypofluorite, in absence of nitrogen as diluent, is explosive on mixing. In addition, Acetylene is incompatible with mercury, mercuric salts, and silver salts, oxidizing materials, chlorine, fluorine. Zinc, hydrides (e.g. sodium hydride, cesium hydride), ozone, perchloric acid and potassium.

HAZARDOUS POLYMERIZATION: Can occur when heated or under pressure.

CONDITIONS TO AVOID: Contact with incompatible materials and exposure to heat, sparks and other sources of ignition. Cylinders exposed to high temperatures or direct flame can rupture or burst. Liquid nitrogen should not be used as a trap, as it may cause acetylene to condense to its liquid or solid state, both of which are explosive.

PART IV *Is there any other useful information about this material?*

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA: The following information is for Acetylene.

TCLo (Inhalation-Human) 20 pph: Behavioral: headache; Lungs, Thorax, or Respiration: dyspnea
LCLo (Inhalation-Human) 50 pph/5 minutes
LCLo (Inhalation-Mammal-Species Unspecified) 50 pph/5 minutes

Other data pertaining to the effects of Acetylene inhalation on humans are as follows:

Concentration	Symptom
100,000 ppm	Intoxication (drowsiness, dizziness, giddiness).
200,000 ppm	Severe intoxication.
300,000 ppm	Loss of coordination.
350,000 ppm	Unconsciousness after 5 minutes of exposure.

Effects on Short-Term Inhalation: Animals have shown tolerance to 10% Acetylene. In studies with dogs, cats, and rabbits, Acetylene acts as an anesthetic at 20% exposure. Recovery occurs if the oxygen level is maintained. In an oxygen-deficient environment, death may occur after 5-10 minutes. Rodents exposed to 25, 50, and 80 percent Acetylene in oxygen for 1-2 hours daily (93 hours total exposure), evidenced no weight change or cellular damage. Mixtures of 80% Acetylene/20% oxygen caused a rise in blood pressure in an exposed cat.

11. TOXICOLOGICAL INFORMATION (Continued)

SUSPECTED CANCER AGENT: Acetylene is not found on the following lists: FEDERAL OSHA Z LIST, NTP, IARC, CAL/OSHA, and therefore is not considered to be, nor suspected to be a cancer-causing agent by these agencies.

IRRITANCY OF PRODUCT: Acetylene is not irritating; however, contact with the acetone component of Acetylene can be slightly irritating to contaminated skin or eyes.

SENSITIZATION TO THE PRODUCT: Acetylene is not known to cause sensitization in humans.

REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects Acetylene on the human reproductive system.

Mutagenicity: No mutagenicity effects have been described for Acetylene.
Embryotoxcity: No embryotoxic effects have been described for Acetylene.
Teratogenicity: No teratogenicity effects have been described for Acetylene.
Reproductive Toxicity: No reproductive toxicity effects have been described for Acetylene.

A mutagen is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generation lines. An embryotoxin is a chemical which causes damage to a developing embryo (i.e. within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A teratogen is a chemical which causes damage to a developing fetus, but the damage does not propagate across generational lines. A reproductive toxin is any substance which interferes in any way with the reproductive process.

BIOLOGICAL EXPOSURE INDICES (BEIs): Currently, Biological Exposure Indices (BEIs) are not applicable for this gas.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL STABILITY: This gas will be dissipated rapidly in well-ventilated areas. The following environmental data are available for this gas.

ACETYLENE: Water Solubility = 100 vol./100 vol. at 18 EC. Acetylene is not expected to be harmful to aquatic life. Only moderately toxic to fish. Volatility and low solubility suggest it would be rare for water to become critically polluted from accidental releases. Acetylene is biodegraded through various plant and bacterial systems by inactivating atmospheric acetylene through their nitrogen- fixing mechanisms.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: Any adverse effect on animals would be related to oxygen deficient environments and the anesthetic properties of Acetylene at high concentrations of exposure. The following data are available for effects on plant-life:

Sweet pea: declination in seedling: 250 ppm, 3 days
Tomato: Epinasty in petiole: 50 ppm, 2 days.

EFFECT OF CHEMICAL ON AQUATIC LIFE: The following aquatic toxicity data are available for Acetylene.

LC_{50} (river trout): 33 hours, 200 mg/L

13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Product removed from the cylinder must be disposed of in accordance with appropriate U.S. Federal, State, and local regulations or with regulations of Canada and its Provinces. Return cylinders with residual product to Airgas, Inc. Do not dispose of locally.

14. TRANSPORTATION INFORMATION

THIS GAS IS HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME:	Acetylene, dissolved
HAZARD CLASS NUMBER and DESCRIPTION:	2.1 (Flammable Gas)
UN IDENTIFICATION NUMBER:	UN 1001
PACKING GROUP:	Not Applicable
DOT LABEL(S) REQUIRED:	Flammable Gas

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2000): 116

MARINE POLLUTANT: Acetylene is not classified by the DOT as a Marine Pollutant (as defined by 49 CFR 172.101, Appendix B).

TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: Acetylene is considered as Dangerous Goods, per regulations of Transport Canada. The use of the above U.S. DOT information from the U.S. 49 CFR regulations is allowed for shipments that originate in the U.S. For shipments via ground vehicle or rail that originate in Canada, the following information is applicable.

PROPER SHIPPING NAME:	Acetylene, dissolved
HAZARD CLASS NUMBER and DESCRIPTION:	2.1 (Flammable Gas)
UN IDENTIFICATION NUMBER:	UN 1001
PACKING GROUP:	Not Applicable
HAZARD LABEL(S) REQUIRED:	Class 2.1 (Flammable Gas)
SPECIAL PROVISIONS:	38, 42
EXPLOSIVE LIMIT & LIMITED QUANTITY INDEX:	0
ERAP INDEX:	None
PASSENGER CARRYING SHIP INDEX:	75

PASSENGER CARRYING ROAD OR RAIL VEHICLE INDEX: Forbidden

MARINE POLLUTANT: Acetylene is not listed by Transport Canada as a Marine Pollutant.

15. REGULATORY INFORMATION

ADDITIONAL U.S. REGULATIONS:

U.S. SARA REPORTING REQUIREMENTS: Acetylene is not subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act.

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for this material. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lb (4,554 kg) may apply, per 40 CFR 370.20.

U.S. CERCLA REPORTABLE QUANTITY (RQ): Not applicable.

U.S. TSCA INVENTORY STATUS: Acetylene is on the TSCA Inventory.

OTHER U.S. FEDERAL REGULATIONS: Acetylene is subject to the reporting requirements of Section 112(r) of the Clean Air Act, unless used as a fuel. The Threshold Quantity for this gas is 10,000 lb (4554 kg). Depending on specific operations involving the use of Acetylene, the regulations of the Process Safety Management of Highly Hazardous Chemicals may be applicable (29 CFR 1910.119). Under this regulation Acetylene is not listed in Appendix A, however, any process that involves a flammable gas on-site, in one location, in quantities of 10,000 lb (4,554 kg) or greater is covered under this regulation unless it is used as a fuel.

U.S. STATE REGULATORY INFORMATION: Acetylene is covered under specific State regulations, as denoted below:

Alaska - Designated Toxic and Hazardous Substances: Acetylene.
California - Permissible Exposure Limits for Chemical Contaminants: Acetylene.
Florida - Substance List: Acetylene.
Illinois - Toxic Substance List: Acetylene.
Kansas - Section 302/313 List: No.
Massachusetts - Substance List: Acetylene.
Michigan - Critical Materials Register: No.
Minnesota - List of Hazardous Substances: Acetylene.
Missouri - Employer Information/Toxic Substance List: Acetylene.
New Jersey - Right to Know Hazardous Substance List: Acetylene.
North Dakota - List of Hazardous Chemicals, Reportable Quantities: No.
Pennsylvania - Hazardous Substance List: Acetylene.
Rhode Island - Hazardous Substance List: Acetylene.
Texas - Hazardous Substance List: No.
West Virginia - Hazardous Substance List: No.
Wisconsin - Toxic and Hazardous Substances: No.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): Acetylene is not on the California Proposition 65 lists.

CGA LABELING (For Compressed Gas):

DANGER: FLAMMABLE GAS UNDER PRESSURE.
CAN FORM EXPLOSIVE MIXTURES WITH AIR.
FUSIBLE PLUGS ON TOP, BOTTOM, OR VALVE MELT AT 212°F (100°C).
DO NOT DISCHARGE AT PRESSURES ABOVE 15 PSIG (103 kPa)

ODOR: Garlic-like.

Keep away from heat, flames, and sparks.
Store and use width adequate ventilation.
Use equipment rated for cylinder pressure.
Close valve after each use and when empty.
Use in accordance with the Material Safety Data Sheet.
Cylinder contains acetone solvent, which may cause irritation.

NOTE: DO NOT REMOVE THIS PRODUCT LABEL

ADDITIONAL CANADIAN REGULATIONS:

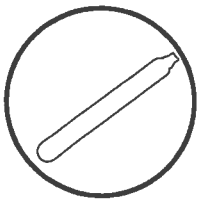
CANADIAN DSL INVENTORY: Acetylene listed on the DSL Inventory.

OTHER CANADIAN REGULATIONS: Not applicable.

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS: Acetylene is not on the CEPA Priorities Substances Lists.

CANADIAN WHMIS SYMBOLS:

Class A: Compressed Gas
Class B1: Flammable Gas



16. OTHER INFORMATION

PREPARED BY:

CHEMICAL SAFETY ASSOCIATES, Inc.
PO Box 3519, La Mesa, CA 91944-3519
619/670-0302

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. AIRGAS, Inc. assumes no responsibility for injury to the vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, AIRGAS, Inc. assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.

DEFINITIONS OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. Some of these which are commonly used include the following

CAS #: This is the Chemical Abstract Service Number that uniquely identifies each constituent.

EXPOSURE LIMITS IN AIR:

CEILING LEVEL: The concentration that shall not be exceeded during any part of the working exposure.

LOQ: Limit of Quantitation.

MAK: Federal Republic of Germany Maximum Concentration Values in the workplace.

NE: Not Established. When no exposure guidelines are established, an entry of NE is made for reference.

NIC: Notice of Intended Change.

NIOSH CEILING: The exposure that shall not be exceeded during any part of the workday. If instantaneous monitoring is not feasible, the ceiling shall be assumed as a 15-minute TWA exposure (unless otherwise specified) that shall not be exceeded at any time during a workday.

NIOSH RELs: NIOSH's Recommended Exposure Limits.

PEL-Permissible Exposure Limit: OSHA's Permissible Exposure Limits. This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (Federal Register: 58: 35338-35351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, "Vacated 1989 PEL," is placed next to the PEL that was vacated by Court Order.

SKIN: Used when a there is a danger of cutaneous absorption.

STEL-Short Term Exposure Limit: Short Term Exposure Limit, usually a 15-minute time-weighted average (TWA) exposure that should not be exceeded at any time during a workday, even if the 8-hr TWA is within the TLV-TWA, PEL-TWA or REL-TWA.

TLV-Threshold Limit Value: An airborne concentration of a substance that represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour.

TWA-Time Weighted Average: Time Weighted Average exposure concentration for a conventional 8-hr (TLV, PEL) or up to a 10-hr (REL) workday and a 40-hr workweek.

IDLH-Immediately Dangerous to Life and Health: This level represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury.

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM HAZARD RATINGS: This rating system was developed by the National Paint and Coating Association and has been adopted by industry to identify the degree of chemical hazards.

HEALTH HAZARD:

0 (Minimal Hazard: No significant health risk, irritation of skin or eyes not anticipated. *Skin Irritation*: Essentially non-irritating. PII or Draize = "0". *Eye Irritation*: Essentially non-irritating, or minimal effects which clear in < 24 hours [e.g. mechanical irritation]. Draize = "0". *Oral Toxicity LD_{50} Rat*: < 5000 mg/kg. *Dermal Toxicity LD_{50}Rat or Rabbit*: < 2000 mg/kg. *Inhalation Toxicity 4-hrs LC_{50} Rat*: < 20 mg/L.); **1** (Slight Hazard: Minor reversible Injury may occur; slightly or mildly irritating. *Skin Irritation*: Slightly or mildly irritating. *Eye Irritation*: Slightly or mildly irritating. *Oral Toxicity LD_{50} Rat*: > 500-5000 mg/kg. *Dermal Toxicity LD_{50}Rat or Rabbit*: > 1000-2000 mg/kg. *Inhalation Toxicity LC_{50}* 4-hrs *Rat*: > 2-20 mg/L); **2** (Moderate Hazard: Temporary or transitory injury may occur. *Skin Irritation*: Moderately irritating; primary irritant; sensitizer. PII or Draize > 0, < 5. *Eye Irritation*: Moderately to severely irritating and/or corrosive; reversible corneal opacity; corneal involvement or irritation clearing in 8-21 days. Draize > 0, ≤ 25. *Oral Toxicity LD_{50} Rat*: > 50-500 mg/kg. *Dermal Toxicity LD_{50}Rat or Rabbit*: > 200-1000 mg/kg. *Inhalation Toxicity LC_{50} 4-hrs Rat*: > 0.5-2 mg/L.);

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM HAZARD RATINGS (continued):

HEALTH HAZARD (continued):

3 (Serious Hazard: Major injury likely unless prompt action is taken and medical treatment is given; high level of toxicity; corrosive. *Skin Irritation*: Severely irritating and/or corrosive; may destroy dermal tissue, cause skin burns, dermal necrosis. PII or Draize > 5-8 with destruction of tissue. *Eye Irritation*: Corrosive, irreversible destruction of ocular tissue; corneal involvement or irritation persisting for more than 21 days. Draize > 80 with effects irreversible in 21 days. *Oral Toxicity LD_{50} Rat*: > 1-50 mg/kg. *Dermal Toxicity LD_{50}Rat or Rabbit*: > 20-200 mg/kg. *Inhalation Toxicity LC_{50} 4-hrs Rat*: > 0.05-0.5 mg/L.); **4** (Severe Hazard: Life-threatening; major or permanent damage may result from single or repeated exposure. *Skin Irritation*: Not appropriate. Do not rate as a "4", based on skin irritation alone. *Eye Irritation*: Not appropriate. Do not rate as a "4", based on eye irritation alone. *Oral Toxicity LD_{50} Rat*: ≤ 1 mg/kg. *Dermal Toxicity LD_{50}Rat or Rabbit*: ≤ 20 mg/kg. *Inhalation Toxicity LC_{50} 4-hrs Rat*: ≤ 0.05 mg/L).

FLAMMABILITY HAZARD:

0 (Minimal Hazard-Materials that will not burn in air when exposure to a temperature of 815.5°C [1500°F] for a period of 5 minutes.); **1** (Slight Hazard-Materials that must be pre-heated before ignition can occur. Material require considerable pre-heating, under all ambient temperature conditions before ignition and combustion can occur, Including: Materials that will burn in air when exposed to a temperature of 815.5°C (1500°F) for a period of 5 minutes or less; Liquids, solids and semisolids having a flash point at or above 93.3°C [200°F] (e.g. OSHA Class IIIB, or; Most ordinary combustible materials [e.g. wood, paper, etc.]; **2** (Moderate Hazard-Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur. Materials in this degree would not, under normal conditions, form hazardous atmospheres in air, but under high ambient temperatures or moderate heating may release vapor in sufficient quantities to produce hazardous atmospheres in air, Including: Liquids having a flash-point at or above 37.8°C [100°F]; Solid materials in the form of course dusts that may burn rapidly but that generally do not form explosive atmospheres; Solid materials in a fibrous or shredded form that may burn rapidly and create flash fire hazards (e.g. cotton, sisal, hemp; Solids and semisolids that readily give off flammable vapors.); **3** (Serious Hazard- Liquids and solids that can be ignited under almost all ambient temperature conditions. Materials in this degree produce hazardous atmospheres with air under almost all ambient temperatures, or, unaffected by ambient temperature, are readily ignited under almost all conditions, including: Liquids having a flash point below 22.8°C [73°F] and having a boiling point at or above 38°C [100°F] and below 37.8°C [100°F] [e.g. OSHA Class IB and IC]; Materials that on account of their physical form or environmental conditions can form explosive mixtures with air and are readily dispersed in air [e.g., dusts of combustible solids, mists or droplets of flammable liquids]; Materials that burn extremely rapidly, usually by reason of self-contained oxygen [e.g. dry nitrocellulose and many organic peroxides]); **4** (Severe Hazard-Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air, and which will burn readily, including: Flammable gases; Flammable cryogenic materials; Any liquid or gaseous material that is liquid while under pressure and has a flash point below 22.8°C [73°F] and a boiling point below 37.8°C [100°F] [e.g. OSHA Class IA; Material that ignite spontaneously when exposed to air at a temperature of 54.4°C [130°F] or below [e.g. pyrophoric]).

DEFINITIONS OF TERMS (Continued)

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM HAZARD RATINGS (continued):

PHYSICAL HAZARD:

0 (*Water Reactivity*: Materials that do not react with water. *Organic Peroxides*: Materials that are normally stable, even under fire conditions and will not react with water. *Explosives*: Substances that are Non-Explosive. Unstable *Compressed Gases*: No Rating. *Pyrophorics*: No Rating. *Oxidizers*: No "0" rating allowed. *Unstable Reactives*: Substances that will not polymerize, decompose, condense or self-react.); **1** (*Water Reactivity*: Materials that change or decompose upon exposure to moisture. *Organic Peroxides*: Materials that are normally stable, but can become unstable at high temperatures and pressures. These materials may react with water, but will not release energy. *Explosives*: Division 1.5 & 1.6 substances that are very insensitive explosives or that do not have a mass explosion hazard. *Compressed Gases*: Pressure below OSHA definition. *Pyrophorics*: No Rating. *Oxidizers*: Packaging Group III; Solids: any material that in either concentration tested, exhibits a mean burning time less than or equal to the mean burning time of a 3:7 potassium bromate/cellulose mixture and the criteria for Packing Group I and II are not met. Liquids: any material that exhibits a mean pressure rise time less than or equal to the pressure rise time of a 1:1 nitric acid (65%)/cellulose mixture and the criteria for Packing Group I and II are not met. *Unstable Reactives*: Substances that may decompose, condense or self-react, but only under conditions of high temperature and/or pressure and have little or no potential to cause significant heat generation or explosive hazard. Substances that readily undergo hazardous polymerization in the absence of inhibitors.); **2** (*Water Reactivity*: Materials that may react violently with water. *Organic Peroxides*: Materials that, in themselves, are normally unstable and will readily undergo violent chemical change, but will not detonate. These materials may also react violently with water. *Explosives*: Division 1.4 – Explosive substances where the explosive effect are largely confined to the package and no projection of fragments of appreciable size or range are expected. An external fire must not cause virtually instantaneous explosion of almost the entire contents of the package. *Compressed Gases*: Pressurized and meet OSHA definition but < 514.7 psi absolute at 21.1°C (70°F) [500 psig]. *Pyrophorics*: No Rating. *Oxidizers*: Packing Group II Solids: any material that, either in concentration tested, exhibits a mean burning time of less than or equal to the mean burning time of a 2:3 potassium bromate/cellulose mixture and the criteria for Packing Group I are not met. Liquids: any material that exhibits a mean pressure rise time less than or equal to the pressure rise of a 1:1 aqueous sodium chlorate solution (40%)/cellulose mixture and the criteria for Packing Group I are not met. *Unstable Reactives*: Substances that may polymerize, decompose, condense, or self-react at ambient temperature and/or pressure, but have a low potential for significant heat generation or explosion. Substances that readily form peroxides upon exposure to air or oxygen at room temperature); **3** (*Water Reactivity*: Materials that may form explosive reactions with water. *Organic Peroxides*: Materials that are capable of detonation or explosive reaction, but require a strong initiating source, or must be heated under confinement before initiation; or materials that react explosively with water. *Explosives*: Division 1.2 – Explosive substances that have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but do not have a mass explosion hazard. *Compressed Gases*: Pressure ≥ 514.7 psi absolute at 21.1°C (70°F) [500 psig]. *Pyrophorics*: No Rating. *Oxidizers*: Packing Group I Solids: any material that, in either concentration tested, exhibits a mean burning time less than the mean burning time of a 3.:2 potassium bromate/cellulose mixture. Liquids: Any material that spontaneously ignites when mixed with cellulose in a 1:1 ratio, or which exhibits a mean pressure rise time less than the pressure rise time of a 1:1 perchloric acid (50%)/cellulose mixture. *Unstable Reactives*: Substances that may polymerize, decompose, condense or self-react at ambient temperature and/or pressure and have a moderate potential to cause significant heat generation or explosion.);

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM HAZARD RATINGS (continued):

PHYSICAL HAZARD (continued):

4 (*Water Reactivity*: Materials that react explosively with water without requiring heat or confinement. *Organic Peroxides*: Materials that are readily capable of detonation or explosive decomposition at normal temperature and pressures. *Explosives*: Division 1.1 & 1.2-explosive substances that have a mass explosion hazard or have a projection hazard. A mass explosion is one that affects almost the entire load instantaneously. *Compressed Gases*: No Rating. *Pyrophorics*: Add to the definition of Flammability "4". *Oxidizers*: No "4" rating. *Unstable Reactives*: Substances that may polymerize, decompose, condense or self-react at ambient temperature and/or pressure and have a high potential to cause significant heat generation or explosion.).

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS:

HEALTH HAZARD: **0** (material that on exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials); **1** (materials that on exposure under fire conditions could cause irritation or minor residual injury); **2** (materials that on intense or continued exposure under fire conditions could cause temporary incapacitation or possible residual injury); **3** (materials that can on short exposure could cause serious temporary or residual injury); 4 (materials that under very short exposure could cause death or major residual injury).

FLAMMABILITY HAZARD AND REACTIVITY HAZARD: Refer to definitions for "Hazardous Materials Identification System".

FLAMMABILITY LIMITS IN AIR: Much of the information related to fire and explosion is derived from the National Fire Protection Association (**NFPA**). Flash Point - Minimum temperature at which a liquid gives off sufficient vapors to form an ignitable mixture with air. Autoignition Temperature: The minimum temperature required to initiate combustion in air with no other source of ignition. LEL - the lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source. UEL - the highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.

TOXICOLOGICAL INFORMATION:

Human and Animal Toxicology: Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. Definitions of some terms used in this section are: **LD_{50}** - Lethal Dose (solids & liquids) which kills 50% of the exposed animals; **LC_{50}** - Lethal Concentration (gases) which kills 50% of the exposed animals; ppm concentration expressed in parts of material per million parts of air or water; **mg/m^3** concentration expressed in weight of substance per volume of air; **mg/kg** quantity of material, by weight, administered to a test subject, based on their body weight in kg. Other measures of toxicity include **TDLo**, the lowest dose to cause a symptom and **TCLo** the lowest concentration to cause a symptom; **TDo**, **LDLo**, and **LDo**, or **TC**, **TCo**, **LCLo**, and **LCo**, the lowest dose (or concentration) to cause lethal or toxic effects. **Cancer Information:** The sources are: **IARC** - the International Agency for Research on Cancer; **NTP** - the National Toxicology Program, **RTECS** - the Registry of Toxic Effects of Chemical Substances, **OSHA** and **CAL/OSHA**. IARC and NTP rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used. **Other Information:** BEI - ACGIH Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV.

DEFINITIONS OF TERMS (Continued)

ECOLOGICAL INFORMATION:

EC is the effect concentration in water. **BCF** = Bioconcentration Factor, which is used to determine if a substance will concentrate in lifeforms which consume contaminated plant or animal matter. TL_m = median threshold limit; Coefficient of Oil/Water Distribution is represented by **log K_{ow}** or **log K_{oc}** and is used to assess a substance's behavior in the environment.

REGULATORY INFORMATION:

U.S. and CANADA:

This section explains the impact of various laws and regulations on the material. **ACGIH:** American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits. **EPA** is the U.S. Environmental Protection Agency. **NIOSH** is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. Occupational Safety and Health Administration (**OSHA**). **WHMIS** is the Canadian Workplace Hazardous Materials Information System. **DOT** and **TC** are the U.S. Department of Transportation and the Transport Canada, respectively.

Superfund Amendments and Reauthorization Act (**SARA**); the Canadian Domestic/Non-Domestic Substances List (**DSL/NDSL**); the U.S. Toxic Substance Control Act (**TSCA**); Marine Pollutant status according to the **DOT**; the Comprehensive Environmental Response, Compensation, and Liability Act (**CERCLA or Superfund**); and various state regulations. This section also includes information on the precautionary warnings which appear on the material's package label. **OSHA** - U.S. Occupational Safety and Health Administration.

2-A

MATERIAL SAFETY DATA SHEET
LEAD ACID BATTERY WET, FILLED WITH ACID
(US, CN, EU Version for International Trade)

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **Lead Acid Battery Wet, Filled With Acid**
OTHER PRODUCT NAMES: Electric Storage Battery, SLI or Industrial Battery, UN2794

MANUFACTURER: East Penn Manufacturing Company, Inc.
DIVISION: Deka Road
ADDRESS: Lyon Station, PA 19536 USA

EMERGENCY TELEPHONE NUMBERS:
US: CHEMTREC 1-800-424-9300
CN: CHEMTREC 1-800-424-9300
Outside US: +1-202-483-7616

NON-EMERGENCY HEALTH/SAFETY INFORMATION: +1-610-682-6361

CHEMICAL FAMILY: This product is a wet lead acid storage battery. May also include gel/absorbed electrolye type lead acid battery types.

PRODUCT USE: Industrial/Commercial electrical storage batteries.

This product is considered a Hazardous Substance, Preparation or Article that is regulated under US-OSHA; CAN-WHMIS; IOSH; ISO; UK-CHIP; or EU Directives (67/548/EEC-Dangerous Substance Labeling, 98/24/EC-Chemical Agents at Work, 99/45/EC-Preparation Labeling, 2001/58/EC-MSDS Content, and 1907/2006/EC-REACH), and an MSDS/SDS is required for this product considering that when used as recommended or intended, or under ordinary conditions, it may present a health and safety exposure or other hazard.

Additional Information
This product may not be compatible with all environments, such as those containing liquid solvents or extreme temperature or pressure. Please request information if considering use under extreme conditions or use beyond current product labeling.

SECTION 2: HAZARDS IDENTIFICATION

GHS Classification:

Health	Environmental	Physical
Acute Toxicity – Not listed (NL) Eye Corrosion – Corrosive* Skin Corrosion – Corrosive* Skin Sensitization – NL Mutagenicity/Carcinogenicity – NL Reproductive/Developmental – NL Target Organ Toxicity (Repeated) – NL	Aquatic Toxicity – NL	NFPA – Flammable gas, hydrogen (during charging) CN - NL EU - NL

*as sulfuric acid

GHS Label: Lead Acid Battery, Wet

Symbols: C (Corrosive)

Hazard Statements	Precautionary Statements
Contact with internal components may cause irritation of severe burns. Irritating to eyes, respiratory system, and skin.	Keep out of reach of children. Keep containers tightly closed. Avoid heat, sparks, and open flame while charging batteries. Avoid contact with internal acid.

MATERIAL SAFETY DATA SHEET
LEAD ACID BATTERY WET, FILLED WITH ACID
(US, CN, EU Version for International Trade)

EMERGENCY OVERVIEW: May form explosive air/gas mixture during charging. Contact with internal components may cause irritation or severe burns. Irritating to eyes, respiratory system, and skin. Prolonged inhalation or ingestion may result in serious damage to health. Pregnant women exposed to internal components may experience reproductive/developmental effects.

POTENTIAL HEALTH EFFECTS:

EYES: Direct contact of internal electrolyte liquid with eyes may cause severe burns or blindness.

SKIN: Direct contact of internal electrolyte liquid with the skin may cause skin irritation or damaging burns.

INGESTION: Swallowing this product may cause severe burns to the esophagus and digestive tract and harmful or fatal lead poisoning. Lead ingestion may cause nausea, vomiting, weight loss, abdominal spasms, fatigue, and pain in the arms, legs and joints.

INHALATION: Respiratory tract irritation and possible long term effects.

ACUTE HEALTH HAZARDS:
Repeated or prolonged contact may cause mild skin irritation.

CHRONIC HEALTH HAZARDS:
Lead poisoning if persons are exposed to internal components of the batteries. Lead absorption may cause nausea, vomiting, weight loss, abdominal spasms, fatigue, pain in the arms, legs and joints. Other effects may include central nervous system damage, kidney dysfunction, and potential reproductive effects. Chronic inhalation of sulfuric acid mist may increase the risk of lung cancer.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:
Respiratory and skin diseases may predispose one to acute and chronic effects of sulfuric acid and/or lead. Children and pregnant women must be protected from lead exposure. Persons with kidney disease may be at increased risk of kidney failure.

Additional Information
No health effects are expected related to normal use of this product as sold.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENTS (Chemical/Common Names):	CAS No.:	% by Wt:	EC No.:
Lead, inorganic	7439-92-1	43-70 (average: 65)	231-100-4
Sulfuric acid	7664-93-9	20-44 (average: 25)	231-639-5
Antimony	7440-36-0	0-4 (average: 1)	231-146-5
Arsenic	7440-38-2	<0.01	231-148-6
Polypropylene	9003-07-0	5-10 (average: 8)	NA

NA – Not applicable/ND – Not determined

Additional Information
These ingredients reflect components of the finished product related to performance of the product as distributed into commerce.

SECTION 4: FIRST AID MEASURES

EYE CONTACT: Flush eyes with large amounts of water for at least 15 minutes. Seek immediate medical attention if eyes have been exposed directly to acid.

SKIN CONTACT: Flush affected area(s) with large amounts of water using deluge emergency shower, if available, shower for at least 15 minutes. Remove contaminated clothing. If symptoms persist, seek medical attention.

INGESTION: If swallowed, give large amounts of water. Do NOT induce vomiting or aspiration into the lungs may occur and can cause permanent injury or death.

INHALATION: If breathing difficulties develop, remove person to fresh air. If symptoms persist, seek medical attention.

SECTION 5: FIRE-FIGHTING MEASURES

SUITABLE/UNSUITABLE EXTINGUISHING MEDIA:
Dry chemical, carbon dioxide, water, foam. Do not use water on live electrical circuits.

SPECIAL FIRE FIGHTING PROCEDURES & PROTECTIVE EQUIPMENT:
Use appropriate media for surrounding fire. Do not use carbon dioxide directly on cells. Avoid breathing vapors. Use full protective equipment (bunker gear) and self-contained breathing apparatus.
UNUSUAL FIRE AND EXPLOSION HAZARDS:
Batteries evolve flammable hydrogen gas during charging and may increase fire risk in poorly ventilated areas near sparks, excessive heat or open flames.
SPECIFIC HAZARDS IN CASE OF FIRE:
Thermal shock may cause battery case to crack open. Containers may explode when heated.

Additional Information
Firefighting water runoff and dilution water may be toxic and corrosive and may cause adverse environmental impacts.

SECTION 6: ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:
Avoid Contact with Skin. Neutralize any spilled electrolyte with neutralizing agents, such as soda ash, sodium bicarbonate, or very dilute sodium hydroxide solutions.
ENVIRONMENTAL PRECATIONS:
Prevent spilled material from entering sewers and waterways.
SPILL CONTAINMENT & CLEANUP METHODS/MATERIALS:
Add neutralizer/absorbent to spill area. Sweep or shovel spilled material and absorbent and place in approved container. Dispose of any non-recyclable materials in accordance with local, state, provincial or federal regulations.

Additional Information
Lead acid batteries and their plastic cases are recyclable. Contact your East Penn representative for recycling information.

SECTION 7: HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING AND STORAGE:
- Keep containers tightly closed when not in use.
- If battery case is broken, avoid contact with internal components.
- Do not handle near heat, sparks, or open flames.
- Protect containers from physical damage to avoid leaks and spills.
- Place cardboard between layers of stacked batteries to avoid damage and short circuits.
- Do not allow conductive material to touch the battery terminals. A dangerous short-circuit may occur and cause battery failure and fire.

OTHER PRECAUTIONS (e.g.; Incompatibilities):
Keep away from combustible materials, organic chemicals, reducing substances, metals, strong oxidizers and water.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS/SYSTEM DESIGN INFORMATION:
Charge in areas with adequate ventilation.
VENTILATION:
General dilution ventilation is acceptable.
RESPIRATORY PROTECTION:
Not required for normal conditions of use. See also special firefighting procedures (Section 5).
EYE PROTECTION:
Wear protective glasses with side shields or goggles.
SKIN PROTECTION:

Wear chemical resistant gloves as a standard procedure to prevent skin contact.
OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Chemically-impervious apron and face shield recommended when adding water or electrolyte to batteries.
Wash Hands after handling.
EXPOSURE GUIDELINES & LIMITS:

OSHA	Permissible Exposure Limit (PEL/TWA)	Lead, inorganic (as Pb)	0.05 mg/m^3
		Sulfuric acid	1 mg/m^3
		Antimony	0.5 mg/m^3
		Arsenic	0.01 mg/m^3
ACGIH	2007 Threshold Limit Value (TLV)	Lead, inorganic (as Pb)	0.05 mg/m^3
		Sulfuric acid	0.2 mg/m^3
		Antimony	0.5 mg/m^3
		Arsenic	0.01 mg/m^3
Quebec	Permissible Exposure Value (PEV)	Lead, inorganic (as Pb)	0.15 mg/m^3
		Sulfuric acid	1 mg/m^3 TWA 3 mg/m^3 STEV
		Antimony	0.5 mg/m^3
		Arsenic	0.1 mg/m^3
Ontario	Occupational Exposure Level (OEL)	Lead (designated substance)	0.10 mg/m^3
		Sulfuric acid	1 mg/m^3 TWAEV 3 mg/m^3 STEV
		Antimony	0.5 mg/m^3
		Arsenic (designated substance)	0.01 mg/m^3
Netherlands	Maximaal Aanvaarde Concentratie (MAC)	Lead, inorganic (as Pb)	0.15 mg/m^3
		Sulfuric acid	1 mg/m^3
Germany	Maximale Arbeitsplatzkonzentrationen (MAK)	Lead, inorganic (as Pb)	0.1 mg/m^3
		Sulfuric acid	1 mg/m^3 TWA 2 mg/m^3 STEL
		Antimony	0.5 mg/m^3
United Kingdom	Occupational Exposure Standard (OES)	Lead	0.15 mg/m^3
		Antimony	0.5 mg/m^3
		Arsenic	0.1 mg/m^3

TWA – 8-Hour Time Weighted Average/ STE – Short Term Exposure / mg/m^3 – milligrams per cubic meter of air/ NE – Not Established

Additional Information
- Batteries are housed in polypropylene cases which are regulated as total dust or respirable dust only when they are ground up during recycling. The OSHA PEL for dust is 15 mg/m^3 as total dust or 5 mg/m^3 as respirable dust.
- May be required to meet Domestic Requirements for a Specific Destination(s).

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Industrial/commercial lead acid battery
ODOR:	Odorless
ODOR THRESHOLD:	NA
PHYSICAL STATE:	Sulfuric Acid: Liquid; Lead: solid
pH:	<1
BOILING POINT:	235-240° F (as sulfuric acid)
MELTING POINT:	NA
FREEZING POINT:	NA
VAPOR PRESSURE:	10 mmHg
VAPOR DENSITY (AIR = 1):	> 1
SPECIFIC GRAVITY (H2O = 1):	1.27–1.33
EVAPORATION RATE (n-BuAc=1):	< 1
SOLUBILITY IN WATER:	100% (as sulfuric acid)
FLASH POINT:	Below room temperature (as hydrogen gas)

AUTO-IGNITION TEMPERATURE:	NA
LOWER EXPLOSIVE LIMIT (LEL):	4% (as hydrogen gas)
UPPER EXPLOSIVE LIMIT (UEL):	74% (as hydrogen gas)
PARTITION COEFFICIENT:	NA
VISCOSITY (poise @ 25° C):	Not Available
DECOMPOSITION TEMPERATURE:	Not Available

FLAMMABILITY/HMIS HAZARD CLASSIFICATIONS (US/CN/EU): As sulfuric acid
HEALTH: 3 FLAMMABILITY: 0 REACTIVITY: 2

SECTION 10: STABILITY AND REACTIVITY

STABILITY:	This product is stable under normal conditions at ambient temperature.
INCOMPATIBILITY (MATERIAL TO AVOID):	Strong bases, combustible organic materials, reducing agents, finely divided metals, strong oxidizers, and water.
HAZARDOUS DECOMPOSITION BY-PRODUCTS:	Thermal decomposition will produce sulfur dioxide, sulfur trioxide, carbon monoxide, sulfuric acid mist, and hydrogen.
HAZARDOUS POLYMERIZATION:	Will not occur
CONDITIONS TO AVOID:	Overcharging, sources of ignition

SECTION 11: TOXICOLOGICAL INFORMATION

ACUTE TOXICITY (Test Results Basis and Comments):
Sulfuric acid: LD_{50}, Rat: 2140 mg/kg
LC_{50}, Guinea pig: 510 mg/m^3
Lead: No data available for elemental lead
SUBCHRONIC/CHRONIC TOXICITY (Test Results and Comments):
Repeated exposure to lead and lead compounds in the workplace may result in nervous system toxicity. Some toxicologists report that abnormal conduction velocities in person with blood lead levels of 50 µg/100 ml or higher. Heavy lead exposure may result in central nervous system damage, encephalopathy and damage to the blood-forming (hematopoietic) tissues.

Additional Information
- Very little chronic toxicity data available for elemental lead.
- Lead is listed by IARC as a 2B carcinogen: possible carcinogen in humans. Arsenic is listed by IARC, ACGIH, and NTP as a carcinogen, based on studies with high doses overlong periods of time. The other ingredients in this product, present at equal to or greater than 0.1% of the product, are not listed by OSHA, NTP, or IARC as suspect carcinogens.
- The 19th Amendment to EC Directive 67/548/EEC classified lead compounds, but not lead in metal form, as possibly toxic to reproduction. Risk phrase 61: May cause harm to the unborn child, applies to lead compounds, especially soluble forms.

SECTION 12: ECOLOGICAL INFORMATION

PERSISTENCE & DEGRADABILITY:
Lead is very persistent in soils and sediments. No data available on biodegradation.
BIO-ACCUMULATIVE POTENTIAL (Including Mobility):
Mobility of metallic lead between ecological compartments is low. Bioaccumulation of lead occurs in aquatic and terrestrial animals and plants, but very little bioaccumulation occurs through the food chain. Most studies have included lead compounds, not solid inorganic lead.
AQUATIC TOXICITY (Test Results & Comments):
Sulfuric acid: 24-hour LC_{50}, fresh water fish (*Brachydanio rerio*): 82 mg/l
96-hour LOEC, fresh water fish (*Cyprinus carpio*): 22 mg/l (lowest observable effect concentration)
Lead (metal): No data available

Additional Information
- No known effects on stratospheric ozone depletion.
- Volatile organic compounds: 0% (by Volume)

- Water Endangering Class (WGK): NA

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD:	Follow local, State/Provincial, and Federal/National regulations applicable to as-used, end-of-life characteristics to be determined by end-user.
HAZARDOUS WASTE CLASS/CODE:	US - Not applicable to finished product as manufactured for distribution into commerce. CN – Not applicable to finished product as manufactured for distribution into commerce. EWC – Not applicable to finished product as manufactured for distribution into commerce.

Additional Information

Not Included – **Recycle** or dispose as allowed by local jurisdiction for the end-of-life characteristics as-disposed.

SECTION 14: TRANSPORT INFORMATION

GROUND – US-DOT/CAN-TDG/EU-ADR/APEC-ADR:

Proper Shipping Name	Batteries, Wet, Filled with Acid		
Hazard Class	8	ID Number	UN2794
Packing Group	III	Labels	Corrosive

AIRCRAFT – ICAO-IATA:

Proper Shipping Name	Batteries, Wet, Filled with Acid		
Hazard Class	8	ID Number	UN2794
Packing Group	II	Labels	Corrosive

Reference IATA packing instructions 800

VESSEL – IMO-IMDG:

Proper Shipping Name	Batteries, Wet, Filled with Acid		
Hazard Class	8	ID Number	UN2794
Packing Group	III	Labels	Corrosive

Reference IMDG packing instructions P801

Additional Information

Transport requires proper packaging and paperwork, including the Nature and Quantity of goods, per applicable origin/destination/customs points as-shipped.

SECTION 15: REGULATORY INFORMATION

INVENTORY STATUS:

All components are listed on the TSCA; EINECS/ELINCS; and DSL, unless noted otherwise below.

U.S. FEDERAL REGULATIONS:

TSCA Section 8b – Inventory Status: All chemicals comprising this product are either exempt or listed on the TSCA Inventory.

TSCA Section 12b – Export Notification: If the finished product contains chemicals subject to TSCA Section 12b export notification, they are listed below:

Chemical	CAS #
None	NA

CERCLA (COMPREHENSIVE RESPONSE COMPENSATION, AND LIABILITY ACT)

Chemicals present in the product which could require reporting under the statute:

Chemical	CAS #
Lead	7439-92-1
Sulfuric acid	7664-93-9

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

The finished product contains chemicals subject to the reporting requirements of Section 313 of SARA Title III.

Chemical	CAS #	% wt

Lead	7439-92-1	65
Sulfuric acid	7664-93-9	25

CERCLA SECTION 311/312 HAZARD CATEGORIES: Note that the finished product is exempt from these regulations, but lead and sulfuric acid above the thresholds are reportable on Tier II reports.

Fire Hazard	No
Pressure Hazard	No
Reactivity Hazard	No
Immediate Hazard	Yes (Sulfuric acid is Corrosive)
Delayed Hazard	No

Note: Sulfuric acid is listed as an Extremely Hazardous Substance.

STATE REGULATIONS (US):

California Proposition 65

The following chemicals identified to exist in the finished product as distributed into commerce are known to the State of California to cause cancer, birth defects, or other reproductive harm:

Chemical	CAS #	% Wt
Arsenic (as arsenic oxides)	7440-38-2	<0.1
Strong inorganic acid mists including sulfuric acid	NA	25
Lead	7439-92-1	65

California Consumer Product Volatile Organic Compound Emissions

This Product is not regulated as a Consumer Product for purposes of CARB/OTC VOC Regulations, as-sold for the intended purpose and into the industrial/Commercial supply chain.

INTERNATIONAL REGULATIONS (Non-US):

Canadian Domestic Substance List (DSL)

All ingredients remaining in the finished product as distributed into commerce are included on the Domestic Substances List.

WHMIS Classifications

Class E: Corrosive materials present at greater than 1%

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the Controlled Products Regulations.

NPRI and Ontario Regulation 127/01

This product contains the following chemicals subject to the reporting requirements of Canada NPRI +/or Ont. Reg. 127/01:

Chemical	CAS #	% Wt
Lead	7439-92-1	65
Sulfuric acid	7664-93-9	25

European Inventory of Existing Commercial Chemical Substances (EINECS)

All ingredients remaining in the finished product as distributed into commerce are exempt from, or included on, the European Inventory of Existing Commercial Chemical Substances.

European Communities (EC) Hazard Classification according to directives 67/548/EEC and 1999/45/EC.

R-Phrases	S-Phrases
35, 36, 38	1/2, 26, 30, 45

Additional Information

This product may be subject to Restriction of Hazardous Substances (RoHS) regulations in Europe and China, or may be regulated under additional regulations and laws not identified above, such as for uses other than described or as-designed/as-intended by the manufacturer, or for distribution into specific domestic destinations.

SECTION 16: OTHER INFORMATION

OTHER INFORMATION:

Distribution into Quebec to follow Canadian Controlled Product Regulations (CPR) 24(1) and 24(2).

Distribution into the EU to follow applicable Directives to the Use, Import/Export of the product as-sold.

SOURCES OF INFORMATION:

International Agency for Research on Cancer (1987), *IARC Monographs on the Evaluation of Carcinogenic Risks to Humans: Overall Evaluations of Carcinogenicity: An updating of IARC Monographs Volumes 1-42, Supplement 7, Lyon,* France.

MATERIAL SAFETY DATA SHEET
LEAD ACID BATTERY WET, FILLED WITH ACID
(US, CN, EU Version for International Trade)

Ontario Ministry of Labour Regulation 654/86. Regulations Respecting Exposure to Chemical or Biological Agents.
RTECS – Registry of Toxic Effects of Chemical Substances, National institute for Occupational Safety and Health.

MSDS/SDS PREPARATION INFORMATION:

DATE OF ISSUE:	***6 August 2007***	SUPERCEDES:	***29 January 2007***
Rev. 1 DATE:	***12 March 2009***		
SUPERCEDES:	***6 August 2007***		

DISCLAIMER:
This Material Safety Data Sheet is based upon information and sources available at the time of preparation or revision date. Information in the MSDS was obtained from sources which we believe are reliable, but are beyond our direct supervision or control. We make no Warranty of Merchantability, Fitness for any particular purpose or any other Warranty, Expressed or Implied, with respect to such information and we assume no liability resulting from its use. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. It is the obligation of each user of this product to determine the suitability of this product and comply with the requirements of all applicable laws regarding use and disposal of this product. For additional information concerning East Penn Manufacturing Co., Inc. products or questions concerning the content of this MSDS please contact your East Penn representative.

END

Material Safety Data Sheet

SECTION I - Material Identity
SECTION II - Manufacturer's Information
SECTION III - Physical/Chemical Characteristics
SECTION IV - Fire and Explosion Hazard Data
SECTION V - Reactivity Data
SECTION VI - Health Hazard Data
SECTION VII - Precautions for Safe Handling and Use
SECTION VIII - Control Measures
SECTION IX - Label Data
SECTION X - Transportation Data
SECTION XI - Site Specific/Reporting Information
SECTION XII - Ingredients/Identity Information

SECTION I - Material Identity

Item Name	
Part Number/Trade Name	ANTI-SEIZE LUBRICANT, 80208
National Stock Number	9150P80208
CAGE Code	62377
Part Number Indicator	A
MSDS Number	179382
HAZ Code	B

SECTION II - Manufacturer's Information

Manufacturer Name	PERMATEX IND CORP
Street	30 TOWER LANE AVON PARK SOUTH
City	AVON
State	CT
Country	US
Zip Code	06001
Emergency Phone	203-672-7727
Information Phone	203-672-7727

MSDS Preparer's Information

MSDS Preparer Name	STEPHEN REPETTO
Date MSDS Prepared/Revised	01JAN89
Date of Technical Review	17JAN91
Active Indicator	Y

Alternate Vendors

Vendor #5 CAGE	BPCMF

SECTION III - Physical/Chemical Characteristics

Hazard Storage Compatibility Code	N/K
Appearance/Odor	GREY GREASE; PETROLEUM ODOR
Boiling Point	>500F,>260C
Melting Point	N/K
Vapor Pressure	<5 @ 80F
Vapor Density	N/K
Specific Gravity	1.06
Decomposition Temperature	N/K
Evaporation Rate	N/K
Solubility in Water	NIL
Percent Volatiles by Volume	N/K
Chemical pH	N/A
Corrosion Rate	N/K
Container Pressure Code	4
Temperature Code	8
Product State Code	U

SECTION IV - Fire and Explosion Hazard Data

Flash Point	200
Flash Point Method	TCC
Lower Explosion Limit	N/A
Upper Explosion Limit	N/A
Extinguishing Media	CO*2, FOAM, DRY CHEMICAL
Special Fire Fighting Procedures	WEAR NIOSH/MSHA APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT (FP N)
Unusual Fire/Explosion Hazards	NONE

SECTION V - Reactivity Data

Stability	YES
Stability Conditions to Avoid	NONE SPECIFIED BY MANUFACTURER
Materials to Avoid	NONE
Hazardous Decomposition Products	BY FIRE/THERMAL DECOMP: METAL VAPORS, NON-THERMAL: NONE
Hazardous Polymerization	NO
Polymerization Conditions to Avoid	NOT RELEVANT
LD50 - LD50 Mixture	NONE SPECIFIED BY MANUFACTURER

SECTION VI - Health Hazard Data

Route of Entry: Skin	YES
Route of Entry: Ingestion	YES
Route of Entry: Inhalation	YES
Health Hazards - Acute and Chronic	MAY CAUSE SKIN OR EYE IRRITATION WITH PROLONGED OR REPEATED CONTACT. COPPER HAS BEEN SHOWN TO CAUSE TUMORS IN EXPERIMENTAL ANIMALS ON

	IMPLANTATION BENEATH SKIN & ADVERSE REPRODUCTIVE EFFECTS UPON INGESTION. SILICON DIOXIDE DUST HAS BEEN SHOWN TO CAUSE ADVERSE PULMONARY EFFECTS ON INHALATION. (EFTS OF OVEREXPOS)
Carcinogenity: NTP	NO
Carcinogenity: IARC	NO
Carcinogenity: OSHA	NO
Explanation of Carcinogenity	NOT RELEVANT
Symptoms of Overexposure	HLTH HAZ: GRAPHITE HAS BEEN SHOWN TO CAUSE ADVERSE REPRODUCTIVE EFFECTS IN EXPERIMENTAL ANIMALS WHEN INJECTED BENEATH SKIN
Medical Cond. Aggrevated by Exposure	NONE SPECIFIED BY MANUFACTURER
Emergency/First Aid Procedures	INGEST: DO NOT INDUCE VOMITING. KEEP INDIVIDUAL CALM. OBTAIN MEDICAL ATTENTION. INHAL: (OIL MIST) REMOVE TO FRESH AIR. IF SYMPTOMS PERSIST, OBTAIN MEDICAL ATTENTION. SKIN: FLUSH WITH WATER. EYE: FLUSH AT LEAST 15 MINUTES WITH WATER. OBTAIN MEDICAL ATTENTION

SECTION VII - Precautions for Safe Handling and Use

Steps if Material Released/Spilled	SOAK UP WITH AN INERT ABSORBENT
Neutralizing Agent	NONE SPECIFIED BY MANUFACTURER
Waste Disposal Method	LANDFILL OR INCINERATE FOLLOWING EPA AND LOCAL REGULATIONS. DISPOSAL MUST BE I/A/W FEDERAL, STATE AND LOCAL REGULATIONS (FP N)
Handling and Storage Precautions	SPECIAL PRECAUTIONS. NO
Other Precautions	NONE SPECIFIED BY MANUFACTURER

SECTION VIII - Control Measures

Respiratory Protection	NIOSH/MSHA APPROVED RESPIRATOR APPROPRIATE FOR EXPOSURE OF CONCERN (FP N)
Ventilation	PROVIDE ADEQ LOCAL VENT TO MAINTAIN VAP CONCENTRATION BELOW TLV IF MISTING OF OIL OCCURS OR IF COMPOUND BECOMES DRY
Protective Gloves	RUBBER OR PLASTIC GLOVES
Eye Protection	CHEMICAL WORKERS GOGGLES (FP N)
Other Protective Equipment	NONE SPECIFIED BY MANUFACTURER
Work Hygenic Practices	NONE SPECIFIED BY MANUFACTURER
Supplemental Health/Safety Data	NONE SPECIFIED BY MANUFACTURER
Disposal Code	O

SECTION IX - Label Data

Protect Eye	YES
Protect Skin	YES
Protect Respiratory	YES
Chronic Indicator	UNKNOWN
Contact Code	SLIGHT
Fire Code	UNKNOWN
Health Code	UNKNOWN
React Code	UNKNOWN

SECTION X - Transportation Data

Container Quantity	1
Unit of Measure	LB

SECTION XI - Site Specific/Reporting Information

Volatile Organic Compounds (P/G)	0
Volatile Organic Compounds (G/L)	0

SECTION XII - Ingredients/Identity Information

Ingredient #	01
Ingredient Name	PARAFFIN OILS
CAS Number	8012951
NIOSH Number	1002988MO
Proprietary	NO
Percent	70
OSHA PEL	NOT APPLICABLE
ACGIH TLV	5 MG/M3 (MIST)
Recommended Limit	N/K
Ingredient #	02
Ingredient Name	(CUCPD) COPPER
CAS Number	7440508
NIOSH Number	GL5325000
Proprietary	NO
Percent	15
OSHA PEL	0.1MG/M3 FUME/1 DUST
ACGIH TLV	0.2MG/M3 FUME/1 DUST
Recommended Limit	N/K
Ingredient #	03
Ingredient Name	GRAPHITE, NATURAL
CAS Number	7782425
NIOSH Number	MD9659600
Proprietary	NO
Percent	3
OSHA PEL	15 MPPCF RDUST
ACGIH TLV	2 MG/M3 RDUST; 9293
Recommended Limit	N/K
Ingredient #	04
Ingredient Name	ALUMINUM
CAS Number	7429905
NIOSH Number	BD0330000
Proprietary	NO
Percent	10
OSHA PEL	15MG/M3 DUST/5 FUME
ACGIH TLV	10MG/M3 DUST
Recommended Limit	N/K
Ingredient #	05
Ingredient Name	SILICON DIOXIDE (AMORPHOUS)
CAS Number	67762907
NIOSH Number	1004194SD

Proprietary	NO
Percent	3
OSHA PEL	NOT APPLICABLE
ACGIH TLV	10 MG/M3 (DUST)
Recommended Limit	N/K
Ingredient #	06
Ingredient Name	LITHIUM SOAP
CAS Number	1003
NIOSH Number	1000598LS
Proprietary	NO
Percent	3
OSHA PEL	NOT APPLICABLE
ACGIH TLV	NOT APPLICABLE
Recommended Limit	N/K

4-A

PRESTONE ANTIFREEZE/COOLANT MSDSP149

SECTION 1: IDENTIFICATION

MSDS ID: MSDSP149

PRODUCT NAME:
PRESTONE ANTIFREEZE/COOLANT
Product Number: AF777
Formula Number: YA721, YA718, YA718B

Prestone Products Corporation
39 Old Ridgebury Road
Danbury, CT 06810-5109

INFORMATION PHONE NUMBER: (203) 731-3686

EMERGENCY PHONE NUMBER: CHEMTREC 1-800-424-9300
483-7161 in the District of Columbia

MSDS DATE OF PREPARATION/REVISION 10/18/99

SECTION 2: PRODUCT COMPONENTS

HAZARDOUS COMPONENTS CAS# PERCENT EXPOSURE LIMITS
Ethylene Glycol 107-21-1 80-96 None Established-OSHA PEL
(aerosol) 100 mg/m3 Ceiling ACGIH TLV

Diethylene Glycol 111-46-6 0-8 None Established
MANUFACTURER: OSHA PEL, ACGIH TLV

Non-Hazardous Ingredients >1%
Water 7732-18-5

SECTION 3:

EMERGENCY OVERVIEW HAZARDS IDENTIFICATION

Eye and upper respiratory irritant. May cause nausea, vomiting, headache, drowsiness, blurred vision, convulsions, coma or death if ingested or inhaled. Prolonged or repeated skin contact may cause dermatitis or skin sensitization.

POTENTIAL HEALTH EFFECTS:

INHALATION: May cause irritation of the nose and throat with headache, particularly from mists. High vapor concentrations caused, for example, by heating the material in an enclosed and poorly ventilated workplace, may produce nausea, vomiting, headache, dizziness and irregular eye movements.

SKIN CONTACT: No evidence of adverse effects from available information.

EYE CONTACT: Liquid, vapors or mist may cause discomfort in the eye with persistent conjunctivitis, seen as slight excess redness or conjunctiva. Serious corneal injury is not anticipated.

INGESTION: Following ingestion, a bitter taste may be noted. May cause abdominal discomfort or pain, nausea, vomiting, dizziness, drowsiness, malaise, blurring of vision, irritability, back pain, decrease in urine output, kidney failure, and central nervous system effects, including irregular eye movements, convulsions and coma. Cardiac failure and pulmonary edema may develop. Severe kidney damage

which may be fatal
may follow the swallowing of ethylene glycol. A few reports have been
published describing the development of weakness of the facial muscles,
diminishing hearing, and difficulty with swallowing, during the late
stages of severe poisoning.

CHRONIC EFFECTS: Prolonged or repeated inhalation exposure may produce
signs of central nervous system involvement, particularly dizziness and
jerking eye movements. Prolonged or repeated skin contact may cause
skin sensitization and an associated dermatitis in some individuals.
Ethylene glycol has been found to cause birth defects in laboratory
animals. The significance of this finding to humans has not been
determined. See section 11 for additional information.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: The available toxicological
information and a knowledge of the physical and chemical properties of
the material suggest that overexposure in unlikely to aggravate existing
medical conditions.

CARCINOGEN: None of the components of these products is listed as a
carcinogen or suspected carcinogen by IARC, NTP or OSHA.

SECTION 4: FIRST AID MEASURES

INHALATION: Remove the victim to fresh air. If breathing has stopped
administer artificial respiration. If breathing is difficult, have
medical personnel administer oxygen. Get medical attention.

SKIN CONTACT: Remove contaminated clothing. Immediately wash contacted
area thoroughly with soap and water. If irritation persists, get medical
attention.

EYE CONTACT: Immediately flush eyes with large amounts of water for 15
minutes. Get medical attention if irritation persists.

INGESTION: Seek immediate medical attention. Immediately call local
poison control center or go to an emergency department. Never give
anything by mouth to or induce vomiting in an unconscious or drowsy
person.

NOTES TO PHYSICIAN: The principal toxic effects of ethylene glycol,
when swallowed, are kidney damage and metabolic acidosis. The
combination of metabolic acidosis, an osmol gap and oxalate crystals
the urine is evidence of ethylene glycol poisoning.

Pulmonary edema with hypoxemia has been described in a number of
patients following poisoning with ethylene glycol.

Respiratory support
with mechanical ventilation may be required.

There may be cranial nerve involvement in the late stages of toxicity
from swallowed ethylene glycol. In particular, effects have been
reported involving the seventh, eighth, and ninth cranial nerves,
presenting with bilateral facial paralysis, diminished hearing and
dysphagia.

Ethanol is antidotal and its early administration may block the
formation of nephrotoxic metabolites of ethylene glycol in the liver.
The objective is to rapidly achieve and maintain a blood ethanol level
of approximately 100 mg/dl by giving a loading dose of ethanol followed
by a maintenance dose. Intravenous administration of ethanol is the
preferred route. Ethanol blood levels should be checked frequently.
Hemodialysis may be required.

4-Methylpyrazole (Antizole(R) or Fomepizole), a potent inhibitor of
alcohol dehydrogenase, has been used therapeutically to decrease the
metabolic consequences of ethylene glycol poisoning. Additional
therapeutic modalities which may decrease the adverse consequences of
ethylene glycol metabolism are the administration of both thiamine and
pyridoxine. As there are complicated and serious overdoses, we recommend
you consult with the toxicologists at your poison

control center.
This antidote is now approved by the F.D.A. and in many cases has
replaced ethanol in the treatment of ethylene glycol poisoning.

SECTION 5: FIRE AND EXPLOSION DATA

FLASH POINT: 242 F (117 C) TOC
220 F (104 C) PMCC

AUTOIGNITION TEMPERATURE: Not determined

FLAMMABILITY LIMITS: LEL: 3.2% UEL: 15.3%

EXTINGUISHING MEDIA: For large fires, use alcohol type or all-purpose
foams. For small fires, use water spray, carbon dioxide or dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES: Do not spray pool fires directly.
Cool fire exposed containers with water. Firefighters should wear
positive pressure self-contained breathing apparatus and full protective
clothing for fires in areas where chemicals are used or stored.

UNUSUAL FIRE HAZARDS: A solid stream of water or foam directed into
hot, burning liquid can cause frothing.

HAZARDOUS COMBUSTION PRODUCTS: Burning may produce carbon monoxide and
carbon dioxide.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Wear appropriate protective clothing and equipment (See Section ~)
Collect with absorbent material and place in appropriate, labeled
container for disposal or, if permitted flush spill area with water.

SECTION 7: HANDLING AND STORAGE

DANGER: Harmful or Fatal if Swallowed

Do not drink antifreeze or solution.
Avoid eye and prolonged or repeated skin contact.
Avoid breathing vapors or mists.
Wash exposed skin thoroughly with soap and water after use.
Do not store in opened or unlabeled containers.

Keep container away from open flames and excessive heat.
Do not reuse empty containers unless properly cleaned.

Empty containers retain product residue and may be dangerous. Do not
cut, weld, drill, etc. containers, even empty.

Sudden release of hot organic chemical vapors or mists from process
equipment operating at elevated temperature and pressure, or sudden
ingress of air into vacuum equipment, may result in ignitions without
any obvious ignition sources. Published

"autoignition" or "ignition'
temperatures cannot be treated as safe operating temperatures in
chemical processes without analysis of the actual process conditions.
Use of this product in elevated temperature applications should be
thoroughly evaluated to assure safe operating conditions.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

VENTILATION: Use general ventilation or local exhaust as required to
maintain exposures below the occupational exposure limits.

RESPIRATORY PROTECTION: For operations where the TLV is exceeded a NIOSH
approved respirator with organic vapor cartridges and dust/mist
prefilters or supplied air respirator is recommended. Equipment
selection depends on contaminant type and concentration. Select and use
in accordance with 29 CFR 1910.134 and good industrial hygiene practice.
For firefighting, use self-contained breathing apparatus.

GLOVES: Chemical resistant gloves such as neoprene or PVC where contact
is possible

EYE PROTECTION: Splash-proof goggles.

OTHER PROTECTIVE EQUIPMENT/CLOTHING: Appropriate protective clothing as

AEROSOL SYSTEMS INC -- 565-1314, BRAKE CLEANER TM-1807 -- 6850-00N029443

========== Product Identification ==========

Product ID:565-1314, BRAKE CLEANER TM-1807
MSDS Date:05/07/1986
FSC:6850
NIIN:00N029443
MSDS Number: BMVWS
=== Responsible Party ===
Company Name:AEROSOL SYSTEMS INC
Address:9150 VALLEY VIEW RD
City:MACEDONIA
State:OH
ZIP:44056
Country:US
Info Phone Num:216-467-4195
Emergency Phone Num:216-467-4195
Preparer's Name:LLOYD FLANNER
CAGE:2F853
=== Contractor Identification ===
Company Name:AEROSOL SYSTEMS INC
Address:9150 VALLEY VIEW RD
Box:City:MACEDONIA
State:OH
ZIP:44056-2013
Country:US
Phone:330-467-4195 / 330-467-6641
CAGE:2F853

========== Composition/Information on Ingredients ==========

Ingred Name:1,1,1-TRICHLOROETHANE; (METHYL CHLOROFORM) (SARA III)
CAS:71-55-6
RTECS #:KJ2975000
Fraction by Wt: 47.0%
OSHA PEL:350 PPM/450 PPM STEL
ACGIH TLV:350 PPM/450 PPM STEL
EPA Rpt Qty:1000 LBS
DOT Rpt Qty:1000 LBS
Ozone Depleting Chemical:1

Ingred Name:ETHYLENE, TETRACHLORO- (PERCHLOROETHYLENE) (SARA III)
CAS:127-18-4
RTECS #:KX3850000
Fraction by Wt: 50.0%
OSHA PEL:100 PPM
ACGIH TLV:25PPM/100,A3 STEL;94
EPA Rpt Qty:100 LBS
DOT Rpt Qty:100 LBS

Ingred Name:CARBON DIOXIDE
CAS:124-38-9
RTECS #:FF6400000
Fraction by Wt: 3.0%
OSHA PEL:5000 PPM
ACGIH TLV:5000PPM/30000STEL;93

========== Hazards Identification ==========

LD50 LC50 Mixture:NONE SPECIFIED BY MANUFACTURER.
Routes of Entry: Inhalation:YES Skin:NO Ingestion:YES
Reports of Carcinogenicity:NTP:YES IARC:YES OSHA:NO
Health Hazards Acute and Chronic:(ACUTE) MAY CAUSE DIZZINESS OR NARCOSIS IN HIGH VAPOR CONCENTRATIONS. WILL CAUSE DEFATTING OF SKIN. EFFECTS ARE REVERSIBLE. (CHRONIC) LONG TERM EXPOSURE (YEARS) VAPOR MAY CAUSE LUNG, LIVER OR KIDNEY D AMAGE.
Explanation of Carcinogenicity:TETRACHLOROETHYLENE: GROUP 2 (NTP), GROUP 2B (IARC).
Effects of Overexposure:INHALATION: DIFFICULTY IN BREATHING. SKIN: REDNESS. INGESTION: VOMITING.
Medical Cond Aggravated by Exposure:HEART DISEASE.

First Aid Measures

First Aid:INHALATION: GIVE OXYGEN. INGESTION: DO NOT INDUCE VOMITING. GASTRIC LAVAGE. EYES: WASH WITH WATER FOR AT LEAST 15 MINUTES. SKIN: WASH WITH WATER.

Fire Fighting Measures

Flash Point:NONE
Lower Limits:NONE
Upper Limits:NONE
Extinguishing Media:USE WATER FOG, DRY CHEMICAL OR CARBON DIOXIDE.
Fire Fighting Procedures:WEAR NIOSH/MSHA APPROVED PRESSURE DEMAND SCBA AND FULL PROTECTIVE EQUIPMENT . AEROSOL CANS MAY RUPTURE WHEN HEATED.
Unusual Fire/Explosion Hazard:HEATED CANS MAY BURST. THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE HCL AND PHOSGENE .

Accidental Release Measures

Spill Release Procedures:USE ABSORBENT SWEEPING COMPOUND TO SOAK UP MATERIAL. PUT INTO CONTAINER. DISPOSE AS HAZARDOUS WASTE.
Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

Handling and Storage

Handling and Storage Precautions:KEEP AWAY FROM HEAT, SPARKS, OR OPEN FLAME. STORE AT TEMPERATURES BELOW 120F.
Other Precautions:NONE.

Exposure Controls/Personal Protection

Respiratory Protection:WEAR NIOSH/MSHA APPROVED SELF CONTAINED BREATHING APPARATUS IF ABOVE TLV LIMIT.
Ventilation:LOCAL EXHAUST.
Protective Gloves:IMPERVIOUS GLOVES .
Eye Protection:CHEMICAL WORKERS GOGGLES .
Other Protective Equipment:LONG SLEEVE AND LONG PANTS.
Work Hygienic Practices:DO NOT SMOKE WHILE SPRAYING; WASH HANDS AFTER USE.
Supplemental Safety and Health
NONE SPECIFIED BY MANUFACTURER.

Physical/Chemical Properties

Boiling Pt:B.P. Text:>197F,>92C

Vapor Pres:100 PSIG
Vapor Density:4.0
Spec Gravity:1.3 (H2O=1)
Evaporation Rate & Reference:3.0 (BUTYL ACETATE=1)
Solubility in Water:NONE
Appearance and Odor:CLEAR LIQUID, SOLVENT ODOR.

Stability and Reactivity Data

Stability Indicator/Materials to Avoid:YES
NONE.
Stability Condition to Avoid:HIGH TEMPERATURES.
Hazardous Decomposition Products:IN FIRE PRODUCT MAY DECOMPOSE TO CARBON DIOXIDE AND WATER.

Disposal Considerations

Waste Disposal Methods:DISPOSE AS HAZARDOUS WASTE IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS.

Disclaimer (provided with this information by the compiling agencies): This information is formulated for use by elements of the Department of Defense. The United States of America in no manner whatsoever, expressly or implied, warrants this information to be accurate and disclaims all liability for its use. Any person utilizing this document should seek competent professional advice to verify and assume responsibility for the suitability of this information to their particular situation.

ASHLAND CHEMICAL CO DIV OF ASHLAND OIL INC -- BRAKE FLUID DOT 3 -- 9150-01-102-9455

========== Product Identification ==========

Product ID:BRAKE FLUID DOT 3
MSDS Date:12/06/1990
FSC:9150
NIIN:01-102-9455
MSDS Number: CDQNG
=== Responsible Party ===
Company Name:ASHLAND CHEMICAL CO DIV OF ASHLAND OIL INC
Address:3849 FISHER RD
Box:2219
City:COLUMBUS
State:OH
ZIP:43228
Country:US
Info Phone Num:614-790-3333
Emergency Phone Num:800-274-5263
CAGE:7L600
=== Contractor Identification ===
Company Name:ASHLAND CHEMICAL CO DIV OF ASHLAND OIL INC
Address:3849 FISHER RD
Box:2219
City:COLUMBUS
State:OH
ZIP:43216
Country:US
Phone:614-790-3333 / 800-325-3751
CAGE:7L600
Company Name:CHEMICAL SPECIALISTS AND DEVELOPMENT INC
Address:2210 HACKBERRY LN
Box:687
City:CONROE
State:TX
ZIP:77305
Country:US
Phone:409-756-1065
CAGE:4N760

========== Composition/Information on Ingredients ==========

Ingred Name:TRIETHYLENE GLYCOL MONOBUTYL ETHER (SARA III)
CAS:143-22-6
Fraction by Wt: 45-50%
Other REC Limits:NONE SPECIFIED

Ingred Name:DIETHYLENE GLYCOL MONOBUTYL ETHER (SARA III)
CAS:112-34-5
RTECS #:KJ9100000
Fraction by Wt: 20-25%
Other REC Limits:PEL= 35 PPM (MFG)

Ingred Name:DIETHYLENE GLYCOL
CAS:111-46-6
RTECS #:ID5950000
Fraction by Wt: 1-10%
Other REC Limits:50 PPM,8-HR TWA(MFG)

Ingred Name:DIETHYLENE GLYCOL MONOPROPYL ETHER (SARA III)
CAS:6881-94-3
Fraction by Wt: 1-5%
Other REC Limits:NONE SPECIFIED

Ingred Name:DIETHYLENE GLYCOL MONOETHYL ETHER (SARA III)
CAS:111-90-0
RTECS #:KK8750000
Fraction by Wt: 1-5%
Other REC Limits:NONE SPECIFIED

Ingred Name:TRIETHYLENE GLYCOL MONOETHYL ETHER (SARA III)
CAS:112-50-5
Fraction by Wt: 1-5%
Other REC Limits:NONE SPECIFIED

Hazards Identification

LD50 LC50 Mixture:NONE SPECIFIED BY MANUFACTURER.
Routes of Entry: Inhalation:NO Skin:YES Ingestion:NO
Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
Health Hazards Acute and Chronic:EYES: MAY CAUSE IRRITATION. SKIN: PROLONGED OR REPEATED CONTACT CAN CAUSE MODERATE IRRITATION, DEFATTING, DERMATITIS. INHALATION: NONE CURRENTLY KNOWN. INGESTION: MAY CAUSE GASTROINTESTINAL IRRITATION . ORAL TOXICITY IS LOW.
Explanation of Carcinogenicity:NONE
Effects of Overexposure:EYES: IRRITATION. SKIN: IRRITATION, DEFATTING, DERMATITIS. INHALATION: NONE CURRENTLY KNOWN. INGESTION: GASTROINTESTIONAL IRRITATION.
Medical Cond Aggravated by Exposure:NONE SPECIFIED BY MANUFACTURER.

First Aid Measures

First Aid:EYES: FLUSH WITH LARGE AMOUNTS OF WATER. IF IRRITATION PERSISTS GET MEDICAL ATTENTION. SKIN: WASH AREA WITH SOAP AND WATER. INHALATION: MOVE TO FRESH AIR. INGESTION: DRINK 2 GLASSES OF WATER. INDUCE V OMITING. GET MEDICAL ATTENTION.

Fire Fighting Measures

Flash Point Method:COC
Flash Point:250F,121C
Extinguishing Media:ALCOHOL FOAM, WATER FOG, CARBON DIOXIDE, DRY CHEMICAL.
Fire Fighting Procedures:WATER OR FOAM MAY CAUSE FROTHING WHICH CAN BE VIOLENT AND ENDANGER THE LIFE OF THE FIREFIGHTER, ESPECIALLY IF SPRAYED INTO CONTAINERS OF HOT, BURNING LIQUID.
Unusual Fire/Explosion Hazard:WATER OR FOAM MAY CAUSE FROTHING WHICH CAN BE VIOLENT AND ENDANGER THE LIFE OF THE FIREFIGHTER, ESPECIALLY IF SPRAYED INTO CONTAINERS OF HOT, BURNING LIQUID.

Accidental Release Measures

Spill Release Procedures:ABSORB SMALL SPILLS WITH ABSORBENT MATERIAL. DIKE LARGE SPILLS TO PREVENT RUN-OFF TO SEWERS, STREAMS OR OTHER BODIES OF WATER. PUMP LIQUID TO SALVAGE TANK. ABSORB RESIDUE WITH ABSORBENT. DEPOSITE WAST E IN PROPER CONTAINERS FOR DISPOSAL.
Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

Handling and Storage

Handling and Storage Precautions:STORE IN WELL VENTILATED AREA AWAY FROM IGNITION SOURCE AND STRONG OXIDIZING AGENTS. PROTECT FROM PHYSICAL DAMAGE. KEEP CONTAINERS CLOSED.
Other Precautions:CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTIED. EMPTIED CONTAINERS RETAIN PRODUCT RESIDUES (VAPOR, LIQUID, SOLID). NEVER USE WELDING OR CUTTING TORCH ON OR NEAR THESE CONTAINERS BECAUSE PRO DUCT OR RESIDUE CAN IGNITE EXPLOSIVELY.

Exposure Controls/Personal Protection

Respiratory Protection:NOT REQUIRED UNDER NORMAL CONDITIONS OF USE.
Ventilation:NOT REQUIRED UNDER NORMAL CONDITIONS OF USE.
Protective Gloves:NOT REQUIRED UNDER NORMAL USE.
Eye Protection:SAFETY GLASSES RECOMMENDED.
Other Protective Equipment:WEAR NORMAL WORK CLOTHING COVERING ARMS AND LEGS.
Work Hygienic Practices:WASH AFTER HANDLING AND BEFORE EATING, DRINKING, OR SMOKING. LAUNDER CONTAMINATED CLOTHING BEFORE REUSE.
Supplemental Safety and Health
NONE

Physical/Chemical Properties

HCC:V6
Boiling Pt:B.P. Text:401F,205C
Spec Gravity:1.036
Evaporation Rate & Reference:<1 (ETHER=1)
Appearance and Odor:CLEAR AN COLORLESS LIQUID.

Stability and Reactivity Data

Stability Indicator/Materials to Avoid:YES
AVOID CONTACT WITH STRONG OXIDIZING AGENTS.
Stability Condition to Avoid:NEVER USE WELDING OR CUTTING TORCH ON OR NEAR DRUM (EVEN EMPTY) BECAUSE PRODUCT (EVEN RESIDUE) CAN IGNITE EXPLOSIVELY.
Hazardous Decomposition Products:MAY FORM TOXIC MATERIALS, CARBON DIOXIDE, CARBON MONOXIDE, VARIOUS HYDROCARBONS, ETC.
Conditions to Avoid Polymerization:CANNOT OCCUR.

Disposal Considerations

Waste Disposal Methods:DISPOSE OF WASTE IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS. IF A RUN-OFF TO SEWERS, STREAMS OR OTHER BODIES OF WATER, NOTIFY PROPER AUTHORITIES AS REQUIRED.

Disclaimer (provided with this information by the compiling agencies): This information is formulated for use by elements of the Department of Defense. The United States of America in no manner whatsoever, expressly or implied, warrants this information to be accurate and disclaims all liability for its use. Any person utilizing this document should seek competent professional advice to verify and assume responsibility for the suitability of this information to their particular situation.

2-B

Material Safety Data Sheet
(Nepheline Basalt)

1. IDENTIFICATION

Chemical Name:	Nepheline Basalt	Chemical Formula:	Mixture
Molecular Weight:	N/A	Trade Name:	Traprock
DOT Identification No.	None		

Synonyms: Construction Aggregate, Coverstone, Flexible Base, Low-Silica Abrasive Blasting Agent (SSPC Type 1, Class A), Manufactured Sand, Mill Sand, Rockwool Aggregate, Trap Mix Aggregate

2. PRODUCT AND COMPONENT DATA

Component(s) Chemical Name	CAS Registry No.	% (Approx)	Exposure Limits
Traprock*	None	100	See section 6
*Composition varies naturally – typically contains low levels of crystalline silica.	1408-60-7	<1	

3. PHYSICAL DATA

Appearance and Odor: Angular particles ranging in size from sand to boulders.

Specific Gravity: 3.0 – 3.4

Boiling point (At 1 Atm.): N/A

Vapor Density in Air (Air = 1): N/A

Vapor Pressure (mmHg @ 20°C): N/A

% Volatile, By Volume (@ 100° F: N/A

Evaporation Rate (at 1Atm. and 25° C; n-butyl acetate = 1): N/A

Solubility in Water: Negligible

4. REACTIVITY DATA

Stability: Stable

Conditions to Avoid: Avoid contact with incompatible materials (see below).

Incompatibility (materials to avoid): Traprock ignites on contact with fluorine and is incompatable with acids, alum, ammonium salts, and magnesium. Silica reacts violently with powerful oxidizing agents such as fluorine, boron trifluoride, manganese trifluoride, and oxygen difluoride yielding possible fire and/or explosions. Silica dissolves readily in hydrofluoric acid producing a corrosive gas - silicon tetrafluoride.

Hazardous Decomposition Products: None known

Hazardous Polymerization: Not known to polymerize

5. FIRE AND EXPLOSION HAZARD DATA

Flashpoint (Method used): Not flammable

Flammable Limits in Air: Not Flammable

Extinguishing Agents: None required

Unusual Fire and Explosion Hazards: Contact with powerful oxidizing agents may cause fire and/or explosions (see section 4 of this MSDS).

6. TOXICITY AND FIRST AID

EXPOSURE LIMITS: (When exposure to this product and other chemicals is concurrent, the exposure limit must be defined in the workplace.) Unless specified otherwise, limits are expressed as eight-hour time-weighted averages (TWA). Limits for cristobalite and tridymite (other forms of crystalline silica) are equal to one-half of the limits for quartz.

ABBREVIATIONS: TLV = threshold limit value of the American Conference of Governmental Industrial Hygienists (ACGIH); MSHA PEL = permissible exposure limit of the Mine Safety and Health Administration (MSHA); OSHA PEL= permissible exposure limit of the Occupational Safety and Health Administration (OSHA); mg/m^3 = milligrams of substance per cubic meter of air.

Other Particulates: TLV = $10mg/m^3$ (inhalable/total particulate, not otherwise classified), TLV = $3mg/m^3$ (respirable particulate, not otherwise classified); OSHA PEL = 15 mg/m^3 (total particulate, not otherwise regulated), OSHA PEL = 5 mg/m^3 (respirable particulate, not otherwise regulated)

Respirable Crystalline Silica (quartz): TLV = 0.05 mg/m^3; MSHA and OSHA PEL = 10 $mg/m^3 \div (\%SiO_2 + 2)$; MSHA-Proposed and OSHA Proposed PEL = 0. 1 mg/m^3

Respirable Dust: MSHA and OSHA PEL = 10 $mg/m^3 \div (\%SiO_2 + 2)$

Total Dust: MSHA PEL= 30 $mg/m^3 \div (\%SiO_2 + 3)$; OSHA PEL = 30 $mg/m^3 \div (\%SiO_2 + 2)$

ACGIH, MSHA, and OSHA have determined that adverse effects are not likely to occur in the workplace provided exposure levels do not exceed the appropriate TLVs/PELs. However, because of the wide variation in individual susceptibility, lower exposure limits may be appropriate for some individuals including persons with pre-existing medical conditions such as those described below.

Medical Conditions Aggravated by Exposure

Inhaling respirable dust and/or crystalline silica may aggravate existing respiratory system disease(s) and/or dysfunctions. Exposure to dust may aggravate existing skin and/or eye conditions.

Primary Route(s) of Exposure:

_X_ Inhalation ___ Skin ___ Ingestion

Acute Toxicity

EYE CONTACT: Direct contact with dust may cause irritation by mechanical abrasion.

SKIN CONTACT: Direct contact may cause irritation by mechanical abrasion.

SKIN ABSORPTION: Not expected to be a significant exposure route.

INGESTION: Expected to be practically non-toxic. Ingestion of large amounts may cause gastrointestinal irritation and blockage.

INHALATION: Dusts may irritate the nose, throat, and respiratory tract by mechanical abrasion. Coughing, sneezing, and shortness of breath may occur following exposures in excess of appropriate exposure limits.

First Aid

EYES: Immediately flush eye(s) with plenty of clean water for at least 15 minutes, while holding the eyelid(s) open. Occasionally lift the eyelid(s) to ensure thorough rinsing. Beyond flushing, do not attempt to remove material from the eye(s). Contact a physician if irritation persists or later develops.

SKIN: Wash with soap and water. Contact a physician if irritation persists or later develops.

INGESTION: If person is conscious, give large quantity of water and induce vomiting; however, never attempt to make an unconscious person drink or vomit. Get immediate medical attention.

INHALATION: Remove to fresh air. Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists or later develops.

For emergencies, contact _____
(your company's designated emergency contact)

Chronic Toxicity

Prolonged and repeated inhalation of respirable crystalline silica-containing dust in excess of appropriate exposure limits has caused silicosis, a lung disease. Not all individuals with silicosis will exhibit symptoms

(signs) of the disease. However, silicosis can be progressive, and symptoms can appear at any time, even years after exposure has ceased. Symptoms of silicosis may include, but are not limited to, the following: shortness of breath; difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; right heart enlargement and/or failure. Smoking may increase the risk of developing lung disorders, including emphysema and lung cancer. Persons with silicosis have an increased risk of pulmonary tuberculosis infection.

Respirable dust containing newly broken silica particles has been shown to be more hazardous to animals in laboratory tests than respirable dust containing older silica particles of similar size. Respirable silica particles which had aged for sixty days or more showed less lung injury in animals than equal exposures of respirable dust containing newly broken particles of silica.

There are reports in the literature suggesting that excessive crystalline silica exposure may be associated with adverse health effects involving the kidney, scleroderma (thickening of the skin caused by swelling and thickening of fibrous tissue) and other autoimmune disorders. However, this evidence has been obtained primarily from case reports involving individuals working in high exposure situations or those who have already developed silicosis; and therefore, this evidence does not conclusively prove a causal relationship between silica or silicosis and these adverse health effects. Several studies of persons with silicosis also indicate an increased risk of developing lung cancer, a risk that increases with the duration of exposure. Many of these studies of silicotics do not account for lung cancer confounders, especially smoking.

Traprock is not listed as a carcinogen by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or the Occupational Safety and Health Administration (OSHA). In October 1996, an IARC Working Group re-assessing crystalline silica, a component of this product, designated crystalline silica as carcinogenic (Group I). The NTP's Report on Carcinogens, 9th edition, lists respirable crytalline silica as a "known human carcinogen." In year 2000, the American Conference of Governmental Industrial Hygienists (ACGIH) listed respirable crystalline silica (quartz) as a suspected human carcinogen (A-2). These classifications are based on sufficient evidence of carcinogenicity in certain experimental animals and on selected epidemiological studies of workers exposed to crystalline silica.

7. PERSONAL PROTECTION AND CONTROLS

RESPIRATORY PROTECTION: For respirable quartz levels that exceed or are likely to exceed an 8-hr TWA of 0.1 mg/m^3, a NIOSH approved dust respirator must be worn. For respirable quartz levels that exceed or are likely to exceed an 8-hr TWA of 0.5 mg/m^3, a NIOSH approved HEPA filter respirator must be worn. If respirable quartz levels exceed or are likely to exceed an 8-hr TWA of 5 mg/m^3, a NIOSH approved positive pressure, full face respirator or equivalent is required. Respirator use must comply with applicable MSHA or OSHA standards, which include provisions for a user training program, respirator repair and cleaning, respirator fit testing, and other requirements.

VENTILATION: Local exhaust or general ventilation adequate to maintain exposures below appropriate exposure limits.

SKIN PROTECTION: See "Hygiene" section below.

EYE PROTECTION: Safety glasses with side shields should be worn as minimum protection. Dust goggles should be worn when excessively (visible) dusty conditions are present or are anticipated.

HYGIENE: Wash dust-exposed skin with soap and water before eating, drinking, smoking, and using toilet facilities. Wash work clothes after each use.

OTHER CONTROL MEASURES: Respirable dust levels should be monitored regularly. Dust and quartz levels in excess of appropriate exposure limits should be reduced by all feasible engineering controls, including (but not limited to) wet suppression, ventilation, process enclosure, and enclosed employee work stations.

8. STORAGE AND HANDLING PRECAUTIONS

Respirable crystalline silica-containing dust may be generated during processing, handling, and storage. The personal protection and controls identified in Section 7 of the MSDS should be applied as appropriate.

Do not store near food and beverages or smoking materials.

9. SPILL, LEAK AND DISPOSAL PRACTICES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

The personal protection and controls identified in Section 7 of the MSDS should be applied as appropriate. Spilled material, where dust can be generated, may overexpose cleanup personnel to respirable crystalline silica-containing dust. Wetting of spilled material and/or use of respiratory protective equipment may be necessary. Do not dry sweep spilled material.

Prevent spilled materials from inadvertently entering streams, drains, or sewers.

WASTE DISPOSAL METHOD

Pick up and reuse clean materials. Dispose of waste materials only in accordance with applicable federal, state, and local laws and regulations.

For emergencies, contact _____
(your company's designated emergency contact)

10. TRANSPORTATION

DOT Hazard Classification: None

Placard Required: None

Label Required: Label as required by the OSHA Hazard Communication Standard [29 CFR 1910.1200 (f)] and applicable state and local laws and regulations.

For Further Information Contact: Place here the name, address, and telephone number of the operator or responsible party who can provide more info about the hazardous chemical.

Date of Preparation:

Emergency Information: Your company's designated emergency contact

3-B

EAST PENN manufacturing co., inc. Deka®

– Material Safety Data Sheet –
Battery Cleaner (Spray)

SECTION I

Manufacturer's Name:
Sprayon Products
(Battery Cleaner, Aerosol)
26300 Fargo Avenue, Bedford Heights, OH 44146

Date: June 2009
Distributor's Name:
East Penn Manufacturing Co., Inc.
Deka Road, Lyon Station, PA 19536

Telephone Number for Information: (610) 682-6361

East Penn Product I.D.: 00321, 00323

Emergency Telephone Number: CHEMTREC: 1-800-424-9300,
In Washington D.C. or outside continental U.S., call 1-202-483-7616

SECTION II
HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Components Specific Chemical Identity (Common Name (s))	CAS #	OSHA PEL	ACGIH TLV	Percent
Sodium Bicarbonate	#144-55-8	N/A	N/A	<10.0
Water		N/A	N/A	>90.0
Propellant:				
Isobutane	#75-28-5	N/A	N/A	<10.0
or				
Butane	#106-97-8	800 ppm	800 ppm	<10.0
or				
Propane	#74-98-6	1000 ppm	2500 ppm	<10.0
Detergents	Mixture	N/A	N/A	<10.0
2-Butoxy Ethanol	#111-76-2	25 ppm	25 ppm	<10

SECTION III
PHYSICAL/CHEMICAL CHARACTERISTICS

Chemicals without propellent/Propeltent
Appearance and Odor: A quick breaking foam
Solubility in Water: Soluble in water
Freezing Point: 32°F/Not Determined
Boiling Point: 212°F/-213°F
Evaporation Rate: Not Determined

Specific Gravity (H_20=1): 1.04/.095
Vapor Density (AIR=1): Not Determined
Vapor Pressure (mm Hg): Not Determined
% Volatile: 3%/97%

SECTION IV
FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used): Propellant below 20°F (TOC)
Flammable Limits: Propellent
Extinguishing Media: Carbon dioxide, foam, dry chemicals
LEL: 1.9 **UEL:** 9.5
Unusual Fire and Explosion Hazards: Do not spray near open flame. Aerosol cans may explode. Flammable material.
Special Fire Fighting Procedures: Remove aerosol containers from fire area if possible.

SECTION V
REACTIVITY DATA

Stability: Stable
Conditions to Avoid: Do not store above 120°F to prevent cans from exploding
Hazardous Decomposition of By-Products: Carbon monoxide, carbon dioxide

SECTION VI
HEALTH HAZARD DATA

Primary Route(s) of Entry: Inhalation, skin and ingestion
Signs and Symptoms of Exposure: *Inhalation*: Over-exposure may result in light-headedness, staggering gait, giddiness, and possible nausea. *Skin and Eyes*: May cause irritation. *Ingestion*: Harmful or fatal if swallowed.
Chronic Overexposure: Reports have associated repeated and prolong overexposure to solvents with permanent brain and nervous system damage.
Medical Conditions Generally Aggravated by Exposure: None identified
Emergency and First Aid Procedures:

Inhalation: Remove to fresh air. Give artificial respiration if necessary. *Ingestion*: Induce vomiting on the advice of a physician. *Eyes*: Flush with water for 15 minutes. *Skin*: Remove contaminated clothing and wash with soap and water

SECTION VII
PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case Material is Released or Spilled: Remove all sources of ignition, ventilate, avoid breathing vapors, and remove with inert absorbent.
Waste Disposal Method: Dispose of in accordance with local, state or applicable federal regulations.
Precautions to be Taken in Handling and Storing: Do not store above 120°F. Keep away from children. DO not puncture or incinerate. Do not spray near fire or open flame.

SECTION VIII
CONTROL MEASURES

Respiratory Protection (Specific Type): Use NIOSH/MSHA compliant respirators or self contained breathing apparatus above exposure limits.
Ventilation: Adequate to prevent accumulation of vapors.
Protective Clothing: Wear chemically protective gloves and safety glasses. Use splash aprons and boots if splashing occurs.
Eye and Face Protection: Safety glasses, face shield if splashing occurs.
Other Protective Equipment: Not needed.

SECTION IX
OTHER REGULATORY INFORMATION

	NFPA	HMIS
Health (Blue)	1	1
Flammability (Red)	4	4
Reactivity (Yellow)	0	0

SARA Title III: ***Section 311/312***: Acute ***Section 313***: 2 Butoxy Ethanol
Extremely Hazardous Substance: No

For additional information concerning East Penn Manufacturing Co., Inc. products or questions concerning the content of this MSDS please contact your East Penn representative.

This information is accurate to the best of East Penn Mfg. Co.'s knowledge or obtained from sources believed by East Penn to be accurate. Before using any product, read all warnings and directions on the label.

4-B

LPS LABORATORIES
MSDS
MATERIAL SAFETY DATA SHEET

Section 1 - Product Identification and Use

Manufacturer's Name:
LPS Laboratories

Address (Number Street):
4647 Hugh Howell Road

Address (City, State, Zip):
Tucker, GA 30085-5052

Trade Name:
LPS Premium Belt Dressing

Chemical Family:
Aliphatic Hydrocarbons

Part Numbers:
02216

Telephone Number: 770-934-7800
Emergency Telephone Number: 1-800-424-9300 Chemtrec
Outside U.S.: (703) 527-3887

Hazardous Materials Description and proper shipping name (49 CFR 172.101):
CONSUMER COMMODITY ORM-D

TSCA Inventory:
All of the ingredients are listed on the TSCA inventory.

HMIS Labeling:
Health: 1
Flammability: 3
Reactivity: 0

Section 2 - Hazardous Ingredients / Identity Information

Ingredients	CAS Numbers	%WW	OSHA PEL	ACGIH TLV	OTHER LIMITS
Isohexane	107-83-5	60-70	500 ppm	500 ppm	1,000 ppm STEL
n-Hexane	110-54-3	1-2	50 ppm	50 ppm	-
Isobutane/Propane Propellant	68476-85-7	20-30	1,000 ppm	N.E.	None

Section 3 - Physical / Chemical Characteristics

Boiling point (F°): 141°
Vapor pressure @ 20°C: 40-50 PSIG
Vapor density (Air = 1): Approx. 3.0
Solubility in water: Nil
Specific gravity (H20 = 1): 0.680
Percent volatile by volume (%): 87%
Evaporation rate (Ethyl Ether = 1): <1
Appearance/Odor: Clear colorless liquid with mild solvent odor that dries to a tacky film.

Section 4 - Fire and Explosion Hazard

Flash point (method used): N.E. (aerosol package)
Flammable limits: **LEL** = N.E. **UEL** = N.E.
Extinguishing media: Foam, Carbon Dioxide, Dry Chemical.
Firefighting procedures: Wear self-contained breathing apparatus approved by NIOSH. Use water to keep containers cool.
Unusual fire and explosive hazards: Intense heat created by fire will cause aerosols to burst. Flammable vapors which are heavier than air may accumulate in low areas and/or spread along the ground away from handling site.

Section 5 - Health Hazard Data

N.E. = Not established
N.A. = Not applicable

Primary route(s) of entry: Eyes, inhalation, skin.
Health hazard/effects of over exposure:

Eyes: Vapor and liquid may cause irritation.
Skin: Prolonged or repeated contact may cause drying of skin. Can be absorbed through skin.
Inhalation: Headache, light headedness, giddiness, central nervous system depression. May irritate mucosal tissue at high concentration.
Ingestion: Unlikely route of exposure. However, minute amounts aspirated into lungs during ingestion may cause chemical pneumonia.

Medical conditions aggravated by exposure: Pre-existing respiratory disorders.
Chemicals listed as potential carcinogen: **NTP:** No **IARC:** No **OSHA:** No
Emergency and first aid procedures:

Eyes: Flush with plenty of cold water and contact physician.
Skin: Wash with soap and water; apply medicated skin cream.
Inhalation: Move to fresh air and contact physician. Give oxygen if indicated.
Ingestion: Do not induce vomiting. Contact physician immediately

Section 6 - Reactivity Data

Stability: Stable
Conditions to avoid: Open flames, electric arcs and other hot surfaces which may cause thermal decomposition.
Incompatibility (Materials to avoid): Oxygen and strong oxidizing agents.
Hazardous decomposition products: Carbon monoxide, carbon dioxide, if burned.
Hazardous polymerization: Will not occur.

Section 7 - Precautions for Safe Handling and Use

Steps to be taken when material is released or spilled: Evacuate area and ventilate. Remove sources of ignition. Remove leaking container and transfer remaining product to another vessel. Mop or soak up spill with absorbent material and transfer to disposal drums using non-sparking equipment. Store in closed containers. Do not flush product to sewer.
CAUTION: Surfaces may be tacky.
Waste disposal methods: Dispose of in accordance with federal, state and local regulations for flammable hydrocarbons.
RCRA Hazardous Waste No.: This material has the RCRA characteristic of ignitability and if discarded in its purchased form, would have the hazardous waste number D001.
CERCLA Reportable Quantity: 5000 lbs.
SARA TITLE III Chemicals: Yes. CAS # 110-54-3
Precautions to be taken in handling and storage: Store aerosols below 120°F and above 32°F. Store away from ignition sources and avoid breathing vapors and prolonged skin contact. Vapors will collect in low areas. Use and store with adequate ventilation.

Section 8 - Control Measures

Respiratory Protection: None required if good ventilation is maintained. If vapor concentration rises above TLV, use NIOSH approved organic respirator or self-contained breathing apparatus.
Ventilation: Use adequate ventilation to maintain TLV and prevent accumulation of vapors in low lying areas.
Protective Gloves: Use solvent resistant gloves for liquid handling (Buna-N or Neoprene).
Eye protection: Goggles if splashing is likely.
Other protective equipment: None
Work/hygienic practices: Do not get in eyes, on skin, or clothing. Remove contaminated clothing and launder before reuse.

Section 9 - Preparation Date of MSDS

The foregoing technical information and recommendations are compiled from sources that are believed to be accurate and reliable. However, they are supplied without warranty or guarantee of any kind either expressed or implied. The purchaser is responsible for selecting and determining the suitability of products for purchaser's particular needs and we disclaim any responsibility for improper applications or misuse of our products in any manner whatsoever.

January 31, 2003
Fred Fugitt, Technical Services Chemist
Ed Williams, Manager of Research and Development
LPS Laboratories
ITW

Form # 2586
MSDS LPS Premium Belt Dressing

ASHLAND CHEMICAL CO., DIV OF ASHLAND OIL, INC. -- MAC'S CARBURETOR & CHOKE CLEANER 8700 -- 6850-00N003791

========== Product Identification ==========

Product ID:MAC'S CARBURETOR & CHOKE CLEANER 8700
MSDS Date:01/01/1985
FSC:6850
NIIN:00N003791
MSDS Number: BCKWB
=== Responsible Party ===
Company Name:ASHLAND CHEMICAL CO., DIV OF ASHLAND OIL, INC.
Box:2219
City:COLUMBUS
State:OH
ZIP:43216
Country:US
Info Phone Num:614-790-3333
Emergency Phone Num:606-324-1133
CAGE:5A188
=== Contractor Identification ===
Company Name:ASHLAND CHEMICAL CO
Address:5200 PAUL BLAZEL MEMORIAL PARKWAY
Box:City:DUBLIN
State:OH
ZIP:43017
Country:US
Phone:614-889-4505
CAGE:5A188

========== Composition/Information on Ingredients ==========

Ingred Name:XYLENES (O-,M-,P- ISOMERS) (SARA III)
CAS:1330-20-7
RTECS #:ZE2100000
Fraction by Wt: 45%
OSHA PEL:100 PPM/150 STEL
ACGIH TLV:100 PPM/150STEL;9192
EPA Rpt Qty:1000 LBS
DOT Rpt Qty:1000 LBS

Ingred Name:METHYL ETHYL KETONE (2-BUTANONE) (MEK) (SARA III)
CAS:78-93-3
RTECS #:EL6475000
Fraction by Wt: 20%
OSHA PEL:200 PPM/300 STEL
ACGIH TLV:200 PPM/300STEL 9192
EPA Rpt Qty:5000 LBS
DOT Rpt Qty:5000 LBS

Ingred Name:DIACETONE ALCOHOL (4-HYDROXY-4-METHYL-2-PENTANONE)
CAS:123-42-2
RTECS #:SA9100000
Fraction by Wt: 20%
OSHA PEL:50 PPM
ACGIH TLV:50 PPM; 9192

Ingred Name:PROPANE
CAS:74-98-6

RTECS #:TX2275000
Fraction by Wt: 20%
OSHA PEL:1000 PPM
ACGIH TLV:ASPHYXIANT; 9192

Ingred Name:ISOBUTANE; 1-10%- ALSO KNOWN AS LIQUIFIED PETROLEUM GAS(L.P.G.).
CAS:75-28-5
RTECS #:TZ4300000
Fraction by Wt: 5%
ACGIH TLV:1000 PPM

Hazards Identification

Effects of Overexposure:EYES:SEVERE IRRIT/REDNESS/TEARS/BLURRED VISION. SKIN:IRRIT/DEFATTING/DERMATITIS. SEE SUPP DATA.

First Aid Measures

First Aid:SKIN:THOROUGHLY WASH W/SOAP & WATER. REMOVE CLTHNG, LAWNDER BEFORE REUSE.EYES:FLUSH W/LRG AMTS WATER 15 MINS, LIFTING LIDS;CALL MD. ING:DO NOT INDUCE VOMITING/KEEP WARM, QUIET CALL MD. INH:MOVE TO FRE SH AIR/GIVE O*2, ART RESP AS NEC. GET MED ATTN.

Fire Fighting Measures

Flash Point:<73F,<23C CC
Lower Limits:1.0
Extinguishing Media:DRY CHEM/REG FOAM/CO*2. H*2O/FOAM:VIOLENT FROTHING:HAZARDOUS
Fire Fighting Procedures:SCBA W/FULL FACEPIECE:OPERATE IN PRESS-DEMAND/POS PRESS MODE
Unusual Fire/Explosion Hazard:HIGHLY VOLATILE:VAP MOVE ALNG GRND,IGNITE EXPLOSIVELY BY IGNIT SRCE AT LONG DISTANCE/CAUSE FLASHFIRE

Exposure Controls/Personal Protection

Supplemental Safety and Health
OVEREXP:INH:NASAL & RESP IRRIT/DIZZ/WEAK/NAUS/HDCH/UNCONS. ING:ASPIRATION OF MATL INTO LUNGS:POSS CHEM PHEUMONITIS WHICH CAN BE FATAL.

Physical/Chemical Properties

HCC:V3
Boiling Pt:B.P. Text:-49F,-45C
Vapor Pres:0.8
Vapor Density:>1.0
Spec Gravity:60

Stability and Reactivity Data

Stability Indicator/Materials to Avoid:YES
STRONG OXIDIZING SGENTS, E.G.NITRIC ACID, PERMANGANATES, ETC
Stability Condition to Avoid:FLAMES, SPARKS, OTHER IGNITION SOURCES.
Hazardous Decomposition Products:MAY FORM TOXIC MATLS:CO*2 & CO, VARIOUS HYDROCARBONS.

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1-D

ConocoPhillips

No. 2 Diesel Fuel

Material Safety Data Sheet

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name:	No. 2 Diesel Fuel
MSDS Number:	001847
Synonyms:	CARB Diesel TF3; CARB Diesel; CARB Diesel 10%; CARB Diesel Ultra Low Sulfur - Dyed and Undyed; EPA Low Sulfur Diesel Fuel - Dyed and Undyed; EPA Off Road High Sulfur Diesel - Dyed; High Sulfur Diesel Fuel; Low Sulfur Diesel Fuel; No. 2 Diesel Fuel Oil; No. 2 High Sulfur Diesel - Dyed; No. 2 Low Sulfur Diesel - Dyed; No. 2 Low Sulfur Diesel - Undyed; No. 2 Low Sulfur Distillate; No. 2 Diesel with Renewable Diesel; No. 2 Ultra Low Sulfur Diesel - Dyed; No. 2 Ultra Low Sulfur Diesel - Undyed; Super Diesel Fuel; Super Diesel Fuel II-LS; Virgin Diesel Fuel; No. 2 Distillate; ULSD; Super Diesel Fuel; Super Diesel Fuel II-LS; Virgin Diesel Fuel; Distillate Blend Stock
Intended Use:	Fuel
Manufacturer/Supplier:	ConocoPhillips 600 N. Dairy Ashford Houston, Texas 77079-1175
Emergency Health and Safety Number:	Chemtrec: 800-424-9300 (24 Hours)
MSDS Information:	Phone: 800-762-0942 Email: MSDS@conocophillips.com Internet: http://w3.conocophillips.com/NetMSDS/

2. HAZARDS IDENTIFICATION

Emergency Overview

WARNING!

Flammable Liquid and Vapor
Skin Irritant
Aspiration Hazard

NFPA

Appearance: Straw colored to dyed red
Physical Form: Liquid
Odor: Diesel fuel

Potential Health Effects

Eye: Contact may cause mild eye irritation including stinging, watering, and redness.

Skin: Mild to moderate skin irritant. Contact may cause redness, itching, a burning sensation, and skin damage. Prolonged or repeated contact may cause drying and cracking of the skin, dermatitis (inflammation), burns, and severe skin damage. No harmful effects from skin absorption have been reported.

Inhalation (Breathing): No information available on acute toxicity.

Ingestion (Swallowing): Low degree of toxicity by ingestion. ASPIRATION HAZARD - This material can enter lungs during swallowing or vomiting and cause lung inflammation and damage.

Signs and Symptoms: Effects of overexposure may include irritation of the digestive tract, irritation of the respiratory tract, nausea, diarrhea and signs of nervous system depression (e.g., headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue).

Pre-Existing Medical Conditions: Conditions aggravated by exposure may include skin disorders.

See Section 11 for additional Toxicity Information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS	Concentration*
Diesel Fuel No. 2	68476-34-6	95-100
Renewable Diesel	Proprietary	0-5
Naphthalene	91-20-3	<1

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. FIRST AID MEASURES

Eye Contact: If irritation or redness develops from exposure, flush eyes with clean water. If symptoms persist, seek medical attention.

Skin Contact: Remove contaminated shoes and clothing, and flush affected area(s) with large amounts of water. If skin surface is damaged, apply a clean dressing and seek medical attention. If skin surface is not damaged, cleanse affected area(s) thoroughly by washing with mild soap and water or a waterless hand cleaner. If irritation or redness develops, seek medical attention. Wash contaminated clothing before reuse.

Inhalation (Breathing): If respiratory symptoms develop, move victim away from source of exposure and into fresh air in a position comfortable for breathing. If symptoms persist, seek medical attention.

Ingestion (Swallowing): Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. If victim is drowsy or unconscious and vomiting, place on the left side with the head down. If possible, do not leave victim unattended and observe closely for adequacy of breathing. Seek medical attention.

5. FIRE-FIGHTING MEASURES

NFPA 704 Hazard Class

Health: 1 **Flammability:** 2 **Instability:** 0 (0-Minimal, 1-Slight, 2-Moderate, 3-Serious, 4-Severe)

Unusual Fire & Explosion Hazards: Flammable. This material can be ignited by heat, sparks, flames, or other sources of ignition (e.g., static electricity, pilot lights, mechanical/electrical equipment, and electronic devices such as cell phones, computers, calculators, and pagers which have not been certified as intrinsically safe). Vapors may travel considerable distances to a source of ignition where they can ignite, flash back, or explode. May create vapor/air explosion hazard indoors, in confined spaces, outdoors, or in sewers. Vapors are heavier than air and can accumulate in low areas. If container is not properly cooled, it can rupture in the heat of a fire.

Extinguishing Media: Dry chemical, carbon dioxide, or foam is recommended. Water spray is recommended to cool or protect exposed materials or structures. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces. Water may be ineffective for extinguishment, unless used under favorable conditions by experienced fire fighters.

Fire Fighting Instructions: For fires beyond the incipient stage, emergency responders in the immediate hazard area should wear bunker gear. When the potential chemical hazard is unknown, in enclosed or confined spaces, a self contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8).

Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done safely. Move undamaged containers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Cool equipment exposed to fire with water, if it can be done safely. Avoid spreading burning liquid with water used for cooling purposes.

Hazardous Combustion Products: Combustion may yield smoke, carbon monoxide, and other products of incomplete combustion. Oxides of nitrogen and sulfur may also be formed.

See Section 9 for Flammable Properties including Flash Point and Flammable (Explosive) Limits

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Flammable. Keep all sources of ignition and hot metal surfaces away from spill/release if safe to do so. The use of explosion-proof electrical equipment is recommended. Stay upwind and away from spill/release. Notify persons down wind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see Section 8). See Sections 2 and 7 for additional information on hazards and precautionary measures.

Environmental Precautions: Stop spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems, and natural waterways. Use foam on spills to minimize vapors (see Section 5). Use water sparingly to minimize environmental contamination and reduce disposal requirements. Spills into or upon navigable waters, the contiguous zone, or adjoining shorelines that cause a sheen or discoloration on the surface of the water, may require notification of the National Response Center (phone number 800-424-8802).

Methods for Containment and Clean-Up: Notify relevant authorities in accordance with all applicable regulations. Immediate cleanup of any spill is recommended. Dike far ahead of spill for later recovery or disposal. Absorb spill with inert material such as sand or vermiculite, and place in suitable container for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling: Wear protective gloves. Wash thoroughly after handling. Use good personal hygiene practices and wear appropriate personal protective equipment.

Open container slowly to relieve any pressure. Bond and ground all equipment when transferring from one vessel to another. Can accumulate static charge by flow or agitation. Can be ignited by static discharge. The use of explosion-proof electrical equipment is recommended and may be required (see appropriate fire codes). Refer to NFPA-704 and/or API RP 2003 for specific bonding/grounding requirements. Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. Do not wear contaminated clothing or shoes. Keep contaminated clothing away from sources of ignition such as sparks or open flames.

"Empty" containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Before working on or in tanks which contain or have contained this material, refer to OSHA regulations, ANSI Z49.1, and other references pertaining to cleaning, repairing, welding, or other contemplated operations.

Conditions for safe storage: Keep container(s) tightly closed. Use and store this material in cool, dry, well-ventilated areas away from heat, direct sunlight, hot metal surfaces, and all sources of ignition. Store only in approved containers. Post area "No Smoking or Open Flame." Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage. Outdoor or detached storage is preferred. Indoor storage should meet OSHA standards and appropriate fire codes.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Component	US-ACGIH	OSHA	Other
Diesel Fuel No. 2	TWA: 100 mg/m³ Skin	---	---
Naphthalene	TWA: 10 ppm STEL: 15 ppm Skin	TWA: 10 ppm TWA: 50 mg/m³	TWA: 0.2 mg/m³ (as total of 17 PNA's measured by NIOSH Method 5506) (ConocoPhillips Guidelines)

Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

Engineering controls: If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional engineering controls may be required.

Eye/Face Protection: The use of eye protection that meets or exceeds ANSI Z.87.1 is recommended to protect against potential eye contact, irritation, or injury. Depending on conditions of use, a face shield may be necessary.

Skin/Hand Protection: The use of gloves impervious to the specific material handled is advised to prevent skin contact. Users should check with manufacturers to confirm the breakthrough performance of their products. Suggested protective materials: Nitrile

Respiratory Protection: Where there is potential for airborne exposure above the exposure limit a NIOSH certified air purifying respirator equipped with organic vapor cartridges/canisters may be used.

A respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed whenever workplace conditions warrant a respirator's use. Air purifying respirators provide limited protection and cannot be used in atmospheres that exceed the maximum use concentration (as directed by regulation or the manufacturer's instructions), in oxygen deficient (less than 19.5 percent oxygen) situations, or under conditions that are immediately dangerous to life and health (IDLH).

Other Protective Equipment: Eye wash and quick-drench shower facilities should be available in the work area. Thoroughly clean shoes and wash contaminated clothing before reuse.

Suggestions provided in this section for exposure control and specific types of protective equipment are based on readily available information. Users should consult with the specific manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial hygiene, safety, or engineering professionals.

9. PHYSICAL AND CHEMICAL PROPERTIES

Note: Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm). Data represent typical values and are not intended to be specifications.

Appearance:	Straw colored to dyed red
Physical Form:	Liquid
Odor:	Diesel fuel
Odor Threshold:	No data
pH:	Not applicable
Vapor Pressure:	0.40 mm Hg
Vapor Density (air=1):	> 3
Boiling Point/Range:	300-690°F / 149-366°C
Melting/Freezing Point:	No data
Solubility in Water:	Negligible
Partition Coefficient (n-octanol/water) (Kow):	No data
Specific Gravity:	0.81-0.88 @ 60°F (15.6°C)
Bulk Density:	7.08 lbs/gal
Percent Volatile:	Negligible @ ambient conditions
Evaporation Rate (nBuAc=1):	<1
Flash Point:	125 -180°F / 52 - 82°C
Test Method:	Pensky-Martens Closed Cup (PMCC), ASTM D93, EPA 1010
LEL (vol % in air):	0.3
UEL (vol % in air):	10.0
Autoignition Temperature:	500°F / 260°C

10. STABILITY AND REACTIVITY

Stability: Stable under normal ambient and anticipated conditions of storage and handling. Flammable liquid and vapor. Vapor can cause flash fire.

Conditions to Avoid: Avoid high temperatures and all sources of ignition. Prevent vapor accumulation.

Materials to Avoid (Incompatible Materials): Avoid contact with strong oxidizers

Hazardous Decomposition Products: Not anticipated under normal conditions of use.

Hazardous Polymerization: Not known to occur.

11. TOXICOLOGICAL INFORMATION

Chronic Data:

Diesel Fuel No. 2

Carcinogenicity: Petroleum middle distillates have been shown to cause skin tumors in mice following repeated and prolonged skin contact. Follow-up studies have shown that these tumors are produced through a non-genotoxic mechanism associated with frequent cell damage and repair, and that they are not likely to cause tumors in the absence of prolonged skin irritation. Animal studies have also shown that washing the skin with soap and water can reduce the tumor response. Middle distillates with low polynuclear aromatic hydrocarbon content have not been identified as a carcinogen by NTP, IARC or OSHA. Diesel exhaust has been identified as a probable cancer hazard by IARC.

Target Organs: Limited evidence of renal impairment has been noted from a few older case reports involving excessive exposure to diesel fuel No. 2. However, renal toxicity has not been demonstrated to be a consistent finding of diesel fuel exposure.

Naphthalene

Carcinogenicity: Naphthalene has been evaluated in two year inhalation studies in both rats and mice. The National Toxicology Program (NTP) concluded that there is clear evidence of carcinogenicity in male and female rats based on increased incidences of respiratory epithelial adenomas and olfactory epithelial neuroblastomas of the nose. NTP found some evidence of carcinogenicity in female mice (alveolar adenomas) and no evidence of carcinogenicity in male mice. Naphthalene has been identified as a carcinogen by IARC and NTP.

Acute Data:

Component	Oral LD50	Dermal LD50	Inhalation LC50
Diesel Fuel No. 2	> 5 g/kg	>5ml/kg	4.6 - 7.6 mg/L
Renewable Diesel	9 ml/kg (Rat)	>5ml/kg (Rabbit)	No data available

12. ECOLOGICAL INFORMATION

When middle distillate hydrocarbons escape into the environment due to leaks or spills, most of their constituent hydrocarbons will evaporate and be photodegraded by reaction with hydroxyl radicals in the atmosphere. The half-lives in air for many of the individual hydrocarbons is less than one day. Less volatile hydrocarbons can persist in the aqueous environment for longer periods. They remain floating on the surface of the water; those that reach soil or sediment biodegrade relatively slowly. Soil contaminated with middle distillates can develop adapted microbial species able to use the fuel as a carbon source; soil aeration and nutrient supplementation can enhance this biodegradation.

Reported LC50/EC50 values for water-soluble fractions of middle distillates are usually in the range of 10 to 100 mg/liter. Adverse effects on the gills, pseudobranch, kidney and nasal mucosa have been reported in fish involved in spills of middle distillates. Juvenile clams may be particularly sensitive to marine sediments contaminated as a result of spilled material. Direct toxicity and fouling of sea birds can occur if birds dive through floating layers of spilled material.

Phytotoxic effects of middle distillate hydrocarbons have been reported following exposure of plants to sprays or vapors. Lack of seed germination and inhibition of seedling growth may also occur. There is evidence for moderate bioaccumulation of the water-soluble hydrocarbons present in middle distillates.

13. DISPOSAL CONSIDERATIONS

The generator of a waste is always responsible for making proper hazardous waste determinations and needs to consider state and local requirements in addition to federal regulations.

This material, if discarded as produced, would not be a federally regulated RCRA "listed" hazardous waste. However, it would likely be identified as a federally regulated RCRA hazardous waste for the following characteristic(s) shown below. See Sections 7 and 8 for information on handling, storage and personal protection and Section 9 for physical/chemical properties. It is possible that the material as produced contains constituents which are not required to be listed in the MSDS but could affect the hazardous waste determination. Additionally, use which results in chemical or physical change of this material could subject it to regulation as a hazardous waste.

Container contents should be completely used and containers should be emptied prior to discard. Container residues and rinseates could be considered to be hazardous wastes.

EPA Waste Number(s)
- D001 - Ignitability characteristic

14. TRANSPORTATION INFORMATION

U.S. Department of Transportation (DOT)

Shipping Description:	Diesel fuel, Combustible liquid, NA1993, III
Non-Bulk Package Marking:	Not Regulated ***[49 CFR 173.150(f)(2)]***
Non-Bulk Package Labeling:	Not Regulated ***[49 CFR 173.150(f)(2)]***
Bulk Package/Placard Marking:	Combustible / 1993
Packaging - References:	None; None; 49 CFR 173.241 ***(Exceptions; Non-bulk; Bulk)***
Hazardous Substance:	See Section 15 for RQ's
Emergency Response Guide:	128

International Maritime Dangerous Goods (IMDG)

Shipping Description:	***Not regulated if flashpoint is >60° C closed-cup***
Non-Bulk Package Marking:	Diesel fuel, UN1202
Labels:	Flammable liquid
Placards/Marking (Bulk):	Flammable / 1202
Packaging - Non-Bulk:	P001, LP01
EMS:	F-E, S-E
Note:	***Proper Shipping name can be:*** Gas Oil *or* Diesel fuel *or* Heating Oil, light

International Civil Aviation Org. / International Air Transport Assoc. (ICAO/IATA)

UN/ID #:	***Not regulated if flashpoint is >60° C closed-cup*** UN1202
Proper Shipping Name:	Diesel fuel
Hazard Class/Division:	3
Subsidiary risk:	None
Packing Group:	III
Non-Bulk Package Marking:	Diesel fuel, UN1202
Labels:	Flammable liquid
ERG Code:	3L
Note:	***Proper Shipping name can be:*** Gas Oil *or* Diesel fuel *or* Heating Oil, light

	LTD. QTY	Passenger Aircraft	Cargo Aircraft Only
Packaging Instruction #:	Y309	309	310
Max. Net Qty. Per Package:	10 L	60 L	220 L

15. REGULATORY INFORMATION

CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs (in pounds):
This material does not contain any chemicals subject to the reporting requirements of SARA 302 and 40 CFR 372.

CERCLA/SARA - Section 311/312 (Title III Hazard Categories)

Acute Health:	Yes
Chronic Health:	Yes
Fire Hazard:	Yes
Pressure Hazard:	No
Reactive Hazard:	No

CERCLA/SARA - Section 313 and 40 CFR 372:
This material contains the following chemicals subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR 372:

Component	Concentration*	de minimis
Naphthalene	<1	0.1%

EPA (CERCLA) Reportable Quantity (in pounds):
EPA's Petroleum Exclusion applies to this material - (CERCLA 101(14)).

California Proposition 65:
Warning: This material may contain detectable quantities of the following chemicals, known to the State of California to cause cancer, birth defects or other reproductive harm, and which may be subject to the requirements of California Proposition 65 (CA Health & Safety Code Section 25249.5):

Component	Type of Toxicity
Naphthalene	Cancer
Toluene	Developmental Toxicant
Benzene	Cancer Developmental Toxicant Male Reproductive Toxicant

Canadian Regulations:
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the Regulations.

WHMIS Hazard Class
B3 - Combustible Liquids
D2A
D2B

National Chemical Inventories:
All components are either listed on the US TSCA Inventory, or are not regulated under TSCA.
All components are either on the DSL, or are exempt from DSL listing requirements.

U.S. Export Control Classification Number: EAR99

16. OTHER INFORMATION

Issue Date:	16-Jun-2008
Status:	Final
Previous Issue Date:	02-Jan-2008
Revised Sections or Basis for Revision:	Product Name / Synonyms (Section 1)
MSDS Number:	001847

MSDS Legend:
ACGIH = American Conference of Governmental Industrial Hygienists; ADR = Agreement on Dangerous Goods by Road; CAS = Chemical Abstracts Service Registry; CEILING = Ceiling Limit (15 minutes); EINECS - European Inventory of Existing Commercial Chemical Substances; EPA = [US] Environmental Protection Agency; Germany-DFG = Deutsche Forschungsgemeinschaft; IARC = International Agency for Research on Cancer; ICAO/IATA = International Civil Aviation Organization / International Air Transport Association; IMDG = International Maritime Dangerous Goods; Ireland-HSA = Ireland's National Health and Safety Authority; LEL = Lower Explosive Limit; N/A = Not Applicable; N/D = Not Determined; NIOSH = National Institute for Occupational Safety and Health; NTP = [US] National Toxicology Program; OSHA = [US] Occupational Safety and Health Administration; PEL = Permissible Exposure Limit; RID = Regulations Concerning the International Transport of Dangerous Goods by Rail; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value; TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; UK-EH40 = United Kingdom EH40/2005 Workplace Exposure Limits

Disclaimer of Expressed and implied Warranties:
The information presented in this Material Safety Data Sheet is based on data believed to be accurate as of the date this Material Safety Data Sheet was prepared. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THE INFORMATION PROVIDED ABOVE, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license.

1-E

RADNOR®

Date:	9/15/07	MSDS No.:	RAD-M1
Trade Name:	Radnor 6010		
Sizes:	All		
Supersedes:	3/10/02		

MATERIAL SAFETY DATA SHEET

For Welding Consumables and Related Products

Conforms to Hazard Communication Standard 29CFR 1910.1200 Rev. October 1988

SECTION I - IDENTIFICATION

Supplier:

Radnor Welding Products
P.O.Box 6675
Radnor, PA 19087

Chemtrec 1-800-424-9300

Product Type: Covered Electrode

Classification: AWS E6010

SECTION II - HAZARDOUS MATERIAL (1)

IMPORTANT!

This section covers the materials from which this product is manufactured. The fumes and gases produced during welding with the normal use of this product are covered by Section V; see it for industrial hygiene information.
CAS Number shown is representative for the ingredients listed. All ingredients listed may not be present in all sizes.
(1) The term "hazardous" in "Hazardous Materials" should be interpreted as a term required and defined in the Hazards Communication Standard and does not necessarily imply the existence of any hazard. All materials are listed on the TSCA inventory.

Ingredients:	CAS No.	Wt.%	TLV mg/m^3	PEL mg/m^3
Cellulose and other carbohydrates	65996-61-4	5	10*	10*
Silicates and other binders	1344-09-8	< 5	10*	10*
Titanium dioxides	13463-67-7	< 5	10	15
Manganese and/or manganese alloys and compounds (as Mn)*****	7439-96-5	1	0.2	5 (c)
Mineral silicates	1332-58-7	0.5	5**	5**
Iron oxides	65996-74-9	0.5	5	10
Magnesite	1309-48-4	< 0.5	10	15
Iron	7439-89-6	< 0.5	10*	10*
Graphite	7782-42-5	< 0.5	2.0	2.5
Carbon steel core wire	7439-89-6	85	10*	10*

Supplemental Information: (*) Not listed. Nuisance value maximum is 10 milligrams per cubic meter. PEL value for iron oxide is 10 milligrams per cubic meter. TLV value for iron oxide is 5 milligrams per cubic meter.

(**) As respirable dust.

(*****) Subject to the reporting requirements of Sections 311, 312, and 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and of 40CFR 370 and 372.

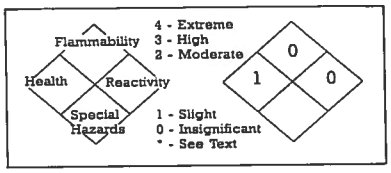
(c) Value is for manganese fume. Present PEL is 5 milligrams per cubic meter (ceiling value). Values proposed by OSHA in 1989 were 1.0 milligrams per cubic meter TWA and 3.0 milligrams per cubic meter STEL (Short Term Exposure Limit).

SECTION III - HAZARD DATA

Non Flammable; Welding arc and sparks can ignite combustibles and flammable products. See Z49.1 referenced in Section VI.
Product is inert, no special handling or spill procedures required. Not regulated by DOT.

(CONTINUED ON SIDE TWO)

Product:	**Radnor 6010**
Date:	**9/15/07**



SECTION IV - HEALTH HAZARD DATA

Threshold Limit Value: The ACGIH recommended general limit for Welding Fume NOS - (Not Otherwise Specified) is 5 mg/m^3. ACGIH-1999 preface states that the TLV-TWA should be used as guides in the control of health hazards and should not be used as fine lines between safe and dangerous concentrations. See Section V for specific fume constituents which may modify this TLV. Threshold Limit Values are figures published by the American Conference of Government Industrial Hygienists. Units are milligrams per cubic meter of air.

Effects of Overexposure: Electric arc welding may create one or more of the following health hazards: Fumes and Gases can be dangerous to your health. Common entry is by inhalation. Other possible routes are skin contact and ingestion.

Short-term (acute) overexposure to welding fumes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema).

Long-term (chronic) overexposure to welding fumes can lead to siderosis (iron deposits in lung) and may affect pulmonary function. Manganese overexposure can affect the central nervous system, resulting in impaired speech and movement. Bronchitis and some lung fibrosis have been reported. WARNING: This product, when used for welding or cutting, produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code Section 25249.5 et seq.)

Arc Rays can injure eyes and burn skin. *Skin cancer has been reported.*
Electric Shock can kill. If welding must be performed in damp locations or with wet clothing, on metal structures or when in cramped positions such as sitting, kneeling or lying, or if there is a high risk of unavoidable or accidental contact with workpiece, use the following equipment: Semiautomatic DC Welder, DC Manual (Stick) Welder, or AC Welder with Reduced Voltage Control.

Emergency and First Aid Procedures: Call for medical aid. Employ first aid techniques recommended by the American Red Cross.
IF BREATHING IS DIFFICULT give oxygen. IF NOT BREATHING employ CPR (Cardiopulmonary Resuscitation) techniques.
IN CASE OF ELECTRICAL SHOCK, turn off power and follow recommended treatment. In all cases call a physician.

SECTION V - REACTIVITY DATA

Hazardous Decomposition Products: Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedure and electrodes used.

Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating, or galvanizing), the number of welders and the volume of the worker area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities.)

When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section II. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in Section II, plus those from the base metal and coating, etc., as noted above.

Reasonably expected fume constituents of this product would include: Primarily iron oxide; secondarily complex oxides of manganese, silicon and sodium.

Maximum fume exposure guideline and PEL for this product is 5.0 milligrams per cubic.

Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc.

Determine the composition and quantity of fumes and gases to which workers are exposed by taking an air sample from inside the welder's helmet if worn or in the worker's breathing zone. Improve ventilation if exposures are not below limits. See ANSI/AWS F1.1, F1.2, F1.3 and F1.5, available from the American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.

SECTION VI AND VII
CONTROL MEASURES AND PRECAUTIONS FOR SAFE HANDLING AND USE

Read and understand the manufacturer's instruction and the precautionary label on the product. Request Lincoln Safety Publication E205. See American National Standard Z49.1, "Safety In Welding, Cutting and Allied Processes" published by the American Welding Society, 550 N.W. LeJeune Road, Miami, FL, 33126 (both available for free download at http://www.lincolnelectric.com/community/safety/) and OSHA Publication 2206 (29CFR1910), U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954 for more details on many of the following:

Ventilation: Use enough ventilation, local exhaust at the arc, or both to keep the fumes and gases from the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes. *Keep exposure as low as possible.*

Respiratory Protection: Use respirable fume respirator or air supplied respirator when welding in confined space or general work area when local exhaust or ventilation does not keep exposure below TLV.

Eye Protection: Wear helmet or use face shield with filter lens shade number 12 or darker. Shield others by providing screens and flash goggles.

Protective Clothing: Wear hand, head, and body protection which help to prevent injury from radiation, sparks and electrical shock. See Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Train the welder not to permit electrically live parts or electrodes to contact skin . . . or clothing or gloves if they are wet. Insulate from work and ground.

Disposal Information: Discard any product, residue, disposable container, or liner as ordinary waste in an environmentally acceptable manner according to Federal, State and Local Regulations unless otherwise noted. No applicable ecological information available.

RADNOR®

Date:	9/15/07	MSDS No.:	RAD-M2
Trade Name:	Radnor 6011		
Sizes:	All		
Supersedes:	3/10/02		

MATERIAL SAFETY DATA SHEET

For Welding Consumables and Related Products

Conforms to Hazard Communication Standard 29CFR 1910.1200 Rev. October 1988

SECTION I - IDENTIFICATION

Supplier:

Radnor Welding Products
P.O.Box 6675
Radnor, PA 19087

Chemtrec 1-800-424-9300

Product Type: Covered Electrode

Classification: AWS E6011

SECTION II - HAZARDOUS MATERIAL (1)

IMPORTANT!

This section covers the materials from which this product is manufactured. The fumes and gases produced during welding with the normal use of this product are covered by Section V; see it for industrial hygiene information.
CAS Number shown is representative for the ingredients listed. All ingredients listed may not be present in all sizes.
(1) The term "hazardous" in "Hazardous Materials" should be interpreted as a term required and defined in the Hazards Communication Standard and does not necessarily imply the existence of any hazard. All materials are listed on the TSCA inventory.

Ingredients:	CAS No.	Wt.%	TLV mg/m^3	PEL mg/m^3
Cellulose and other carbohydrates	65996-61-4	5	10*	10*
Silicates and other binders	1344-09-8	< 5	10*	10*
Titanium dioxides	13463-67-7	< 5	10	15
Iron	7439-89-6	< 5	10*	10*
Magnesite	1309-48-4	< 5	10	15
Manganese and/or manganese alloys and compounds (as Mn)*****	7439-96-5	< 5	0.2	5 (c)
Limestone and/or calcium carbonate	1317-65-3	1	10	15
Quartz	14808-60-7	< 0.5	#0.05**	#0.1**
Carbon steel core wire	7439-89-6	75	10*	10*

Supplemental Information: (*) Not listed. Nuisance value maximum is 10 milligrams per cubic meter. PEL value for iron oxide is 10 milligrams per cubic meter. TLV value for iron oxide is 5 milligrams per cubic meter.

(**) As respirable dust.

(*****) Subject to the reporting requirements of Sections 311, 312, and 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and of 40CFR 370 and 372.

(c) Value is for manganese fume. Present PEL is 5 milligrams per cubic meter (ceiling value). Values proposed by OSHA in 1989 were 1.0 milligrams per cubic meter TWA and 3.0 milligrams per cubic meter STEL (Short Term Exposure Limit).

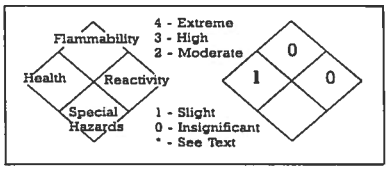
(#) Crystalline silica (quartz) is on the IARC (International Agency for Research on Cancer) and NTP (National Toxicology Program) lists as posing a carcinogenic risk to humans.

SECTION III - HAZARD DATA

Non Flammable; Welding arc and sparks can ignite combustibles and flammable products. See Z49.1 referenced in Section VI. Product is inert, no special handling or spill procedures required. Not regulated by DOT.

(CONTINUED ON SIDE TWO)

Product:	**Radnor 6011**
Date:	**9/15/07**



SECTION IV - HEALTH HAZARD DATA

Threshold Limit Value: The ACGIH recommended general limit for Welding Fume NOS - (Not Otherwise Specified) is 5 mg/m^3. ACGIH-1999 preface states that the TLV-TWA should be used as guides in the control of health hazards and should not be used as fine lines between safe and dangerous concentrations. See Section V for specific fume constituents which may modify this TLV. Threshold Limit Values are figures published by the American Conference of Government Industrial Hygienists. Units are milligrams per cubic meter of air.

Effects of Overexposure: Electric arc welding may create one or more of the following health hazards: Fumes and Gases can be dangerous to your health. Common entry is by inhalation. Other possible routes are skin contact and ingestion.

Short-term (acute) overexposure to welding fumes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema).

Long-term (chronic) overexposure to welding fumes can lead to siderosis (iron deposits in lung) and may affect pulmonary function. Manganese overexposure can affect the central nervous system, resulting in impaired speech and movement. Bronchitis and some lung fibrosis have been reported. Overexposure to crystalline silica present in any dust from this flux can cause severe lung damage (silicosis). Silicosis is a form of disabling pulmonary fibrosis which can be progressive and may lead to death. Crystalline silica is on the IARC (International Agency for Research on Cancer) and NTP (National Toxicology Program) list as posing a cancer risk to humans. WARNING: This product, when used for welding or cutting, produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code Section 25249.5 et seq.)

Arc Rays can injure eyes and burn skin. *Skin cancer has been reported.*
Electric Shock can kill. If welding must be performed in damp locations or with wet clothing, on metal structures or when in cramped positions such as sitting, kneeling or lying, or if there is a high risk of unavoidable or accidental contact with workpiece, use the following equipment: Semiautomatic DC Welder, DC Manual (Stick) Welder, or AC Welder with Reduced Voltage Control.

Emergency and First Aid Procedures: Call for medical aid. Employ first aid techniques recommended by the American Red Cross.
IF BREATHING IS DIFFICULT give oxygen. IF NOT BREATHING employ CPR (Cardiopulmonary Resuscitation) techniques.
IN CASE OF ELECTRICAL SHOCK, turn off power and follow recommended treatment. In all cases call a physician.

SECTION V - REACTIVITY DATA

Hazardous Decomposition Products: Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedure and electrodes used.

Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating, or galvanizing), the number of welders and the volume of the worker area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities.)

When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section II. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in Section II, plus those from the base metal and coating, etc., as noted above.

Reasonably expected fume constituents of this product would include: Primarily iron oxide; secondarily complex oxides of manganese, potassium, silicon and sodium.

Maximum fume exposure guideline and PEL for this product is 5.0 milligrams per cubic.

Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc.

Determine the composition and quantity of fumes and gases to which workers are exposed by taking an air sample from inside the welder's helmet if worn or in the worker's breathing zone. Improve ventilation if exposures are not below limits. See ANSI/AWS F1.1, F1.2, F1.3 and F1.5, available from the American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.

SECTION VI AND VII

CONTROL MEASURES AND PRECAUTIONS FOR SAFE HANDLING AND USE

Read and understand the manufacturer's instruction and the precautionary label on the product. Request Lincoln Safety Publication E205. See American National Standard Z49.1, "Safety In Welding, Cutting and Allied Processes" published by the American Welding Society, 550 N.W. LeJeune Road, Miami, FL, 33126 (both available for free download at http://www.lincolnelectric.com/community/safety/) and OSHA Publication 2206 (29CFR1910), U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954 for more details on many of the following:

Ventilation: Use enough ventilation, local exhaust at the arc, or both to keep the fumes and gases from the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes. *Keep exposure as low as possible.*

Respiratory Protection: Use respirable fume respirator or air supplied respirator when welding in confined space or general work area when local exhaust or ventilation does not keep exposure below TLV.

Eye Protection: Wear helmet or use face shield with filter lens shade number 12 or darker. Shield others by providing screens and flash goggles.

Protective Clothing: Wear hand, head, and body protection which help to prevent injury from radiation, sparks and electrical shock. See Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Train the welder not to permit electrically live parts or electrodes to contact skin . . . or clothing or gloves if they are wet. Insulate from work and ground.

Disposal Information: Discard any product, residue, disposable container, or liner as ordinary waste in an environmentally acceptable manner according to Federal, State and Local Regulations unless otherwise noted. No applicable ecological information available.

Date:	9/15/07	MSDS No.:	RAD-M6
Trade Name:	Radnor 7018 AC		
Sizes:	All		
Supersedes:	3/10/02		

MATERIAL SAFETY DATA SHEET

For Welding Consumables and Related Products

Conforms to Hazard Communication Standard 29CFR 1910.1200 Rev. October 1988

SECTION I - IDENTIFICATION

Supplier:

Radnor Welding Products
P.O.Box 6675
Radnor, PA 19087

Chemtrec 1-800-424-9300

Product Type: Covered Electrode

Classification: AWS E7018

SECTION II - HAZARDOUS MATERIAL (1)

IMPORTANT!

This section covers the materials from which this product is manufactured. The fumes and gases produced during welding with the normal use of this product are covered by Section V; see it for industrial hygiene information.
CAS Number shown is representative for the ingredients listed. All ingredients listed may not be present in all sizes.
(1) The term "hazardous" in "Hazardous Materials" should be interpreted as a term required and defined in the Hazards Communication Standard and does not necessarily imply the existence of any hazard. All materials are listed on the TSCA inventory.

Ingredients:	CAS No.	Wt.%	TLV mg/m^3	PEL mg/m^3
Iron	7439-89-6	15	10*	10*
Titanium dioxides	13463-67-7	10	10	15
Limestone and/or calcium carbonate	1317-65-3	10	10	15
Silicates and other binders	1344-09-8	< 5	10*	10*
Manganese and/or manganese alloys and compounds (as Mn)*****	7439-96-5	< 5	0.2	5 (c)
Mineral silicates	1332-58-7	< 5	5**	5**
Aluminum oxide and/or Bauxite	1344-28-1	< 5	10	15
Fluorides (as F)	7789-75-5	1	2.5	2.5
Silicon and/or silicon alloys and compounds (as Si)	7440-21-3	1	10*	10*
Titanium and/or titanium alloys (as Ti)	12719-90-3	0.5	10*	10*
Carbon steel core wire	7439-89-6	55	10*	10*

Supplemental Information: (*) Not listed. Nuisance value maximum is 10 milligrams per cubic meter. PEL value for iron oxide is 10 milligrams per cubic meter. TLV value for iron oxide is 5 milligrams per cubic meter.

(**) As respirable dust.

(*****) Subject to the reporting requirements of Sections 311, 312, and 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and of 40CFR 370 and 372.

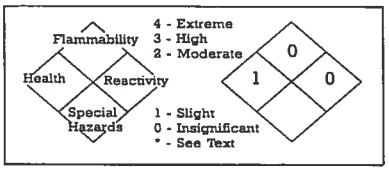
(c) Value is for manganese fume. Present PEL is 5 milligrams per cubic meter (ceiling value). Values proposed by OSHA in 1989 were 1.0 milligrams per cubic meter TWA and 3.0 milligrams per cubic meter STEL (Short Term Exposure Limit).

SECTION III - HAZARD DATA

Non Flammable; Welding arc and sparks can ignite combustibles and flammable products. See Z49.1 referenced in Section VI. Product is inert, no special handling or spill procedures required. Not regulated by DOT.

(CONTINUED ON SIDE TWO)

Product:	**Radnor 7018 AC**
Date:	**9/15/07**



SECTION IV - HEALTH HAZARD DATA

Threshold Limit Value: The ACGIH recommended general limit for Welding Fume NOS - (Not Otherwise Specified) is 5 mg/m^3. ACGIH-1999 preface states that the TLV-TWA should be used as guides in the control of health hazards and should not be used as fine lines between safe and dangerous concentrations. See Section V for specific fume constituents which may modify this TLV. Threshold Limit Values are figures published by the American Conference of Government Industrial Hygienists. Units are milligrams per cubic meter of air.

Effects of Overexposure: Electric arc welding may create one or more of the following health hazards:
Fumes and Gases can be dangerous to your health. Common entry is by inhalation. Other possible routes are skin contact and ingestion.

Short-term (acute) overexposure to welding fumes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema). Exposure to extremely high levels of fluorides can cause abdominal pain, diarrhea, muscular weakness, and convulsions. In extreme cases it can cause loss of consciousness and death.

Long-term (chronic) overexposure to welding fumes can lead to siderosis (iron deposits in lung) and may affect pulmonary function. Manganese overexposure can affect the central nervous system, resulting in impaired speech and movement. Bronchitis and some lung fibrosis have been reported. Repeated exposure to fluorides may cause excessive calcification of the bone and calcification of ligaments of the ribs, pelvis and spinal column. May cause skin rash. WARNING: This product, when used for welding or cutting, produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code Section 25249.5 et seq.)

Arc Rays can injure eyes and burn skin. *Skin cancer has been reported.*
Electric Shock can kill. If welding must be performed in damp locations or with wet clothing, on metal structures or when in cramped positions such as sitting, kneeling or lying, or if there is a high risk of unavoidable or accidental contact with workpiece, use the following equipment: Semiautomatic DC Welder, DC Manual (Stick) Welder, or AC Welder with Reduced Voltage Control.

Emergency and First Aid Procedures: Call for medical aid. Employ first aid techniques recommended by the American Red Cross.
IF BREATHING IS DIFFICULT give oxygen. IF NOT BREATHING employ CPR (Cardiopulmonary Resuscitation) techniques.
IN CASE OF ELECTRICAL SHOCK, turn off power and follow recommended treatment. In all cases call a physician.

SECTION V - REACTIVITY DATA

Hazardous Decomposition Products: Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedure and electrodes used.

Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating, or galvanizing), the number of welders and the volume of the worker area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities.)

When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section II. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in Section II, plus those from the base metal and coating, etc., as noted above.

Reasonably expected fume constituents of this product would include: Primarily iron oxide and fluorides; secondarily complex oxides of manganese, potassium, silicon and sodium.

Maximum fume exposure guideline for this product (based on manganese content) is 3.0 milligrams per cubic.

Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc.

Determine the composition and quantity of fumes and gases to which workers are exposed by taking an air sample from inside the welder's helmet if worn or in the worker's breathing zone. Improve ventilation if exposures are not below limits. See ANSI/AWS F1.1, F1.2, F1.3 and F1.5, available from the American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.

SECTION VI AND VII

CONTROL MEASURES AND PRECAUTIONS FOR SAFE HANDLING AND USE

Read and understand the manufacturer's instruction and the precautionary label on the product. Request Lincoln Safety Publication E205. See American National Standard Z49.1, "Safety In Welding, Cutting and Allied Processes" published by the American Welding Society, 550 N.W. LeJeune Road, Miami, FL, 33126 (both available for free download at http://www.lincolnelectric.com/community/safety/) and OSHA Publication 2206 (29CFR1910), U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954 for more details on many of the following:

Ventilation: Use enough ventilation, local exhaust at the arc, or both to keep the fumes and gases from the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes. *Keep exposure as low as possible.*

Respiratory Protection: Use respirable fume respirator or air supplied respirator when welding in confined space or general work area when local exhaust or ventilation does not keep exposure below TLV.

Eye Protection: Wear helmet or use face shield with filter lens shade number 12 or darker. Shield others by providing screens and flash goggles.

Protective Clothing: Wear hand, head, and body protection which help to prevent injury from radiation, sparks and electrical shock. See Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Train the welder not to permit electrically live parts or electrodes to contact skin . . . or clothing or gloves if they are wet. Insulate from work and ground.

Disposal Information: Discard any product, residue, disposable container, or liner as ordinary waste in an environmentally acceptable manner according to Federal, State and Local Regulations unless otherwise noted. No applicable ecological information available.

RADNOR®

Date:	9/15/07	MSDS No.:	RAD-M5
Trade Name:	Radnor 7018		
Sizes:	All		
Supersedes:	3/10/02		

MATERIAL SAFETY DATA SHEET

For Welding Consumables and Related Products

Conforms to Hazard Communication Standard 29CFR 1910.1200 Rev. October 1988

SECTION I - IDENTIFICATION

Supplier: Radnor Welding Products
P.O.Box 6675
Radnor, PA 19087

Chemtrec 1-800-424-9300

Product Type: Covered Electrode

Classification: AWS E7018

SECTION II - HAZARDOUS MATERIAL (1)

IMPORTANT!
This section covers the materials from which this product is manufactured. The fumes and gases produced during welding with the normal use of this product are covered by Section V; see it for industrial hygiene information.
CAS Number shown is representative for the ingredients listed. All ingredients listed may not be present in all sizes.
(1) The term "hazardous" in "Hazardous Materials" should be interpreted as a term required and defined in the Hazards Communication Standard and does not necessarily imply the existence of any hazard. All materials are listed on the TSCA inventory.

Ingredients:	CAS No.	Wt.%	TLV mg/m^3	PEL mg/m^3
Iron	7439-89-6	15	10*	10*
Limestone and/or calcium carbonate	1317-65-3	10	10	15
Fluorides (as F)	7789-75-5	< 5	2.5	2.5
Silicates and other binders	1344-09-8	< 5	10*	10*
Titanium dioxides	13463-67-7	< 5	10	15
Manganese and/or manganese alloys and compounds (as Mn)*****	7439-96-5	< 5	0.2	5 (c)
Mineral silicates	1332-58-7	< 5	5**	5**
Silicon and/or silicon alloys and compounds (as Si)	7440-21-3	1	10*	10*
Aluminum oxide and/or Bauxite	1344-28-1	< 0.5	10	15
Carbon steel core wire	7439-89-6	60	10*	10*

Supplemental Information: (*) Not listed. Nuisance value maximum is 10 milligrams per cubic meter. PEL value for iron oxide is 10 milligrams per cubic meter. TLV value for iron oxide is 5 milligrams per cubic meter.

(**) As respirable dust.

(*****) Subject to the reporting requirements of Sections 311, 312, and 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and of 40CFR 370 and 372.

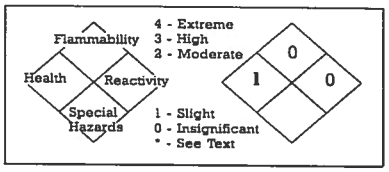
(c) Value is for manganese fume. Present PEL is 5 milligrams per cubic meter (ceiling value). Values proposed by OSHA in 1989 were 1.0 milligrams per cubic meter TWA and 3.0 milligrams per cubic meter STEL (Short Term Exposure Limit).

SECTION III - HAZARD DATA

Non Flammable; Welding arc and sparks can ignite combustibles and flammable products. See Z49.1 referenced in Section VI. Product is inert, no special handling or spill procedures required. Not regulated by DOT.

(CONTINUED ON SIDE TWO)

Product:	**Radnor 7018**
Date:	**9/15/07**



SECTION IV - HEALTH HAZARD DATA

Threshold Limit Value: The ACGIH recommended general limit for Welding Fume NOS - (Not Otherwise Specified) is 5 mg/m^3. ACGIH-1999 preface states that the TLV-TWA should be used as guides in the control of health hazards and should not be used as fine lines between safe and dangerous concentrations. See Section V for specific fume constituents which may modify this TLV. Threshold Limit Values are figures published by the American Conference of Government Industrial Hygienists. Units are milligrams per cubic meter of air.

Effects of Overexposure: Electric arc welding may create one or more of the following health hazards:
Fumes and Gases can be dangerous to your health. Common entry is by inhalation. Other possible routes are skin contact and ingestion.

Short-term (acute) overexposure to welding fumes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema). Exposure to extremely high levels of fluorides can cause abdominal pain, diarrhea, muscular weakness, and convulsions. In extreme cases it can cause loss of consciousness and death.

Long-term (chronic) overexposure to welding fumes can lead to siderosis (iron deposits in lung) and may affect pulmonary function. Manganese overexposure can affect the central nervous system, resulting in impaired speech and movement. Bronchitis and some lung fibrosis have been reported. Repeated exposure to fluorides may cause excessive calcification of the bone and calcification of ligaments of the ribs, pelvis and spinal column. May cause skin rash. WARNING: This product, when used for welding or cutting, produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code Section 25249.5 et seq.)

Arc Rays can injure eyes and burn skin. *Skin cancer has been reported.*
Electric Shock can kill. If welding must be performed in damp locations or with wet clothing, on metal structures or when in cramped positions such as sitting, kneeling or lying, or if there is a high risk of unavoidable or accidental contact with workpiece, use the following equipment: Semiautomatic DC Welder, DC Manual (Stick) Welder, or AC Welder with Reduced Voltage Control.

Emergency and First Aid Procedures: Call for medical aid. Employ first aid techniques recommended by the American Red Cross.
IF BREATHING IS DIFFICULT give oxygen. IF NOT BREATHING employ CPR (Cardiopulmonary Resuscitation) techniques.
IN CASE OF ELECTRICAL SHOCK, turn off power and follow recommended treatment. In all cases call a physician.

SECTION V - REACTIVITY DATA

Hazardous Decomposition Products: Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedure and electrodes used.

Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating, or galvanizing), the number of welders and the volume of the worker area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities.)

When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section II. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in Section II, plus those from the base metal and coating, etc., as noted above.

Reasonably expected fume constituents of this product would include: Primarily iron oxide and fluorides; secondarily complex oxides of manganese, potassium, silicon and sodium.

Maximum fume exposure guideline for this product (based on manganese content) is 3.0 milligrams per cubic.

Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc.

Determine the composition and quantity of fumes and gases to which workers are exposed by taking an air sample from inside the welder's helmet if worn or in the worker's breathing zone. Improve ventilation if exposures are not below limits. See ANSI/AWS F1.1, F1.2, F1.3 and F1.5, available from the American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.

SECTION VI AND VII
CONTROL MEASURES AND PRECAUTIONS FOR SAFE HANDLING AND USE

Read and understand the manufacturer's instruction and the precautionary label on the product. Request Lincoln Safety Publication E205. See American National Standard Z49.1, "Safety In Welding, Cutting and Allied Processes" published by the American Welding Society, 550 N.W. LeJeune Road, Miami, FL, 33126 (both available for free download at http://www.lincolnelectric.com/community/safety/) and OSHA Publication 2206 (29CFR1910), U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954 for more details on many of the following:

Ventilation: Use enough ventilation, local exhaust at the arc, or both to keep the fumes and gases from the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes. *Keep exposure as low as possible.*

Respiratory Protection: Use respirable fume respirator or air supplied respirator when welding in confined space or general work area when local exhaust or ventilation does not keep exposure below TLV.

Eye Protection: Wear helmet or use face shield with filter lens shade number 12 or darker. Shield others by providing screens and flash goggles.

Protective Clothing: Wear hand, head, and body protection which help to prevent injury from radiation, sparks and electrical shock. See Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Train the welder not to permit electrically live parts or electrodes to contact skin . . . or clothing or gloves if they are wet. Insulate from work and ground.

Disposal Information: Discard any product, residue, disposable container, or liner as ordinary waste in an environmentally acceptable manner according to Federal, State and Local Regulations unless otherwise noted. No applicable ecological information available.

FIRST BRANDS CORPORATION -- STP FLAT FIXER -- 6850-00B060060

========== Product Identification ==========

Product ID:STP FLAT FIXER
MSDS Date:12/12/1991
FSC:6850
NIIN:00B060060
MSDS Number: BMTBT
=== Responsible Party ===
Company Name:FIRST BRANDS CORPORATION
Address:83 WOOSTER HEIGHTS ROAD, BLDG. 301
City:DANBURY
State:CT
ZIP:06813-1911
Country:US
Info Phone Num:203-731-2300
Emergency Phone Num:800-424-9300 (CHEMTREC)
CAGE:DO273
=== Contractor Identification ===
Company Name:FIRST BRANDS CORP (PHONE:203-728-6194)
Address:88 LONG HILL ST
City:EAST HARTFORD
State:CT
ZIP:06108
Phone:203-731-2300, CHEMTREC 800-424-9300
CAGE:DO273
Company Name:STP
Address:88 LONG HILL STREET
Box:City:EAST HARTFORD
State:CT
ZIP:06108
Country:US
CAGE:61014

========== Composition/Information on Ingredients ==========

Ingred Name:DIMETHYL ETHER
CAS:115-10-6
RTECS #:PM4780000
Fraction by Wt: 10-20%
Other REC Limits:NONE SPECIFIED

Ingred Name:ETHYLENE GLYCOL (SARA III)
CAS:107-21-1
RTECS #:KW2975000
Fraction by Wt: 0-5%
Other REC Limits:NONE SPECIFIED
OSHA PEL:C 50 PPM
ACGIH TLV:C 50 PPM,VAPOR; 9192
EPA Rpt Qty:1 LB
DOT Rpt Qty:1 LB

Ingred Name:CARBON DIOXIDE
CAS:124-38-9
RTECS #:FF6400000
Fraction by Wt: 0-5%
Other REC Limits:NONE SPECIFIED
OSHA PEL:5000 PPM

ACGIH TLV:5000PPM/30000STEL;93

Ingred Name:WATER
CAS:7732-18-5
RTECS #:ZC0110000
Fraction by Wt: 60-80%
Other REC Limits:NONE SPECIFIED

Hazards Identification

LD50 LC50 Mixture:ORAL RAT LD50:
Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES
Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
Health Hazards Acute and Chronic:MAY CAUSE EYE IRRITATION. INHALATION MAY CAUSE NONSPECIFIC DISCOMFORT, SUCH AS NAUSEA, HEADACHE, OR WEAKNESS. HIGHER INHALATION EXPOSURE MAY CAUSE TEMPORARY NERVOUS SYSTEM DEPRESSION. MAY CAUSE MILE D IGESTIVE TRACT SYMPTOMS IF INGESTED.
Explanation of Carcinogenicity:THIS COMPOUND CONTAINS NO INGREDIENTS AT CONCENTRATIONS OF 0.1% OR GREATER THAT ARE CARCINOGENS OR SUSPECT CARCINOGENS.
Effects of Overexposure:VAPORS MAY CAUSE NONSPECIFIC DISCOMFORT, I. E., NAUSEA, HEADACHE, OR WEAKNESS. HIGHER EXPOSURE MAY CAUSE TEMPORARY NERVOUS SYSTEM DEPRESSION W/ANAESTHETIC EFFECTS SUCH AS DIZZINESS, HEADACHE, CONFUSIO N, INCOORDINATION, AND LOSS OF CONSCIOUSNESS; OR INCREASED SUSCEPTIBILTY TO THE CARDIAC ARRHYTMIC EFFECTS OF EPINEPHRINE
Medical Cond Aggravated by Exposure:INDIVIDUALS WITH PREEXISTING DISEASES OF THE CENTRAL NERVOUS SYSTEM MAY HAVE INCREASED SUSCEPTIBILITY TO THE TOXICITY OF EXCESSIVE EXPOSURE TO DIMETHYL ETHER.

First Aid Measures

First Aid:EYES: FLUSH WITH WATER FOR 15 MIN.; IF IRRITATION PERSISTS, GET MEDICAL ATTN. SKIN: FLUSH AND WASH WITH SOAP. IF IRRITATION DEVELOPS, CONTACT PHYSICIAN. INGESTION: IF LARGE QUANTITY IS INGESTED, SEEK IMMEDIATE MEDICAL ATTN BY CALLING A PHYSICIAN, POISON CONTROL CTR OR EMERGENCY ROOM. INHALATION: REMOVE TO FRESH AIR. GIVE OXYGEN IF NECESSARY. IF IRRITATION DEVELOPS, SEEK MEDICAL ATTN.

Fire Fighting Measures

Flash Point Method:SCC
Flash Point:212F,100C
Extinguishing Media:WATER FOG, DRY CHEMICAL, CARBON DIOXIDE, FOAM.
Fire Fighting Procedures:USE POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS WHEN ENTERING A CONFINED SPACE.
Unusual Fire/Explosion Hazard:AEROSOL CONTAINERS MAY EXPLODE IF EXPOSED TO TEMPERATURES GREATER THEN 120F.

Accidental Release Measures

Spill Release Procedures:WEAR APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT AND REMOVE ALL SOURCES OF IGNITION. COLLECT THE MATERIAL FOR DISPOSAL IN A CONTAINER SUITABLE FOR FLAMMABLE WASTE.
Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

Handling and Storage

Handling and Storage Precautions:AVOID EYE & PROLONGED SKIN CONTACT. AVOID BREATHING VAPORS. USE ONLY W/ADEQUATE VENTILATION. CONTENTS UNDER PRESSURE. DO NOT PUNCTURE OR INCINERATE.
Other Precautions:WASH THOROUGHLY WITH SOAP AND WATER AFTER HANDLING. STORE IN A COOL, WELL-VENTILATED AREA AWAY FROM HEAT, AND ALL SOURCES OF IGNITION. OBSERVE ALL REQUIREMENTS OF PLANT, CO. AND GOVERNMENT REGULATIONS . KEEP AWAY FROM CHILDREN!!!

========== Exposure Controls/Personal Protection ==========

Respiratory Protection:WHERE TLV MAY BE EXCEEDED USE A MOIOSH/MSHA APPROVED ORGANIC VAPOR RESPIRATOR OR SUPPLIED AIR RESPIRATOR IS RECOMMENDED.
Ventilation:GENERAL VENTIALTION SHOULD BE ADEQUATE FOR NORMAL USE.
Protective Gloves:NONE NEEDED UNDER NORMAL CONDITIONS.
Eye Protection:SAFETY GLASSES WITH SIDE SHIELDS.
Other Protective Equipment:NONE SPECIFIED BY MANUFACTURER.
Work Hygienic Practices:WASH THOROUGHLY AFTER HANDLING AND BEFORE EATING, DRINKING OR SMOKING. LAUNDER CONTAMINATED CLOTHING BEFORE REUSE.
Supplemental Safety and Health
TO PHYSICIAN: THERE IS NO SPECIFIC ANTIDOTE. TREATMENT SHOULD BE DIRECTED AT THE CONTROL OF SYMPTOMS AND THE CLINICAL CONDITION. FOLLOWING INHALATION EXPOSURE, CARDIAC FUNCTION SHOULD BE MONITORED, AN D EPINEPHRINE AVOIDED BECAUSE OF THE POSSIBILITY OF MYOCARDIAL SENSITIZATION.

========== Physical/Chemical Properties ==========

Boiling Pt:B.P. Text:-13F,-25C
pH:8
Evaporation Rate & Reference:<1
Solubility in Water:90%
Appearance and Odor:WHITE LIQUID, ETHER SMELL
Percent Volatiles by Volume:88%

========== Stability and Reactivity Data ==========

Stability Indicator/Materials to Avoid:YES
NONE.
Stability Condition to Avoid:DO NOT EXPOSE CONTAINERS TO TEMPERATURES ABOVE 120F (CONTENTS UNDER PRESSURE) OR CONTENTS TO OPEN FLAMES.
Hazardous Decomposition Products:HYDROCARBON FUMES AND SMOKE, CO WHERE COMBUSTION IS INCOMPLETE.

========== Disposal Considerations ==========

Waste Disposal Methods:WASTE MATERIAL IS A RCRA HAZARDOUS WASTE DUE TO IGNITABILITY IF DISCARDED IN ITS PURCHASED FORM. RECYCLE, INCINERATE OR LANDFILL IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS.

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particular situation.

1-F

FLAG FIRE EQUIPMENT LTD -- FIRE EXTINGUISHER ABC MULTIPURPOSE DRY CHEMICAL -- 4210-00-889-2491

========== Product Identification ==========

Product ID:FIRE EXTINGUISHER ABC MULTIPURPOSE DRY CHEMICAL
MSDS Date:04/19/1996
FSC:4210
NIIN:00-889-2491
MSDS Number: CDYGD
=== Responsible Party ===
Company Name:FLAG FIRE EQUIPMENT LTD
Address:HWY 2 AND PATILLO ROAD R R NO 1
City:TECUMSEH
State:ON
Country:CA
Info Phone Num:519-727-6722
Emergency Phone Num:519-727-6722
CAGE:36576
=== Contractor Identification ===
Company Name:FLAG FIRE EQUIPMENT LTD
Address:COUNTRY RD 22 AND PATILLO ROAD
Box:City:TECUMSEH
State:ON
Country:CA
Phone:519-727-6722
CAGE:36576

========== Composition/Information on Ingredients ==========

Ingred Name:AMORPHOUS SILICA GEL
CAS:112926-00-8
Fraction by Wt: 0.12%
Other REC Limits:NONE RECOMMENDED

Ingred Name:AMMONIUM PHOSPHATE MONOBASIC
CAS:7722-76-1
Other REC Limits:NONE RECOMMENDED

Ingred Name:AMMONIUM SULFATE (SOLUTION) (SARA 313)
CAS:7783-20-2
RTECS #:BS4500000
Other REC Limits:NONE RECOMMENDED

Ingred Name:CALCIUM PHOSPHATE TRIBASIC/TRICALCIUM PHOSPHATE
CAS:12167-74-7
Other REC Limits:NONE RECOMMENDED

Ingred Name:METHYL HYDROGEN POLYSILOXANE
CAS:63148-57-2
Other REC Limits:NONE RECOMMENDED

Ingred Name:COMPRESSED AIR
RTECS #:AX5271000
Other REC Limits:NONE RECOMMENDED

========== Hazards Identification ==========

LD50 LC50 Mixture:LD50 (ORAL, RAT) IS NOT KNOWN.

Routes of Entry: Inhalation:YES Skin:NO Ingestion:NO
Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
Health Hazards Acute and Chronic:TARGET ORGANS:EYES, RESPIRATORY TRACT. ACUTE- EYES:MAY CAUSE MECHANICAL IRRITATION AND REDNESS. INHALATION:MAY CAUSE IRRITATION TO RESPIRATORY TRACT. TREAT AS A MINERAL DUST. INGESTION:LARGE QUANTITIE S MAY BE HARMFUL IF SWALLOWED. CHRONIC-NONE KNOWN.
Explanation of Carcinogenicity:NONE
Effects of Overexposure:IRRITATION, NAUSEA, TEARING, COUGH
Medical Cond Aggravated by Exposure:PERSONS WITH PRE-EXISTING EYE DISORDERS OR IMPAIRED RESPIRATORY FUNCTION MAY BE MORE SUSCEPTIBLE TO THE EFFECTS OF THE SUBSTANCE.

First Aid Measures

First Aid:GET MEDICAL HELP IF SYMPTOMS PERSIST. INHALED:REMOVE TO FRESH AIR. PROVIDE CPR/OXYGEN IF NEEDED. EYES:FLUSH WITH WATER FOR 15 MINUTES, HOLDING EYELIDS OPEN. SKIN:WASH WITH MILD SOAP & WATER. ORAL:IF C ONSCIOUS, DRINK PLENTY OF WATER. GET MEDICAL ATTENTION. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

Fire Fighting Measures

Flash Point:NONE
Lower Limits:NOT RELEVANT
Upper Limits:NOT RELEVANT
Extinguishing Media:THIS IS FIRE EXTINGUISHING AGENT. COOL FIRE-EXPOSED CYLINDERS WITH WATER.
Fire Fighting Procedures:WEAR PROTECTIVE CLOTHING AND NIOSH-APPROVED SELF-CONTAINED BREATHING APPARATUS IF TOXIC GASES PRESENT.
Unusual Fire/Explosion Hazard:CYLINDER MAY RUPTURE.

Accidental Release Measures

Spill Release Procedures:VACUUM UP SPILL OR SWEEP UP MATERIAL FOR DISPOSAL OR RECOVERY. FLUSH RESIDUE WITH WATER.
Neutralizing Agent:NOT RELEVANT

Handling and Storage

Handling and Storage Precautions:STORE IN COOL, DRY PLACE AWAY FROM ACIDS. MINIMIZE DUST GENERATION.
Other Precautions:DO NOT CROSS CONTAMINATE WITH OTHER EXTINGUISHING AGENTS. WASH THOROUGHLY AFTER HANDLING. KEEP OUT OF REACH OF CHILDREN.

Exposure Controls/Personal Protection

Respiratory Protection:NONE NORMALLY REQUIRED. IF WORKPLACE EXPOSURE LIMIT IS EXCEEDED (DUST TLV OF 10 MG/M3), A NIOSH-APPROVED DUST RESPIRATOR OR AIR SUPPLIED RESPIRATOR IS ADVISED.
Ventilation:USE GENERAL OR LOCAL EXHAUST VENTILATION TO KEEP FUME OR DUST LEVELS AS LOW AS POSSIBLE.
Protective Gloves:PLASTIC GLOVE RECOMMENDED
Eye Protection:SAFETY GLASSES RECOMMENDED
Other Protective Equipment:EYE WASH STATION, EMERGENCY SHOWER, NORMAL WORK CLOTHING COVERING ARMS AND LEGS
Work Hygienic Practices:OBSERVE GOOD INDUSTRIAL HYGIENE PRACTICES AND RECOMMENDED PROCEDURES. WASH THOROUGHLY BEFORE EATING, DRINKING/SMOKING.

Supplemental Safety and Health

========== Physical/Chemical Properties ==========

HCC:G3
NRC/State Lic Num:NOT RELEVANT
Spec Gravity:NOT RELEVANT
pH:4.5 1%
Viscosity:NOT RELEVANT
Evaporation Rate & Reference:NOT RELEVANT
Solubility in Water:38%
Appearance and Odor:YELLOW CRYSTALS - ODORLESS

========== Stability and Reactivity Data ==========

Stability Indicator/Materials to Avoid:YES
STRONG ACIDS
Stability Condition to Avoid:EXCESSIVE HEAT

========== Disposal Considerations ==========

Waste Disposal Methods:DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS. LANDFILL MAY BE ACCETABLE.

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1-G

Material Safety Data Sheet
(Granite)

1. IDENTIFICATION

Chemical Name:	Granite	Chemical Formula:	N/A
Trade Name:	Crushed Stone	Molecular Weight:	N/A
Synonyms:	Aggregate, Manufactured Sand	DOT Identification No:	None

2. PRODUCT AND COMPONENT DATA

Component(s) Chemical Name	CAS Registry No.	% (Approx)	Exposure Limits
Granite*	None	100	See section 6
*Composition varies naturally – typically contains quartz (crystalline silica).	14808-60-7	>1	

3. PHYSICAL DATA

Appearance and Odor: Angular particles, light salt and pepper colored, ranging in size from pebbles to boulders. No odor.

Specific Gravity: 2.6 – 2.81

Boiling point (At 1 Atm.): N/A

Vapor Density in Air (Air = 1): N/A

Vapor Pressure (mmHg @ 20°C): N/A

% Volatile, By Volume (@ 100° F): 0%

Evaporation Rate (at 1Atm. and 25°C; n-butyl acetate = 1): 0

Solubility in Water: Negligible

4. REACTIVITY DATA

Stability: Stable

Conditions to Avoid: Avoid contact with incompatible materials (see below).

Incompatibility (materials to avoid): Contact with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride may cause fire and/or explosions. Silica dissolves readily in hydrofluoric acid producing a corrosive gas – silicon tetrafluoride.

Hazardous Decomposition Products: Silica-containing respirable dust particles may be generated by handling.

Hazardous Polymerization: Not known to polymerize

5. FIRE AND EXPLOSION HAZARD DATA

Flashpoint (Method used): Not flammable

Flammable Limits in Air: Not Flammable

Extinguishing Agents: None required

Unusual Fire and Explosion Hazards: Contact with powerful oxidizing agents may cause fire and/or explosions (see section 4 of this MSDS).

6. TOXICITY AND FIRST AID

EXPOSURE LIMITS (When exposure to this product and other chemicals is concurrent, the exposure limit must be defined in the workplace.)

Unless specified otherwise, limits are expressed as eight-hour time-weighted averages (TWA). Limits for cristobalite and tridymite (other forms of crystalline silica) are equal to one-half of the limits for quartz.

ABBREVIATIONS: TLV = threshold limit value of the American Conference of Governmental Industrial Hygienists (ACGIH); MSHA PEL = permissible exposure limit of the Mine Safety and Health Administration

(MSHA); OSHA PEL= permissible exposure limit of the Occupational Safety and Health Administration (OSHA); mg/m^3 = milligrams of substance per cubic meter of air.

Other Particulates: TLV=10mg/m^3 (inhalable/total particulate, not otherwise classified), TLV = 3mg/m^3 (respirable particulate, not otherwise classified); OSHA PEL = 15 mg/m^3 (total particulate, not otherwise regulated), OSHA PEL = 5 mg/m^3 (respirable particulate, not otherwise regulated)

Respirable Crystalline Silica (quartz): TLV = 0.05 mg/m^3; MSHA and OSHA PEL = 10 mg/m^3 ÷ (%SiO_2 + 2); MSHA-Proposed and OSHA-Proposed PEL = 0. 1 mg/m^3

Respirable Dust: MSHA and OSHA PEL = 10 mg/m^3 ÷ (%SiO_2 + 2)

Total Dust: MSHA PEL= 30 mg/m^3 ÷ (%SiO_2 + 3); OSHA PEL = 30 mg/m^3 ÷ (%SiO_2 + 2)

ACGIH. MSHA, and OSHA have determined that adverse effects are not likely to occur in the workplace provided exposure levels do not exceed the appropriate TLVs/PELs. However, because of the wide variation in individual susceptibility, lower exposure limits may be appropriate for some individuals including persons with pre-existing medical conditions such as those described below.

Medical Conditions Aggravated by Exposure

Inhaling respirable dust may aggravate existing respiratory system disease(s) and/or dysfunctions. Exposure to dust may aggravate existing skin and/or eye conditions.

Primary Route(s) of Exposure:

_X_ Inhalation ___ Skin ___ Ingestion

Acute Toxicity

EYE CONTACT: Direct contact with dust may cause irritation by mechanical abrasion.

SKIN CONTACT: Direct contact may cause irritation by mechanical abrasion.

SKIN ABSORPTION: Not expected to be a significant exposure route.

INGESTION: Expected to be practically non-toxic. Ingestion of large amounts may cause gastrointestinal irritation and blockage.

INHALATION: Dusts may irritate the nose, throat, and respiratory tract by mechanical abrasion. Coughing, sneezing, and shortness of breath may occur following exposures in excess of appropriate exposure limits.

Use of granite for construction purposes is not believed to cause additional acute toxic effects. However, repeated overexposures to very high levels of respirable crystalline silica (quartz, cristobalite, tridymite) for periods as short as six months have caused acute silicosis. Acute silicosis is a rapidly progressive, incurable lung disease that is typically fatal. Symptoms include (but are not limited to): shortness of breath, cough, fever, weight loss, and chest pain.

First Aid

EYES: Immediately flush eye(s) with plenty of clean water for at least 15 minutes, while holding the eyelid(s) open. Occasionally lift the eyelid(s) to ensure thorough rinsing. Beyond flushing, do not attempt to remove material from the eye(s). Contact a physician if irritation persists or later develops.

SKIN: Wash with soap and water. Contact a physician if irritation persists or later develops.

INGESTION: If person is conscious, give large quantity of water and induce vomiting; however, never attempt to make an unconscious person drink or vomit. Get immediate medical attention.

INHALATION: Remove to fresh air. Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists or later develops.

For emergencies, contact _____
(your company's designated emergency contact)

Chronic Toxicity

Prolonged and repeated inhalation of respirable crystalline silica-containing dust in excess of appropriate exposure limits has caused silicosis, a lung disease. Not all individuals with silicosis will exhibit symptoms (signs) of the disease. However, silicosis can be progressive, and symptoms can appear at any time, even years after exposure has ceased. Symptoms of silicosis may include, but are not limited to, the following: shortness of breath; difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; right heart enlargement and/or failure. Smoking may increase the risk of developing lung disorders, including emphysema and lung cancer. Persons with silicosis have an increased risk of pulmonary tuberculosis infection.

Respirable dust containing newly broken silica particles has been shown to be more hazardous to animals in laboratory tests than respirable dust containing older silica particles of similar size. Respirable silica particles which had aged for sixty days or more showed less lung injury in animals than equal exposures of respirable dust containing newly broken particles of silica.

There are reports in the literature suggesting that excessive crystalline silica exposure may be associated with adverse health effects involving the kidney, scleroderma (thickening of the skin caused by swelling and thickening of fibrous tissue) and other autoimmune disorders. However, this evidence has been obtained primarily from case reports involving individuals working in high exposure situations or those who have already developed silicosis; and therefore, this evidence does not conclusively prove a causal relationship between silica or silicosis and these adverse health effects. Several studies of persons with silicosis also indicate an increased risk of developing lung cancer, a risk that increases with the duration of exposure. Many of these studies of silicotics do not account for lung cancer confounders, especially smoking.

Granite is not listed as a carcinogen by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or the Occupational Safety and Health Administration (OSHA). In October 1996, an IARC Working Group re-assessing crystalline silica, a component of this product, designated respirable crystalline silica as carcinogenic (Group 1). The NTP's Report on Carcinogens, 9th edition, lists respirable crystalline silica as a "known human carcinogen." In year 2000, the American Conference of Governmental Industrial Hygienists (ACGIH) listed respirable crystalline silica (quartz) as a suspected human carcinogen (A-2). These classifications are based on sufficient evidence of carcinogenicity in certain experimental animals and on selected epidemiological studies of workers exposed to crystalline silica.

CALIFORNIA PROPOSITION 65: WARNING: This product contains chemical(s) known to the state of California to cause cancer.

7. PERSONAL PROTECTION AND CONTROLS

Respiratory Protection

For respirable quartz levels that exceed or are likely to exceed an 8-hr TWA of 0.1 mg/m^3, a NIOSH approved dust respirator must be worn. For respirable quartz levels that exceed or are likely to exceed an 8-hr TWA of 0.5 mg/m^3, a NIOSH approved HEPA filter respirator must be worn. If respirable quartz levels exceed or are likely to exceed an 8-hr TWA of 5 mg/m^3, a NIOSH approved positive pressure, full face respirator or equivalent is required. Respirator use must comply with applicable MSHA or OSHA standards, which include provisions for a user training program, respirator repair and cleaning, respirator fit testing, and other requirements.

Ventilation

Local exhaust or general ventilation adequate to maintain exposures below appropriate exposure limits.

Skin Protection

See "Hygiene" section below.

Eye Protection
Safety glasses with side shields should be worn as minimum protection. Dust goggles should be worn when excessively (visible) dusty conditions are present or are anticipated.
Hygiene
Wash dust-exposed skin with soap and water before eating, drinking, smoking, and using toilet facilities. Wash work clothes after each use.

Other Control Measures
Respirable dust and quartz levels should be monitored regularly. Dust and quartz levels in excess of appropriate exposure limits should be reduced by all feasible engineering controls, including (but not limited to) wet suppression, ventilation, process enclosure, and enclosed employee work stations.

8. STORAGE AND HANDLING PRECAUTIONS

Respirable crystalline silica-containing dust may be generated during processing, handling, and storage. The personal protection and controls identified in Section 7 of the MSDS should be used as appropriate.

Do not store near food and beverages or smoking materials.

9. SPILL, LEAK AND DISPOSAL PRACTICES

Steps to be Taken in Case Material is Released or Spilled
The personal protection and controls identified in Section 7 of the MSDS should be used as appropriate. Spilled material, where dust can be generated, may overexpose cleanup personnel to respirable crystalline silica-containing dust. Wetting of spilled material and/or use of respiratory protective equipment may be necessary. Do not dry sweep spilled material.

Prevent spilled materials from inadvertently entering streams, drains, or sewers.

For emergencies, contact _____
(your company's designated emergency contact)

Waste Disposal Method
Dispose of waste materials only in accordance with applicable federal, state, and local laws and regulations.

10. TRANSPORTATION

DOT Hazard Classification: None
Placard Required: None
Label Required: Label as required by the OSHA Hazard Communication Standard [29 CFR 1910.1200 (f) and applicable state and local laws and regulations.

For Further Information Contact: Place here the name, address, and telephone number of the operator or responsible party who can provide more info about the hazardous chemical.

Date of Preparation:

Emergency Information: Your company's designated emergency contact.

Notice: _____ believes the information contained herein is accurate; however, _____ makes no guarantees with respect to such accuracy and assumes no liability in connection with the use of the information contained herein by any party. The provision of the information contained herein is not intended to be and should not be construed as legal advice or as ensuring compliance with any federal, state or local laws and regulations. Any party using this product should review all such laws, rules or regulations prior to use.

NO WARRANTY IS MADE, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE.

2-G

MATERIAL SAFETY DATA SHEET

MSDS NUMBER: 401633MT - 2

24 Hour Emergency Assistance: CHEMTEL
MSDS Assistance Number: (877) 276-7285

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT: TX Conventional Gasoline - Not Oxygenated

PRODUCT CODE(S): 01150, 01151, 01166, 03774, 03775, 03778, 03779, 03780
MANUFACTURER ADDRESS:Motiva Enterprises LLC, P.O. Box 4540, Houston, TX. 77210-4540

SECTION 2 PRODUCT/INGREDIENTS

CAS#	CONCENTRATION	INGREDIENTS
Mixture	100 %volume	Gasoline
Mixture	0 - 49.99 %volume	Miscellaneous Hydrocarbons
1330-20-7	0 - 24.99 %volume	Xylene, mixed isomers
108-88-3	0 - 24.99 %volume	Toluene
95-63-6	0 - 4.99 %volume	1,2,4-Trimethyl Benzene (Pseudocumene)
100-41-4	0 - 4.49 %volume	Ethyl Benzene
71-43-2	0 - 3.99 %volume	Benzene
110-54-3	0 - 2.99 %volume	Hexane
110-82-7	0 - 0.99 %volume	Cyclohexane
91-20-3	0 - 0.99 %volume	Naphthalene
100-42-5	0 - 0.99 %volume	Styrene

NOTE: Content of Gasoline components will vary; Individual components may be present from trace amounts up to the maximum shown.

SECTION 3 HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW
Appearance & Odor: Bronze color, clear & bright liquid. Hydrocarbon odor.
Health Hazards: Toxic and harmful if inhaled. May be harmful or fatal if swallowed. Do not induce vomiting. May cause aspiration pneumonitis. May cause CNS depression.
Physical Hazards: Material is extremely flammable and heavier than air. Vapors may travel across the ground and reach remote ignition sources causing a flashback fire danger.
NFPA Rating (Health, Fire, Reactivity): 1, 3, 0
Hazard Rating:Least - 0 Slight - 1 Moderate - 2 High - 3 Extreme - 4

Inhalation:
Toxic and harmful if inhaled. May cause irritation to the nose, throat and

respiratory tract. Breathing of high vapor concentrations may cause CNS depression, evidenced by dizziness, light-headedness, headache, nausea, drowsiness, and loss of coordination. Continued inhalation may result in unconsciousness.

Eye Irritation:
May be irritating to the eyes causing a burning sensation, redness, swelling and/or blurred vision.

Skin Contact:
May be irritating to the skin causing a burning sensation, redness and/or swelling. Prolonged or repeated skin contact can cause defatting and drying of the skin which may result in a burning sensation and a dried, cracked appearance.

Ingestion:
This material may be harmful or fatal if swallowed. Ingestion may result in vomiting; aspiration (breathing) of vomitus into lungs must be avoided as even small quantities may result in aspiration pneumonitis. Generally considered to have a low order of acute oral toxicity.
Other Health Effects:
Carcinogenic in animal tests. Gasoline has been tested by API in a long-term inhalation test in mice and rats. There was an increased incidence of liver cancer in female mice. Male rats had a dose related increase in kidney tumors. This effect was due to formation of alpha-2u-globulin in the rats. This material is not formed in humans and is therefore not considered relevant. It is probable that the material causes cancer in laboratory animals. Material may adversely effect male reproductive performance based on testing in laboratory animals.

Refer to Section 11, Toxicological Information, for specific information on the following effects:
Developmental Toxicity, Genotoxicity, Immunotoxicity, Reproductive Toxicity

Primary Target Organs:
The following organs and/or organ systems may be damaged by overexposure to this material and/or its components:
Cardiovascular System, Blood/Blood Forming Organs, Kidney, Liver
Signs and Symptoms:
Irritation as noted above. Aspiration pneumonitis may be evidenced by coughing, labored breathing and cyanosis (bluish skin); in severe cases death may occur. Damage to blood-forming organs may be evidenced by: a) easy fatigability and pallor (RBC effect), b) decreased resistance to infection (WBC effect), c) excessive bruising and bleeding (platelet effect). Kidney damage may be indicated by changes in urine output or appearance, pain upon urination or in the lower back or general edema (swelling from fluid retention). Liver damage may be indicated by loss of appetite, jaundice (yellowish skin and eye color), fatigue and sometimes pain and swelling in the upper right abdomen.

For additional health information, refer to section 11.

SECTION 4 FIRST AID MEASURES

Inhalation:
Move victim to fresh air and provide oxygen if breathing is difficult. Get

medical attention. If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting or unresponsive, give 100% oxygen with rescue breathing or CPR as required and transport to the nearest medical facility.

Skin:
Remove contaminated clothing. Flush with large amounts of water for at least 15 minutes and follow by washing with soap if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.

Eye:
Flush eyes with large amounts of water for at least 15 minutes. If redness, burning, blurred vision or swelling persist, transport to nearest medical facility for additional treatment.

Ingestion:
DO NOT take internally. Do NOT induce vomiting. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into lungs. Get medical attention. In general no treatment is necessary unless large quantities are swallowed, however, get medical advice. Have victim rinse mouth out with water, then drink sips of water to remove taste from mouth.

Note to Physician:
If more than 2.0ml/kg body weight has been ingested and vomiting has not occurred, emesis should be induced with supervision. Keep victim's head below hips to prevent aspiration. If symptoms such as loss of gag reflex, convulsions, or unconsciousness occur before emesis, gastric lavage using a cuffed endotracheal tube should be considered.

SECTION 5 FIRE FIGHTING MEASURES

Flash Point [Method]: -40 °F/-40 °C [Tagliabue Closed Cup]
Flammability in Air: 1.3 - 7.6 %volume

Extinguishing Media:
Use water fog, foam, dry chemical or carbon dioxide (CO_2) to extinguish flames. Do not use a direct stream of water. Material will float and can be re-ignited on surface of water.

Fire Fighting Instructions:
DANGER! EXTREMELY FLAMMABLE. Clear fire area of all non-emergency personnel. Only enter confined fire space with full bunker gear, including a positive pressure, NIOSH-approved, self-contained breathing apparatus. Cool surrounding equipment, fire-exposed containers and structures with water. Container areas exposed to direct flame contact should be cooled with large quantities of water (500 gallons water per minute flame impingement exposure) to prevent weakening of container structure.

Unusual Fire Hazards:
Vapors are heavier than air accumulating in low areas and traveling along the ground away from the handling site. Do not weld, heat or drill on or near container. However , if emergency situations require drilling, only trained emergency personnel should drill.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Protective Measures:
DANGER! EXTREMELY FLAMMABLE! Eliminate potential sources of ignition. Handling equipment must be bonded and grounded to prevent sparking.

Spill Management:
Dike and contain spill.

FOR LARGE SPILLS: Remove with vacuum truck or pump to storage/salvage vessels.

FOR SMALL SPILLS: Soak up residue with an absorbent such as clay, sand or other suitable material. Place in non-leaking container and seal tightly for proper disposal.

Reporting:
U.S. regulations require reporting releases of this material to the environment which exceed the reportable quantity to the National Response Center at (800)424-8802.
CWA: This product is an oil as defined under Section 311 of EPA's Clean Water Act (CWA). Spills into or leading to surface waters that cause a sheen must be reported to the National Response Center, 1-800-424-8802.

SECTION 7 HANDLING AND STORAGE

Precautionary Measures:
Avoid heat, open flames, including pilot lights, and strong oxidizing agents. Use explosion-proof ventilation to prevent vapor accumulation. Ground all handling equipment to prevent sparking. Do not siphon gasoline by mouth; harmful or fatal if swallowed. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling.

For use as a motor fuel only. Do not use as a cleaning solvent or for other non-motor fuel uses.

Handling:
Surfaces that are sufficiently hot may ignite liquid material. Material is extremely flammable and heavier than air. Vapors may travel across the ground and reach remote ignition sources causing a flashback fire danger.

Keep containers closed when not in use. WARNING! The flow of gasoline through the pump nozzle can produce static electricity, which may cause a fire if gasoline is pumped into an ungrounded container. To avoid static buildup, place approved container on the ground. Do not fill container in vehicle or truck bed. Keep nozzle in contact with container while filling. Do not use automatic pump handle (latch-open) device. Keep all storage vessels closed. Material will ignite when exposed to air. Air trapped within the storage container may be removed by placing dry ice in the container prior to closing. Turn off all battery operated portable electronic devices (examples include: cellular phones, pagers and CD players) before operating gasoline pump. Use only with adequate ventilation.

Storage:

Store in a cool, dry place with adequate ventilation. Keep away from open flames and high temperatures.

Keep liquid and vapor away from heat, sparks and flame. Extinguish pilot lights, cigarettes and turn off other sources of ignition prior to use and until all vapors have dissipated. Use explosion-proof ventilation indoors and in laboratory settings.

Container Warnings:
Keep containers closed when not in use. Containers, even those that have been emptied, can contain explosive vapors. Do not cut, drill, grind, weld or perform similar operations on or near containers.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Benzene ACGIH TLV TWA: 0.5 ppmv STEL: 2.5 ppmv Notation: Skin
Benzene OSHA PEL TWA: 1 ppmv STEL: 5 ppmv
Cyclohexane ACGIH TLV TWA: 300 ppmv
Cyclohexane OSHA PEL TWA: 300 ppmv
Ethyl Benzene ACGIH TLV TWA: 100 ppmv STEL: 125 ppmv
Ethyl Benzene OSHA PEL TWA: 100 ppmv
Ethyl Benzene OSHA PEL - 1989(revoked) TWA: 100 ppmv STEL: 125 ppmv
Gasoline ACGIH TLV TWA: 300 ppmv STEL: 500 ppmv
Gasoline OSHA PEL - 1989(revoked) TWA: 300 ppmv STEL: 500 ppmv
N-Hexane OSHA PEL TWA: 50 ppmv
N-Hexane OSHA PEL - 1989(revoked) TWA: 50 ppmv
Naphthalene ACGIH TLV TWA: 10 ppmm STEL: 15 ppmm
Naphthalene OSHA PEL TWA: 10 ppmv
Naphthalene OSHA PEL - 1989(revoked) TWA: 10 ppmv STEL: 15 ppmv
Styrene ACGIH TLV TWA: 20 ppmv STEL: 40 ppmv
Styrene OSHA PEL TWA: 100 ppmv Ceiling: 200 ppmv
Styrene OSHA PEL - 1989(revoked) TWA: 50 ppmv STEL: 100 ppmv
Toluene ACGIH TLV TWA: 50 ppmv Notation: Skin
Toluene OSHA PEL TWA: 200 ppmv Ceiling: 300 ppmv
Toluene OSHA PEL - 1989(revoked) TWA: 100 ppmv STEL: 150 ppmv
Toluene SHELL INTERNAL TWA: 50 ppmv
Trimethyl Benzene ACGIH TLV TWA: 25 ppmv
Trimethyl Benzene OSHA PEL - 1989(revoked) TWA: 25 ppmv
Trimethyl Benzene SHELL PEL - 1989(revoked) TWA: 25 ppmv
xylene (o-, m-, p- isomers) OSHA PEL TWA: 100 ppmv
xylene (o-, m-, p- isomers) OSHA PEL - 1989(revoked) TWA: 100 ppmv STEL: 150 ppmv
Xylene (o-, m-, p-isomers) ACGIH TLV TWA: 100 ppmv STEL: 150 ppmv
EXPOSURE CONTROLS
Adequate explosion-proof ventilation indoors and in laboratory settings to control airborne concentrations below the exposure guidelines/limits.

PERSONAL PROTECTION
Personal protective equipment (PPE) selections vary based on potential exposure conditions such as handling practices, concentration and ventilation. Information on the selection of eye, skin and respiratory protection for use with this material is provided below.

Eye Protection:
Chemical Goggles - If liquid contact is likely.

Skin Protection:
Use protective clothing which is chemically resistant to this material. Selection of protective clothing depends on potential exposure conditions and may include gloves, boots, suits and other items. The selection(s) should take into account such factors as job task, type of exposure and durability requirements.

Published literature, test data and/or glove and clothing manufacturers indicate the best protection is provided by:
Neoprene, or Nitrile Rubber, or Polyvinyl Alcohol (PVA)

Respiratory Protection:
If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, an approved respirator must be worn. Respirator selection, use and maintenance should be in accordance with the requirements of the OSHA Respiratory Protection Standard, 29 CFR 1910.134.

Types of respirator(s) to be considered in the selection process include:
Supplied-Air Respirator. Air-Purifying Respirator for Organic Vapors.
Self-contained breathing apparatus for use in environments with unknown concentrations or emergency situations.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance & Odor: Bronze color, clear & bright liquid. Hydrocarbon odor.
Substance Chemical Family: Hydrocarbon
Appearance: Bronze color, clear & bright liquid.

Flammability in Air: 1.3 - 7.6

Flash Point: -40 °F [Tagliabue Closed Cup]

Freezing Point: -72 °F

Solubility (in Water): Negligible

Specific Gravity: 0.72 - 0.76

Stability: Stable

Vapor Density: 3.5

Vapor Pressure: 7 - 14.5 [Reid]

Viscosity: < 1.4 cSt Typical @ 100 °F

Volatility: 100 %weight

SECTION 10 REACTIVITY AND STABILITY

Stability:
Material is stable under normal conditions.

Conditions to Avoid:
Avoid heat, sparks, open flames and other ignition sources.

Materials to Avoid:
Avoid contact with strong oxidizing agents.

Hazardous Decomposition Products:
Thermal decomposition products are highly dependent on combustion conditions. A complex mixture of airborne solids, liquids and gases will evolve when this material undergoes pyrolysis or combustion. Aldehydes, Carbon Monoxide, Carbon Dioxide, Peroxide
and other unidentified organic compounds may be formed upon combustion.

SECTION 11 TOXICOLOGICAL INFORMATION

Acute Toxicity
Dermal LD50 >2 g/kg(Rabbit) OSHA: Non-Toxic Based on similar material(s)
Eye Irritation Moderate to Severe Irritation [Human] OSHA: Irritating Based on similar material(s)
Oral LD50 >5 g/kg(Rat) OSHA: Non-Toxic Based on similar material(s)
Skin Irritation Draize 0.98 [Rabbit, 24 hour(s)] OSHA: Irritating Based on similar material(s)

Carcinogenicity:
Gasoline has been tested by API in a long-term inhalation test in mice and rats. There was an increased incidence of liver cancer in female mice. Male rats had a dose related increase in kidney tumors. This effect was due to formation of alpha-2u-globulin in the rats. This material is not formed in humans and is therefore not considered relevant.

Carcinogenicity Classification
Gasoline
NTP: No IARC: Possible Carcinogen (2B) ACGIH: A3 OSHA: No
Benzene
NTP: Yes IARC: Carcinogen (1) ACGIH: A1 OSHA: Yes
Ethyl Benzene
NTP: No IARC: Possible Carcinogen (2B) ACGIH: A3 OSHA: No
Naphthalene
NTP: Yes IARC: Possible Carcinogen (2B) ACGIH: A4 OSHA: No
Styrene
NTP: No IARC: Possible Carcinogen (2B) ACGIH: A4 OSHA: No
Toluene
NTP: No IARC: Not Classifiable (3) ACGIH: A4 OSHA: No
Carcinogenicity
Chronic inhalation of wholly vaporized gasoline produced kidney tumors in male rats and liver tumors in female mice. The kidney tumors have been shown to develop through a unique mechanism involving Alpha-2u globulin. This protein is not present in humans making the kidney tumors irrelevant to potential human health risks. Origin of the female mouse liver tumors is less understood, leaving their significance for human risks uncertain. Prolonged and repeated exposure to high concentrations (10s to 100s ppm) of benzene may cause serious injury to blood-forming organs, is associated with anemia (depletion of blood cells) and is linked to the later development of acute myelogenous leukemia (AML) in humans. A recent chronic bioassay of ethylbenzene by the NTP produced clear evidence of carcinogenicity in male rats based on kidney tumor increase. Other animal tumors possibly associated with ethylbenzene include testicular adenomas in male rats, kidney tumors in

female rats, lung tumors in male mice and liver tumors in female mice. Toluene is not known to be mutagenic or carcinogenic although available human and experimental animal data are limited and insufficient to assess carcinogenic potential. A two-year inhalation study in rats found that naphthalene caused tumors in the lining of the nose (olfactory epithelial neuroblastoma) and respiratory tract (respiratory epithelial adenoma) of both male and female animals. There is also limited evidence of carcinogenic effects in female mice in a similar study.

Cardiovascular System
While there is no evidence that workplace exposure to acceptable levels of toluene vapors (e.g., the TLV) have produced cardiac effects in humans, high concentrations may cause cardiac sensitization and sudden lethality has been reported from habitual sniffing of solvents or glue. Animal studies have confirmed the sensitizing effects. Sensitization may lead to fatal changes in heart rhythms. Hypoxia or injection of adrenalin-like agents may enhance this effect. Thickening of heart blood vessels has been reported in animals exposed to xylene.

Developmental Toxicity
Daily exposure of pregnant rats to unleaded gasoline vapor at concentrations up to 9000 ppm resulted in no detectable maternal or developmental toxicity. Numerous studies of benzene in experimental animals have failed to detect teratogenic effects (birth defects) even at doses of benzene toxic to the mothers. There is some evidence of fetal toxicity, but not malformations, in mice and rabbits exposed to 500 ppm and higher concentrations of benzene vapor during gestation. Ethylbenzene caused birth defects in rats but not rabbits at doses that produced toxic effects in the mothers. n-Hexane produced fetal toxicity, reduced fetal weight, in mice at maternally toxic doses. Developmental toxicity studies of xylenes showed embryolethal/toxic and teratogenic effects with maternal toxicity. Many case studies involving abuse during pregnancy implicate toluene as a developmental toxicant. Studies in laboratory animals have shown developmental effects comparable to those reported in humans, but the effects were generally associated with maternal toxicity.

Genotoxicity
Unleaded gasoline was tested for genetic activity in tests using microbial cells, cultured mammalian cells and rats (bone marrow) and was judged to be negative in every case. Benzene has been shown to be non-mutagenic or weakly mutagenic in a variety of in vitro (test tube) systems. It has, however, been found to cause other types of chromosome damage (micronuclei, chromosome breakage, non-dysjunctional events) in both laboratory animals and workers exposed to high doses of benzene. These effects appear to be related to one or more metabolites of benzene, possibly acting in combination. Benzene metabolites can also bind to proteins forming detectable complexes (adducts). There is limited evidence of binding to the genetic material (DNA) itself. The relationship of these effects to the causation of leukemia or tumors in experimental animals is unknown. Changes in chromosomes of lymphocytes have been identified in some studies of humans exposed to styrene. The significance of these changes is not known, and other such studies have produced negative results. Chromosomal breaks have been reported in the bone marrow cells of rats exposed to styrene by inhalation along with increased frequency of sister chromatid exchanges in alveolar macrophages, bone marrow cells and regenerating liver cells. Ethylbenzene was not mutagenic in a number of in vitro procedures. Naphthalene was non-mutagenic using in vitro (test tube) evaluations, specifically Ames and rat embryo cell transformation assays. Cyclohexane and pseudocumene were also negative in Ames testing. Toluene was negative in the Ames assay and negative for chromosomal aberrations and sister-chromatid exchanges in human lymphocytes and in an in vitro test using

hamster cells. Mouse lymphoma test results for toluene were inconclusive.

Blood/Blood Forming Organs
Prolonged and repeated exposure to high concentrations (10s to 100s ppm) of benzene may cause serious injury to blood-forming organs and is associated with anemia (depletion of blood cells). Repeated exposure of rabbits to high cyclohexane vapor concentrations causes a slight increase in blood clotting time. Blood effects were seen in rats following prolonged and repeated oral exposure to a mixture of xylenes containing ethylbenzene.

Immunotoxicity
Various studies of workers exposed to high levels of benzene have found impairment of both humoral (antibody) and cellular immunity, most notably a decrease in levels of circulating leukocytes. Many of these exposures also involve other solvents and chemicals. Animal studies with high benzene doses have reported similar effects.

Kidney
Long-term inhalation of wholly vaporized gasoline caused increased kidney weight and progressive nephropathy (tissue damage) in male rats. In rats exposed orally to a xylene mixture also containing ethylbenzene, males developed hyaline droplet changes and females showed evidence of early chronic nephropathy. Intentional abuse of toluene vapors by 'glue-sniffers' has been associated with damage to the kidneys.

Liver
Inhalation of gasoline vapor increased liver weights, urinary excretion of ascorbic acid, and hepatic enzyme activity in male rats. Liver weight increases were seen in rats dosed orally for 90 days with a xylene mixture also containing ethylbenzene. Reversible liver damage has been reported in persons exposed to toluene by solvent abuse.

Neurotoxicity
Inhalation exposure to high n-hexane concentrations has resulted in peripheral neuropathy in rodents and also in human workers. Rats receiving prolonged and repeated exposure to high doses of xylene have shown hearing loss. Prolonged and repeated exposures to high toluene concentrations (mixed solvent) have resulted in hearing loss in laboratory animals. There have also been reports of hearing damage in humans overexposed to toluene and other solvents, however, these effects and their possible relationship to noise exposure remain uncertain. Intentional inhalation ('glue-sniffing') and resulting overexposure to toluene vapors has been linked to brain injury. Rats exposed repeatedly to high concentrations of styrene vapor also developed hearing deficits.

Reproductive Toxicity
Inhalation of high n-hexane concentrations resulted in testicular and epididymal lesions in laboratory animals. Animal studies on benzene have shown testicular effects and alteration in reproductive cycles.

Sensitization
Gasoline and component petroleum streams blended to produce it were tested in animal studies and found not to cause skin sensitization.

Systemic Toxicity
Studies on n-hexane in laboratory animals have shown mild, transitory effects on the spleen and blood (white blood cells) and evidence of nasal tract and lung damage. Chronic exposure to vapors of a mixture containing 50% pseudocumene (and possibly contaminated with benzene) caused decreased weight gain and blood changes (lymphopenia and neutrophilia), liver, lung, spleen,

kidney, and bone marrow effects in rats. Microscopic changes in the lung, including congestion, hemorrhage, edema, exudation, and leukocyte infiltration were observed in rats and guinea pigs following acute inhalation of styrene. In fatally exposed animals, pulmonary congestion, edema, and necrosis of the kidney and liver were reported. Repeated exposure to high vapor concentrations of cyclohexane caused minor microscopic liver and kidney changes in rabbits. Laboratory animals exposed to prolonged and repeated doses of xylenes by various routes have shown effects in liver, kidneys, lungs, spleen, heart, blood and adrenals.

SECTION 12 ECOLOGICAL INFORMATION

Environmental Impact Summary:
There is no ecological data available for this product.

SECTION 13 DISPOSAL CONSIDERATIONS

RCRA Information:

Under RCRA, it is the responsibility of the user of the material to determine, at the time of the disposal, whether the material meets RCRA criteria for hazardous waste. This is because material uses, transformations, mixtures, processes, etc. may affect the classification. Refer to the latest EPA, state and local regulations regarding proper disposal.

SECTION 14 TRANSPORT INFORMATION

US Department of Transportation Classification

Proper Shipping Name: Gasoline
Identification Number: UN1203
Hazard Class/Division: 3 (Flammable Liquid)
Packing Group: II
Marine Pollutant % of Total: 100 %weight
Marine Pollutant: Marine Polluntant based on the presence of >10% hydrocarbons listed in 49 CFR 172.101, appendix B; main constituents Trimethylbenzene and Naphthalene.
Oil: This product is an oil under 49CFR (DOT) Part 130. If shipped by rail or highway in a tank with a capacity of 3500 gallons or more, it is subject to these requirements. Mixtures or solutions containing 10% or more of this product may also be subject to this rule. Per 49 CFR 130.5, containers of 3500 gallon capacity or greater transported by road or rail are excepted from 49 CFR 172.303(L)(2) if shipping papers contain the word 'OIL'; exceptions are not applicable to shipments by water.
Emergency Response Guide # 128

International Air Transport Association

Hazard Class/Division: 3 (Flammable Liquid)
Identification Number: UN1203
Packing Group: II
Proper Shipping Name: Gasoline

International Maritime Organization Classification

Hazard Class/Division: 3 (Flammable Liquid)
Identification Number: UN1203
Packing Group: II
Proper Shipping Name: Gasoline

SECTION 15 REGULATORY INFORMATION

FEDERAL REGULATORY STATUS

OSHA Classification:
Product is hazardous according to the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
Comprehensive Environmental Release, Compensation & Liability Act (CERCLA):
Benzene RQ 10 lbs Reportable Spill => 205 lbs or 34 gal

Ozone Depleting Substances (40 CFR 82 Clean Air Act):
This material does not contain nor was it directly manufactured with any Class I or Class II ozone depleting substances.

Superfund Amendment & Reauthorization Act (SARA) Title III:

There are no components in this product on the SARA 302 list.

SARA Hazard Categories (311/312):
Immediate Health:YES Delayed Health:YES Fire:YES Pressure:NO Reactivity:NO

SARA Toxic Release Inventory (TRI) (313):
Styrene, Xylene (mixed isomers), 1,2,4-Trimethylbenzene, Toluene, Naphthalene, N-Hexane, Ethylbenzene, Cyclohexane, Benzene

Toxic Substances Control Act (TSCA) Status:
All component(s) of this material is(are) listed on the EPA/TSCA Inventory of Chemical Substances.

Other Chemical Inventories:
Australian AICS, Canadian DSL, Chinese Inventory, European EINECS, Japan ENCS, Korean Inventory, Philippines PICCS,

State Regulation
The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the MSDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65).

WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

WARNING: This product contains a chemical(s) known to the State of California to cause birth defects or other reproductive harm.

New Jersey Right-To-Know Chemical List:
Benzene (71-43-2) 0 - 3.99 %volume Carcinogen
Benzene (71-43-2) 0 - 3.99 %volume Mutagen
Benzene, Methyl- (108-88-3) 0 - 24.99 %volume
Cyclohexane (110-82-7) 0 - 0.99 %volume
Ethylbenzene (0851) 0 - 4.49 %volume
Naphthalene (1322) 0 - 0.99 %volume
Styrene (100-42-5) 0 - 0.99 %volume Mutagen
Xylenes (1330-20-7) 0 - 24.99 %volume

Pennsylvania Right-To-Know Chemical List:
Benzene (71-43-2) 0 - 3.99 %volume Spec Haz Sub/Env Hazardous
Benzene, dimethyl- (1330-20-7) 0 - 24.99 %volume Environmental Hazard
Benzene, ethenyl (100-42-5) 0 - 0.99 %volume Environmental Hazard
Benzene, Ethyl- (100-41-4) 0 - 4.49 %volume Environmental Hazard
Benzene, Methyl- (108-88-3) 0 - 24.99 %volume Environmental Hazard
Cyclohexane (110-82-7) 0 - 0.99 %volume Environmental Hazard
Naphthalene (91-20-3) 0 - 0.99 %volume Environmental Hazard

SECTION 16 OTHER INFORMATION

Revision#: 2
Revision Date: 04/14/2003
Revisions since last change (discussion): This Material Safety Data Sheet (MSDS) has been newly reviewed to fully comply with the guidance contained in the ANSI MSDS standard (ANSI Z400.1-1998). We encourage you to take the opportunity to read the MSDS and review the information contained therein.

SECTION 17 LABEL INFORMATION

READ AND UNDERSTAND MATERIAL SAFETY DATA SHEET BEFORE HANDLING OR DISPOSING OF PRODUCT. THIS LABEL COMPLIES WITH THE REQUIREMENTS OF THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200) FOR USE IN THE WORKPLACE. THIS LABEL IS NOT INTENDED TO BE USED WITH PACKAGING INTENDED FOR SALE TO CONSUMERS AND MAY NOT CONFORM WITH THE REQUIREMENTS OF THE CONSUMER PRODUCT SAFETY ACT OR OTHER RELATED REGULATORY REQUIREMENTS.

PRODUCT CODE(S): 01150, 01151, 01166, 03774, 03775, 03778, 03779, 03780

TX Conventional Gasoline - Not Oxygenated

DANGER!

EXTREMELY FLAMMABLE. VAPORS MAY EXPLODE. MAY BE FATAL IF INHALED. OVEREXPOSURE TO VAPORS CAN CAUSE CNS DEPRESSION. MAY CAUSE SKIN AND EYE IRRITATION. ASPIRATION HAZARD IF SWALLOWED - CAN ENTER LUNGS AND CAUSE DAMAGE. CONTAINS BENZENE WHICH IS A CANCER HAZARD - LINKED TO DEVELOPMENT OF ACUTE MYELOGENOUS LEUKEMIA. LONG-TERM EXPOSURE TO GASOLINE VAPORS HAS CAUSED CANCER IN LABORATORY ANIMALS. PROLONGED OR REPEATED SKIN CONTACT MAY CAUSE OIL ACNE OR DERMATITIS.

MAY CAUSE DAMAGE TO: Cardiovascular System, Blood/Blood Forming Organs, Kidney, Liver

Refer to Section 11, Toxicological Information, for specific information on the following effects:
Developmental Toxicity, Genotoxicity, Immunotoxicity, Reproductive Toxicity

Precautionary Measures:
Avoid heat, sparks, open flames and other ignition sources. Avoid breathing of vapors, fumes, or mist. Do not take internally. Use only with adequate ventilation. Avoid contact with eyes, skin and clothing. Keep container closed when not in use. Wash thoroughly after handling.

FIRST AID

Inhalation: Move victim to fresh air and provide oxygen if breathing is difficult. Get medical attention. If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting or unresponsive, give 100% oxygen with rescue breathing or CPR as required and transport to the nearest medical facility.
Skin Contact: Remove contaminated clothing. Flush with large amounts of water for at least 15 minutes and follow by washing with soap if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.
Eye Contact: Flush eyes with large amounts of water for at least 15 minutes. If redness, burning, blurred vision or swelling persist, transport to nearest medical facility for additional treatment.
Ingestion: DO NOT take internally. Do NOT induce vomiting. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into lungs. Get medical attention. Have victim rinse mouth out with water, then drink sips of water to remove taste from mouth. In general no treatment is necessary unless large quantities are swallowed, however, get medical advice.

FIRE

In case of fire, Use water fog, foam, dry chemical or carbon dioxide (CO_2) to extinguish flames. Do not use a direct stream of water. Material will float and can be re-ignited on surface of water.

SPILL OR LEAK
Dike and contain spill.
FOR LARGE SPILLS: Remove with vacuum truck or pump to storage/salvage vessels.

FOR SMALL SPILLS: Soak up residue with an absorbent such as clay, sand or other suitable material. Place in non-leaking container and seal tightly for proper disposal.

CONTAINS: Miscellaneous Hydrocarbons, Mixture; Xylene, mixed isomers, 1330-20-7; Toluene, 108-88-3; 1,2,4-Trimethyl Benzene (Pseudocumene), 95-63-6; Ethyl Benzene, 100-41-4; Benzene, 71-43-2; Hexane, 110-54-3; Cyclohexane,

110-82-7; Naphthalene, 91-20-3; Styrene, 100-42-5

NFPA Rating (Health, Fire, Reactivity): 1, 3, 0

TRANSPORTATION
US Department of Transportation Classification

Proper Shipping Name: Gasoline
Identification Number: UN1203
Hazard Class/Division: 3 (Flammable Liquid)
Packing Group: II
Marine Pollutant % of Total: 100 %weight
Marine Pollutant: Marine Polluntant based on the presence of >10% hydrocarbons listed in 49 CFR 172.101, appendix B; main constituents Trimethylbenzene and Naphthalene.
Oil: This product is an oil under 49CFR (DOT) Part 130. If shipped by rail or highway in a tank with a capacity of 3500 gallons or more, it is subject to these requirements. Mixtures or solutions containing 10% or more of this product may also be subject to this rule. Per 49 CFR 130.5, containers of 3500 gallon capacity or greater transported by road or rail are excepted from 49 CFR 172.303(L)(2) if shipping papers contain the word 'OIL'; exceptions are not applicable to shipments by water.
Emergency Response Guide # 128

CAUTION: Misuse of empty containers can be hazardous. Empty containers can be hazardous if used to store toxic, flammable, or reactive materials. Cutting or welding of empty containers might cause fire, explosion or toxic fumes from residues. Do not pressurize or expose to open flames or heat. Keep container closed and drum bungs in place.

Name and Address
Motiva Enterprises LLC
P.O. Box 4540
Houston, TX 77210-4540

TRANSPORTATION EMERGENCY

HEALTH EMERGENCY

ADMINISTRATIVE INFORMATION
MANUFACTURER ADDRESS: Motiva Enterprises LLC, P.O. Box 4540, Houston, TX. 77210-4540
Company Product Stewardship & Regulatory Compliance Contact: David Snyder
Phone Number: (281) 874-7728

THE INFORMATION CONTAINED IN THIS DATA SHEET IS BASED ON THE DATA AVAILABLE TO US AT THIS TIME, AND IS BELIEVED TO BE ACCURATE BASED UPON THAT : IT IS PROVIDED INDEPENDENTLY OF ANY SALE OF THE PRODUCT, FOR PURPOSE OF HAZARD COMMUNICATION. IT IS NOT INTENDED TO CONSTITUTE PRODUCT PERFORMANCE INFORMATION, AND NO EXPRESS OR IMPLIED WARRANTY OF ANY KIND IS MADE WITH RESPECT TO THE PRODUCT, UNDERLYING DATA OR THE INFORMATION CONTAINED HEREIN. YOU ARE URGED TO OBTAIN DATA SHEETS FOR ALL PRODUCTS YOU BUY, PROCESS, USE OR DISTRIBUTE, AND ARE ENCOURAGED TO ADVISE THOSE WHO MAY COME IN CONTACT WITH SUCH PRODUCTS OF THE INFORMATION CONTAINED HEREIN.

TO DETERMINE THE APPLICABILITY OR EFFECT OF ANY LAW OR REGULATION WITH RESPECT TO THE PRODUCT, YOU SHOULD CONSULT WITH YOUR LEGAL ADVISOR OR THE APPROPRIATE GOVERNMENT AGENCY. WE WILL NOT PROVIDE ADVICE ON SUCH MATTERS, OR BE RESPONSIBLE FOR ANY INJURY FROM THE USE OF THE PRODUCT DESCRIBED HEREIN. THE

UNDERLYING DATA, AND THE INFORMATION PROVIDED HEREIN AS A RESULT OF THAT DATA, IS THE PROPERTY OF EQUIVA SERVICES LLC AND IS NOT TO BE THE SUBJECT OF SALE OR EXCHANGE WITHOUT THE EXPRESS WRITTEN CONSENT OF EQUIVA SERVICES LLC.

38400-12146-100R-04/14/2003

3-G

ExxonMobil

MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: **MOBILGREASE XHP 321 MINE**
Product Description: Base Oil and Additives
Product Code: 531244-00, 97AB11
Intended Use: Grease

COMPANY IDENTIFICATION

Supplier: **EXXON MOBIL CORPORATION**
3225 GALLOWS RD.
FAIRFAX, VA. 22037 USA

24 Hour Health Emergency	609-737-4411
Transportation Emergency Phone	800-424-9300
ExxonMobil Transportation No.	281-834-3296
MSDS Requests	713-613-3661
Product Technical Information	800-662-4525, 800-947-9147
MSDS Internet Address	http://www.exxon.com, http://www.mobil.com

SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

Reportable Hazardous Substance(s) or Complex Substance(s)

Name	CAS#	Concentration*
MOLYBDENUM (IV) SULFIDE	1317-33-5	5 - 10%
ZINC DIALKYL DITHIOPHOSPHATE	68457-79-4	< 2.5%

* All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

SECTION 3 HAZARDS IDENTIFICATION

This material is not considered to be hazardous according to regulatory guidelines (see (M)SDS Section 15).

POTENTIAL HEALTH EFFECTS

Low order of toxicity. Excessive exposure may result in eye, skin, or respiratory irritation. High-pressure injection under skin may cause serious damage.

NFPA Hazard ID:	Health: 0	Flammability: 1	Reactivity: 0
HMIS Hazard ID:	Health: 0	Flammability: 1	Reactivity: 0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 4 FIRST AID MEASURES

INHALATION

Under normal conditions of intended use, this material is not expected to be an inhalation hazard.

SKIN CONTACT

Wash contact areas with soap and water. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Hazardous Combustion Products: Smoke, Fume, Sulfur oxides, Aldehydes, Oxides of carbon, Incomplete combustion products

FLAMMABILITY PROPERTIES

Flash Point [Method]: >246C (475F) [EST. FOR OIL, ASTM D-92 (COC)]
Flammable Limits (Approximate volume % in air): LEL: N/D UEL: N/D
Autoignition Temperature: N/D

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. U.S. regulations require reporting releases of this material to the environment which exceed the reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.

SPILL MANAGEMENT

Land Spill: Scrape up spilled material with shovels into a suitable container for recycle or disposal.

Water Spill: Stop leak if you can do it without risk. Confine the spill immediately with booms. Warn other shipping. Skim from surface.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Prevent small spills and leakage to avoid slip hazard.

Static Accumulator: This material is not a static accumulator.

STORAGE

Do not store in open or unlabelled containers.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMIT VALUES

Exposure limits/standards (Note: Exposure limits are not additive)

Source	Form	Limit / Standard			Note	Source
MOLYBDENUM (IV) SULFIDE [as Mo]		TWA	5 mg/m3		N/A	OSHA Z1
MOLYBDENUM (IV) SULFIDE [as Mo]	Total dust.	TWA	15 mg/m3		N/A	OSHA Z1
MOLYBDENUM (IV) SULFIDE [as Mo]	Inhalable fraction.	TWA	10 mg/m3		N/A	ACGIH
MOLYBDENUM (IV) SULFIDE [as Mo]	Respirable fraction.	TWA	3 mg/m3		N/A	ACGIH

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions.
Control measures to consider:
No special requirements under ordinary conditions of use and with adequate ventilation.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

No protection is ordinarily required under normal conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Work conditions can greatly effect glove durability; inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

No protection is ordinarily required under normal conditions of use.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS

See Sections 6, 7, 12, 13.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Typical physical and chemical properties are given below. Consult the Supplier in Section 1 for additional data.

GENERAL INFORMATION

Physical State: Solid
Form: Semi-fluid
Color: Brown
Odor: Characteristic
Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density: N/D
Flash Point [Method]: >246C (475F) [EST. FOR OIL, ASTM D-92 (COC)]
Flammable Limits (Approximate volume % in air): LEL: N/D UEL: N/D

Autoignition Temperature: N/D
Boiling Point / Range: > 316C (600F)
Vapor Density (Air = 1): N/D
Vapor Pressure: < 0.013 kPa (0.1 mm Hg) at 20 C
Evaporation Rate (n-butyl acetate = 1): N/D
pH: N/A
Log Pow (n-Octanol/Water Partition Coefficient): > 3.5
Solubility in Water: Negligible
Viscosity: 320 cSt (320 mm2/sec) at 40 C
Oxidizing Properties: See Sections 3, 15, 16.

OTHER INFORMATION

Freezing Point: N/D
Melting Point: N/D
DMSO Extract (mineral oil only), IP-346: < 3 %wt

NOTE: Most physical properties above are for the oil component in the material.

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.

MATERIALS TO AVOID: Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Route of Exposure	Conclusion / Remarks
Inhalation	
Toxicity (Rat): LC50 > 5000 mg/m3	Minimally Toxic. Based on assessment of the components.
Irritation: No end point data.	Negligible hazard at ambient/normal handling temperatures. Based on assessment of the components.
Ingestion	
Toxicity (Rat): LD50 > 2000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Skin	
Toxicity (Rabbit): LD50 > 2000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Irritation (Rabbit): Data available.	Negligible irritation to skin at ambient temperatures. Based on assessment of the components.
Eye	
Irritation (Rabbit): Data available.	May cause mild, short-lasting discomfort to eyes. Based on assessment of the components.

CHRONIC/OTHER EFFECTS

Contains:

Base oil severely refined: Not carcinogenic in animal studies. Representative material passes IP-346, Modified Ames test, and/or other screening tests. Dermal and inhalation studies showed minimal effects; lung non-specific infiltration of immune cells, oil deposition and minimal granuloma formation. Not sensitizing in test animals.

Additional information is available by request.

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

1 = NTP CARC	3 = IARC 1	5 = IARC 2B
2 = NTP SUS	4 = IARC 2A	6 = OSHA CARC

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- Not expected to be harmful to aquatic organisms.

MOBILITY

Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Base oil component -- Expected to be inherently biodegradable

BIOACCUMULATION POTENTIAL

Base oil component -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

REGULATORY DISPOSAL INFORMATION

RCRA Information: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous

waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed as hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrositivity or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

Empty Container Warning PRECAUTIONARY LABEL TEXT: Empty containers may retain residue and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Do not attempt to refill or clean container since residue is difficult to remove. Empty drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations.

SECTION 14 TRANSPORT INFORMATION

LAND (DOT) : Not Regulated for Land Transport

LAND (TDG) : Not Regulated for Land Transport

SEA (IMDG) : Not Regulated for Sea Transport according to IMDG-Code

AIR (IATA) : Not Regulated for Air Transport

SECTION 15 REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD: When used for its intended purposes, this material is not classified as hazardous in accordance with OSHA 29 CFR 1910.1200.

NATIONAL CHEMICAL INVENTORY LISTING: AICS, EINECS, TSCA

EPCRA: This material contains no extremely hazardous substances.

SARA (311/312) REPORTABLE HAZARD CATEGORIES: None.

SARA (313) TOXIC RELEASE INVENTORY:

Chemical Name	CAS Number	Typical Value
ZINC DIALKYL DITHIOPHOSPHATE	68457-79-4	< 2.5%

The Following Ingredients are Cited on the Lists Below:*

Chemical Name	CAS Number	List Citations
DIPHENYLAMINE	122-39-4	5, 9, 18
MOLYBDENUM (IV) SULFIDE	1317-33-5	1, 4, 13, 16, 17, 19
NAPHTHENIC ACIDS, ZINC SALTS	12001-85-3	15

SULFUR	7704-34-9	17, 19
ZINC DIALKYL DITHIOPHOSPHATE	68457-79-4	13, 15, 17
ZINC NEODECANOATE	27253-29-8	15

--REGULATORY LISTS SEARCHED--

1 = ACGIH ALL	6 = TSCA 5a2	11 = CA P65 REPRO	16 = MN RTK
2 = ACGIH A1	7 = TSCA 5e	12 = CA RTK	17 = NJ RTK
3 = ACGIH A2	8 = TSCA 6	13 = IL RTK	18 = PA RTK
4 = OSHA Z	9 = TSCA 12b	14 = LA RTK	19 = RI RTK
5 = TSCA 4	10 = CA P65 CARC	15 = MI 293	

Code key: CARC=Carcinogen; REPRO=Reproductive

* EPA recently added new chemical substances to its TSCA Section 4 test rules. Please contact the supplier to confirm whether the ingredients in this product currently appear on a TSCA 4 or TSCA 12b list.

SECTION 16 OTHER INFORMATION

N/D = Not determined, N/A = Not applicable

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:
No revision information is available.

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MHC: 0, 0, 0, 0, 0, 0 PPEC: A

DGN: 7049625XUS (1009419)

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CHEVRON ENVIRONMENTAL HEALTH CENTER INC. -- TRACTOR HYDRAULIC FLUID CPS226606 -- 9150-01-177-9438

========== Product Identification ==========

Product ID:TRACTOR HYDRAULIC FLUID CPS226606
MSDS Date:04/27/1991
FSC:9150
NIIN:01-177-9438
MSDS Number: BLZHH
=== Responsible Party ===
Company Name:CHEVRON ENVIRONMENTAL HEALTH CENTER INC.
Address:15299 SAN PABLO AVE.
Box:4054
City:RICHMOND
State:CA
ZIP:94804
Country:US
Info Phone Num:415-233-3737 OR 800-582-3835
Emergency Phone Num:415-233-3737 OR 800-457-2022
CAGE:0AHD1
=== Contractor Identification ===
Company Name:CHEVRON ENVIRONMENTAL HEALTH CENTER INC
Address:15299 SAN PABLO AVE
Box:4054
City:RICHMOND
State:CA
ZIP:94804
Country:US
Phone:800-582-3835
CAGE:0AHD1
Company Name:CHEVRON PRODUCTS COMPANY LUBRICANTS AND SPECIALTY PRODUCTS
Address:6001 BOLLINGER CANYON RD
Box:City:SAN RAMON
State:CA
ZIP:94583
Country:US
Phone:800-414-6737 / 800-582-3835
CAGE:81230

========== Composition/Information on Ingredients ==========

Ingred Name:LUBRICATING BASE OIL (MULTIPLE CAS NUMBERS INVOLVED)
Fraction by Wt: <90%
Other REC Limits:NONE SPECIFIED
OSHA PEL:5 MG/M3 OIL MIST
ACGIH TLV:5 MG/M3 OIL MIST

Ingred Name:ADDITIVE PACKAGE CONTAINING ZINC DIALKYLDITHIOPHOSPHATE
Fraction by Wt: >10%
Other REC Limits:NONE SPECIFIED

========== Hazards Identification ==========

Routes of Entry: Inhalation:NO Skin:NO Ingestion:NO
Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
Health Hazards Acute and Chronic:THIS SUBSTANCE IS NOT EXPECTED TO CAUSE PROLONGED OR SIGNIFICANT EYE OR SKIN IRRITATION. PRACTICALLY NON-TOXIC TO INTERNAL ORGANS IF IT GETS ON THE SKIN, IS INHALED OR

IS SWALLOWED.
Explanation of Carcinogenicity:ZINC ALKYL DITHIOPHOSPHATES ARE NOT BELIEVED TO POSE ANY MUTAGENIC RISK TO WORKERS EXPOSED TO THIS PRODUCT.
Effects of Overexposure:THIS SUBSTANCE IS NOT EXPECTED TO CAUSE PROLONGED OR SIGNIFICANT EYE OR SKIN IRRITATION. PRACTICALLY NON-TOXIC TO INTERNAL ORGANS IF IT GETS ON THE SKIN, IS INHALED OR IS SWALLOWED.
Medical Cond Aggravated by Exposure:NONE KNOWN

First Aid Measures

First Aid:EYES: FLUSH WITH RUNNING WATER FOR 15 MINUTES WHILE HOLDING EYELIDS OPEN. GET MEDICAL ATTENTION. SKIN: WASH WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING. INHALATION: REMOVE TO FRESH AIR. INGESTIO N: GIVE WATER OR MILK TO DRINK AND TELEPHONE FOR MEDICAL ADVICE. CONSULT MEDICAL PERSONNEL BEFORE INDUCING VOMITING. GET MEDICAL ATTENTION.

Fire Fighting Measures

Flash Point Method:COC
Flash Point:374F,190C
Extinguishing Media:USE WATER FOG, CARBON DIOXIDE, FOAM, OR DRY CHEMICAL.
Fire Fighting Procedures:FOR FIRES INVOLVING THIS MATERIAL, DO NOT ENTER ANY ENCLOSED OR CONFINED FIRE SPACE W/O PROPER PROTECTIVE EQUIPMENT, INCLUDING SELFCONTAINED BREATHING APPARATUS
Unusual Fire/Explosion Hazard:COMBUSTION OR HEAT OF FIRE MAY PRODUCE HAZARDOUS DECOMPOSITION PRODUCTS AND VAPORS.

Accidental Release Measures

Spill Release Procedures:STOP THE SOURCE OF THE LEAK. CLEAN UP AS SOON AS POSSIBLE. CONTAIN LIQUID TO PREVENT FURTHER CONTAMINATION OF SOIL, SURFACE WATER OR GROUNDWATER. CLEAN UP SMALL SPILLS USING APPROPRIATE TECHNIQUES SUC H AS SORBENT MATERIALS OR PUMPING.

Handling and Storage

Handling and Storage Precautions:DO NOT WELD, HEAT OR DRILL CONTAINER. RESIDUE MAY IGNITE WITH EXPLOSIVE VIOLENCE IF HEATED SUFFICIENTLY. CAUTION! DO NOT USE PRESSURE TO EMPTY DRUM.
Other Precautions:FOLLOW DIRECTIONS ON PRODUCT LABEL. THIS MATERIAL IS NOT EXPECTED TO PRESENT ANY ENVIRONMENTAL PROBLEMS OTHER THAN THOSE ASSOCIATED WITH OIL SPILLS.

Exposure Controls/Personal Protection

Respiratory Protection:USE ONLY IN WELL VENTILATED AREAS. IF VENTILATION IS INADEQUATE OR IF OPERATING CONDITIONS CREATE HIGH AIRBORNE CONCENTRATIONS, THE USE OF A NIOSH APPROVED RESPIRATOR IS RECOMMENDED.
Ventilation:USE ADEQUATE VENTILATION TO KEEP THE AIRBORNE CONCENTRATIONS OF THIS MATERIAL BELOW THE RECOMMENDED EXPOSURE STANDARD.
Protective Gloves:NONE NORMALLY REQUIRED.
Eye Protection:CHEMICAL SAFETY GOGGLES RECOMMENDED.
Other Protective Equipment:PROLONGED OR REPEATED SKIN CONTACT CAN BE MINIMIZED BY WEARING PROTECTIVE CLOTHING.

Work Hygienic Practices:WASH THOROUGHLY AFTER HANDLING AND BEFORE EATING, DRINKING OR SMOKING. LAUNDER CONTAMINATED CLOTHING BEFORE REUSE.
Supplemental Safety and Health
FORMULATION CHANGED. FOR PREVIOUS FORMULATIONS SEE P/N A, B, AND C, SAME NSN.

========== Physical/Chemical Properties ==========

HCC:V6
Spec Gravity:0.89
Viscosity:7.4 CST @100C
Solubility in Water:NEGLIGIBLE
Appearance and Odor:ORANGE LIQUID

========== Stability and Reactivity Data ==========

Stability Indicator/Materials to Avoid:YES
STRONG OXIDIZING AGENTS SUCH AS CHLORATES, NITRATES, PEROXIDES, ETC.
Stability Condition to Avoid:HIGH HEAT, OPEN FLAMES AND OTHER SOURCES OF IGNITION
Hazardous Decomposition Products:NORMAL COMBUSTION FORMS CARBON DIOXIDE AND WATER VAPOR. INCOMPLETE COMBUSTION CAN PRODUCE CARBON MONOXIDE.

========== Disposal Considerations ==========

Waste Disposal Methods:PLACE CONTAMINATED MATERIALS IN DISPOSABLE CONTAINERS AND DISPOSE OF IN A MANNER CONSISTENT WITH APPLICABLE REGULATIONS. CONTACT LOCAL ENVIROMENTAL OR HEALTH AUTHORITIES FOR APPROVED DISPOSAL OF THIS MATERIAL.

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2-H

Date: 15 October 2007
Supercedes: 10 June 2005

MATERIAL SAFETY DATA SHEET

IN CASE OF EMERGENCY CALL CHEMTREC AT 1-800-424-9300

1. PRODUCT IDENTIFICATION AND COMPANY IDENTIFICATION:

Product Name: **GOJO® ORANGE PUMICE HAND CLEANER**

Company Name & Address: GOJO Industries, Inc.
One GOJO Plaza, Suite 500
Akron, OH 44311

Emergency Phone: **1-800-424-9300 CHEMTREC**
Non-Emergency Phone: (330) 255-6000
MSDS Request Phone: (330) 255-6000 x8804

2. INFORMATION ON INGREDIENTS:

HAZARDOUS INGREDIENTS	CAS NUMBER	OSHA PEL	ACGIH TLV	% RANGE
None				

Other ingredient(s) with notification requirements:	CAS NUMBER	List
Petroleum Distillates	8002-05-9	MA 1; NJ 1; PA 1
Sodium Hydroxide	1310-73-2	PA 1
Propylene Glycol	57-55-6	CN 1; PA 1
D-Limonene	5989-27-5	CN 1

3. HAZARDS IDENTIFICATION:

EMERGENCY OVERVIEW

When used according to instructions, the product applicable to this MSDS is safe and presents no immediate or long-term health hazard. However, abnormal entry routes, such as gross ingestion, may require immediate medical attention.

Potential Health Effects:

HMIS: Health 1 Flammability 1 Reactivity 0 Personal Protection None

Eye Contact: May cause eye irritation.
Skin Contact: No irritation or reaction expected.
Inhalation: Not applicable.
Ingestion: May cause upset stomach, nausea (Abnormal entry route).
Carcinogenicity: Not listed as a carcinogen by NTP, IARC, OSHA or ACGIH.

4. FIRST AID MEASURES:

Eye Contact: Do not rub eyes. Flush eyes thoroughly with water for 15 minutes. If condition worsens or irritation persists, contact physician.
Skin Contact: Not applicable.
Inhalation: Not applicable.
Ingestion: Do not induce vomiting. Contact a physician or Poison Control Center.

5. FIRE FIGHTING MEASURES:

NFPA: Health 0 Fire 1 Reactivity 0

Flashpoint °F/°C (PMCC method): >212°F/100°C
Unusual Fire and Explosion Hazards: None known.
Special Fire Fighting Procedures: None known.
Extinguishing Media: X Water Fog X Alcohol Foam X CO_2 X Dry Chemical ____ Other

6. ACCIDENTAL RELEASE MEASURES:

No special requirements. Water clean up and rinse. CAUTION – WILL CAUSE SLIPPERY SURFACES.

7. HANDLING AND STORAGE:

Store at normal room temperature away from reach of small children. Keep containers sealed. Use older containers first. Avoid freezing conditions.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION:

Eye Protection:	None required under normal conditions.
Skin Protection:	None required under normal conditions.
Respiratory Protection:	None required under normal conditions.
Ventilation:	None required under normal conditions.
Protective Equipment or Clothing:	None required under normal conditions.

9. PHYSICAL AND CHEMICAL PROPERTIES:

Appearance and Odor	Orange opaque gel, orange odor.
pH (undiluted):	9 typical
VOC , %:	7

10. STABILITY AND REACTIVITY:

Stable/Non reactive product.

11. TOXICOLOGICAL INFORMATION:

No acute or chronic toxic effects expected when used according to directions.

12. ECOLOGICAL CONSIDERATIONS:

No ecological or special considerations when used according to directions. Not considered environmentally harmful from normal dilution, expected usage and typical drainage to sewers, septic systems and treatment plants.

13. DISPOSAL CONSIDERATIONS:

No special considerations when disposed according to local, state and Federal regulations.

14. TRANSPORT INFORMATION:

Not classified as a hazardous material.

15. REGULATORY AND OTHER INFORMATION:

TSCA: All ingredients are listed or exempt per reference 15 USC 2602 (2)(B)(iv).

Complies with current FDA regulations for cosmetic and/or over-the-counter drug products.

Notice: The information herein is based on data considered to be accurate as of the date of preparation of this material safety data sheet. However, no warranty or representation, expressed or implied, is made as to the accuracy or completeness of the foregoing data and safety information. The user assumes all liability for any damage or injury resulting from abnormal use, from any failure to adhere to recommended practices or from any hazards inherent in the nature of the product.

Praxair Material Safety Data Sheet

1. Chemical Product and Company Identification

Product Name: Oxygen, compressed (MSDS No. P-4638-F)	**Trade Name:** Oxygen, MediPure™ Oxygen
Chemical Name: Oxygen	**Synonyms:** Dioxygen
Formula: O_2	**Chemical Family:** Permanent gas
Telephone: **Emergencies:** 1-800-645-4633* **CHEMTREC:** 1-800-424-9300* **Routine:** 1-800-PRAXAIR	**Company Name:** Praxair, Inc. 39 Old Ridgebury Road Danbury, CT 06810-5113

** Call emergency numbers 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product. For routine information, contact your supplier, Praxair sales representative, or call 1-800-PRAXAIR (1-800-772-9247).*

2. Composition/Information on Ingredients

This section covers materials of manufacture only. See sections 3, 8, 10, 11, 15, and 16 for information on by-products generated during use, especially use in welding and cutting. See section 16 for important information about mixtures.

INGREDIENT	CAS NUMBER	CONCEN-TRATION	OSHA PEL	ACGIH TLV-TWA (2004)
Oxygen	7782-44-7	>99%*	None currently established	None currently established

**The symbol > means "greater than."*

3. Hazards Identification

EMERGENCY OVERVIEW

WARNING! High-pressure, oxidizing gas.
Vigorously accelerates combustion.
Self-contained breathing apparatus may be required by rescue workers.
Odor: None

THRESHOLD LIMIT VALUE: None currently established (ACGIH, 2004). Hazardous fumes may be generated during welding with this product. See section 16 for more information on welding hazards. TLV-TWAs should be used as a guide in the control of health hazards and not as fine lines between safe and dangerous concentrations.

EFFECTS OF A SINGLE (ACUTE) OVEREXPOSURE:

INHALATION–Breathing 80% or more oxygen at atmospheric pressure for more than a few hours may cause nasal stuffiness, cough, sore throat, chest pain, and breathing difficulty. Breathing oxygen at higher pressure increases the likelihood of adverse effects within a shorter time period. Breathing pure oxygen under pressure may cause lung damage and also Central Nervous System (CNS) effects resulting in dizziness, poor coordination, tingling sensation, visual and hearing disturbances, muscular

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Revised

twitching, unconsciousness, and convulsions. Breathing oxygen under pressure may cause prolongation of adaptation to darkness and reduced peripheral vision.

SKIN CONTACT–No harm expected.

SWALLOWING–This product is a gas at normal temperature and pressure.

EYE CONTACT–No harm expected.

EFFECTS OF REPEATED (CHRONIC) OVEREXPOSURE: No harm expected.

OTHER EFFECTS OF OVEREXPOSURE: See section 11, Toxicological Information.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: See section 11, Toxicological Information.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION: None known.

CARCINOGENICITY: Oxygen is not listed by NTP, OSHA, or IARC.

4. First Aid Measures

INHALATION: Immediately remove to fresh air. If not breathing, give artificial respiration. Keep victim warm and at rest. Call a physician. Advise the physician that the victim has been exposed to a high concentration of oxygen.

SKIN CONTACT: Wash with soap and water; seek medical attention if discomfort persists.

SWALLOWING: This product is a gas at normal temperature and pressure.

EYE CONTACT: Flush eyes thoroughly with water. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly. Get medical attention if discomfort persists.

NOTES TO PHYSICIAN: *Supportive treatment should include immediate sedation, anti-convulsive therapy if needed, and rest. See section 11, Toxicological Information.*

5. Fire Fighting Measures

FLASH POINT (test method):	Not applicable	
AUTOIGNITION TEMPERATURE:	Not applicable	
FLAMMABLE LIMITS IN AIR, % by volume:	LOWER: Not applicable	UPPER: Not applicable

EXTINGUISHING MEDIA: Vigorously accelerates combustion. Use media appropriate for surrounding fire. Water (e.g., safety shower) is the preferred extinguishing method for clothing fires.

SPECIAL FIRE FIGHTING PROCEDURES: WARNING! High-pressure, oxidizing gas. Evacuate all personnel from danger area. Immediately deluge cylinders with water from maximum distance until cool; then move them away from fire area if without risk. Self-contained breathing apparatus may be required by rescue workers. On-site fire brigades must comply with OSHA 29 CFR 1910.156.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Oxidizing agent; vigorously accelerates combustion. Contact with flammable materials may cause fire or explosion. Heat of fire can build pressure in cylinder and cause it to rupture. Oxygen cylinders are equipped with a pressure relief device. (Exceptions may exist where authorized by DOT.) No part of cylinder should be subjected to a temperature higher than 125°F (52°C). Smoking, flames, and electric sparks in the presence of enriched oxygen atmospheres are potential explosion hazards.

HAZARDOUS COMBUSTION PRODUCTS: Not applicable

STANDARD VALVE CONNECTIONS FOR U.S. AND CANADA:

THREADED:	0-3000 psig	CGA-540
	3001-4000 psig	CGA-577
	4001-5500 psig	CGA-701
PIN-INDEXED YOKE:	0-3000 psig	CGA-870 (Medical Use)
ULTRA-HIGH-INTEGRITY CONNECTION:	0-3000 psig	CGA-714

Use the proper CGA connections. **DO NOT USE ADAPTERS.**

Ask your supplier about free Praxair safety literature as referred to in this MSDS and on the label for this product. Further information about this product can be found in the following pamphlets published by the Compressed Gas Association, Inc. (CGA), 4221 Walney Road, 5th Floor, Chantilly, VA 20151-2923, Telephone (703) 788-2700, http://www.cganet.com/Publication.asp.

AV-1	*Safe Handling and Storage of Compressed Gases*
AV-8	*Characteristics and Safe Handling of Cryogenic Liquid and Gaseous Oxygen*
G-4	*Oxygen*
G-4.1	*Cleaning Equipment for Oxygen Service*
P-1	*Safe Handling of Compressed Gases in Containers*
P-2	*Characteristics and Safe Handling of Medical Gases*
P-39	*Oxygen-Rich Atmospheres*
SB-2	*Oxygen-Deficient Atmospheres*
SB-8	*Use of Oxy-Fuel Gas Welding and Cutting Apparatus*
V-1	*Compressed Gas Cylinder Valve Inlet and Outlet Connections*
—	*Handbook of Compressed Gases, Fourth Edition*

Praxair asks users of this product to study this MSDS and become aware of product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this MSDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information.

The opinions expressed herein are those of qualified experts within Praxair, Inc. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and the conditions of use of the product are not within the control of Praxair, Inc., it is the user's obligation to determine the conditions of safe use of the product.

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PRAXAIR®

Praxair, Inc.
39 Old Ridgebury Road
Danbury, CT 06810-5113

Printed in USA

16. Other Information

Be sure to read and understand all labels and instructions supplied with all containers of this product.

WARNING: Medical grades of oxygen are subject to strict federal regulations and are for use only under the control of a licensed physician or clinician familiar with the product and its hazards.

ADDITIONAL SAFETY AND HEALTH HAZARDS: ***High-pressure, oxidizing gas.*** Clean all gauges, valves, regulators, piping, and equipment to be used in oxygen service in accordance with CGA pamphlet G-4.1. Keep cylinders and their valves free of oil and grease. Use piping and equipment adequately designed to withstand pressures to be encountered. Close cylinder valve after each use; keep closed even when empty. ***Never use oxygen as a substitute for compressed air.*** Never use an oxygen jet for cleaning purposes of any sort, especially for clothing. Oxygen increases the likelihood of an engulfing fire. ***Never work on a pressurized system.*** If a leak occurs, close the cylinder valve. Blow the system down in a safe and environmentally sound manner in compliance with all federal, state, and local laws; then repair the leak. ***Never place a compressed gas cylinder where it may become part of an electrical circuit.***

Personnel who have been exposed to high concentrations of oxygen should stay in a well-ventilated or open area before going into a confined space or near an ignition source.

SPECIAL PRECAUTIONS: ***Use in welding and cutting.*** Read and understand the manufacturer's instructions and the precautionary label on the product. Ask your welding products supplier for a copy of Praxair's free safety booklet, P-2035, *Precautions and Safe Practices for Gas Welding, Cutting, and heating,* and for other manufacturers' safety publications. For a detailed treatment, get ANSI Z49.1, *Safety in Welding, Cutting, and Allied Processes*, published by the American Welding Society (AWS), 550 N.W. Le Jeune Rd., Miami, FL 33126, http://www.aws.org/, or see OSHA's Web site at http://www.osha-slc.gov/SLTC/weldingcuttingbrazing/. Order AWS documents from Global Engineering Documents, 15 Inverness Way East, Englewood, CO 80112-5710, http://global.ihs.com/.

Arcs and sparks can ignite combustible materials. Prevent fires. Refer to NFPA 51B, *Cutting and Welding Processes*. ***Do not strike an arc on the cylinder.*** The defect produced by an arc burn could lead to cylinder rupture.

MIXTURES: When you mix two or more gases or liquefied gases, you can create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an industrial hygienist or other trained person when you evaluate the end product. Remember, gases and liquids have properties that can cause serious injury or death.

HAZARD RATING SYSTEMS:

NFPA RATINGS:		**HMIS RATINGS:**	
HEALTH	= 0	HEALTH	= 0
FLAMMABILITY	= 0	FLAMMABILITY	= 0
INSTABILITY	= 0	PHYSICAL HAZARD	= 3
SPECIAL	= OX (OXidizer)		

15. Regulatory Information

The following selected regulatory requirements may apply to this product. Not all such requirements are identified. Users of this product are solely responsible for compliance with all applicable federal, state, and local regulations.

U.S. FEDERAL REGULATIONS:

EPA (ENVIRONMENTAL PROTECTION AGENCY)

CERCLA: COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT OF 1980 (40 CFR Parts 117 and 302):

Reportable Quantity (RQ): None

SARA: SUPERFUND AMENDMENT AND REAUTHORIZATION ACT:

SECTIONS 302/304: Require emergency planning based on Threshold Planning Quantity (TPQ) and release reporting based on Reportable Quantities (RQ) of Extremely Hazardous Substances (EHS) (40 CFR Part 355):

TPQ: None
EHS RQ: None

SECTIONS 311/312: Require submission of MSDSs and reporting of chemical inventories with identification of EPA hazard categories. The hazard categories for this product are as follows:

IMMEDIATE: No	**PRESSURE:** Yes
DELAYED: No	**REACTIVITY:** No
	FIRE: Yes

SECTION 313: Requires submission of annual reports of release of toxic chemicals that appear in 40 CFR Part 372.

Oxygen does not require reporting under Section 313.

40 CFR 68: RISK MANAGEMENT PROGRAM FOR CHEMICAL ACCIDENTAL RELEASE PREVENTION: Requires development and implementation of risk management programs at facilities that manufacture, use, store, or otherwise handle regulated substances in quantities that exceed specified thresholds.

Oxygen is not listed as a regulated substance.

TSCA: TOXIC SUBSTANCES CONTROL ACT: Oxygen is listed on the TSCA inventory.

OSHA: OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION:

29 CFR 1910.119: PROCESS SAFETY MANAGEMENT OF HIGHLY HAZARDOUS CHEMICALS: Requires facilities to develop a process safety management program based on Threshold Quantities (TQ) of highly hazardous chemicals.

Oxygen is not listed in Appendix A as a highly hazardous chemical.

STATE REGULATIONS:

CALIFORNIA: Oxygen is not listed by California under the SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 (Proposition 65).

PENNSYLVANIA: Oxygen is subject to the PENNSYLVANIA WORKER AND COMMUNITY RIGHT-TO-KNOW ACT (35 P.S. Sections 7301-7320).

At two or more atmospheres, CNS toxicity occurs. Symptoms include nausea, vomiting, dizziness or vertigo, muscle twitching, vision changes, and loss of consciousness and generalized seizures. At three atmospheres, CNS toxicity occurs in less than two hours; at six atmospheres, in only a few minutes.

Patients with chronic obstructive pulmonary disease retain carbon dioxide abnormally. If oxygen is administered, raising their blood-oxygen concentration, their breathing becomes depressed, and retained carbon dioxide rises to a dangerous level.

Animal studies suggest that the administration of certain drugs, including phenothiazine drugs and chloroquine, increases the susceptibility to toxicity from oxygen at high concentrations or pressures. Animal studies also indicate that vitamin E deficiency may increase susceptibility to oxygen toxicity.

Airway obstruction during high oxygen tension may cause alveolar collapse following absorption of the oxygen. Similarly, occlusion of the eustachian tubes may cause retraction of the eardrum and obstruction of the paranasal sinuses may produce vacuum-type headache.

12. Ecological Information

The atmosphere contains approximately 21% oxygen. No adverse ecological effects expected. Oxygen does not contain any Class I or Class II ozone-depleting chemicals. Oxygen is not listed as a marine pollutant by DOT.

13. Disposal Considerations

WASTE DISPOSAL METHOD: Do not attempt to dispose of residual or unused quantities. Return cylinder to supplier. For emergency disposal, secure cylinder in a well-ventilated area or outdoors; then slowly discharge gas to the atmosphere.

14. Transport Information

DOT/IMO SHIPPING NAME: Oxygen, compressed

HAZARD CLASS: 2.2	**IDENTIFICATION NUMBER:** UN 1072	**PRODUCT RQ:** None

SHIPPING LABEL(s): OXYGEN. An oxygen label may be used for domestic shipment in the United States and Canada in place of the NONFLAMMABLE GAS and OXIDIZER labels (49 CFR Part 172).

PLACARD (when required): NONFLAMMABLE GAS or OXYGEN

SPECIAL SHIPPING INFORMATION: Cylinders should be transported in a secure position, in a well-ventilated vehicle. Cylinders transported in an enclosed, nonventilated compartment of a vehicle can present serious safety hazards.

Shipment of compressed gas cylinders that have been filled without the owner's consent is a violation of federal law [49 CFR 173.301(b)].

welding with oxygen. See sections 3, 10, and 16 for details. The respiratory protection used must conform with OSHA rules as specified in 29 CFR 1910.134.

SKIN PROTECTION: Wear work gloves when handling cylinders; welding gloves for welding. Gloves must be free of oil and grease.

EYE PROTECTION: Wear safety glasses when handling cylinders. For welding, wear goggles with filter lens selected as per ANSI Z49.1. Provide protective screens and goggles, if necessary, to protect others. Select as per OSHA 29 CFR 1910.33

OTHER PROTECTIVE EQUIPMENT: Metatarsal shoes for cylinder handling. Select in accordance with OSHA 29 CFR 1910.132 and 1910.133. As needed for welding, wear hand, head, and body protection to help prevent injury from radiation and sparks. (See ANSI Z49.1.) At a minimum, this includes welder's gloves and protective goggles, and may include arm protectors, aprons, hats, shoulder protection, as well as substantial clothing. Regardless of protective equipment, never touch live electrical parts.

9. Physical and Chemical Properties

MOLECULAR WEIGHT:	31.9988
SPECIFIC GRAVITY (Air = 1) at 70°F (21.1°C) and 1 atm:	1.105
SOLUBILITY IN WATER, vol/vol at 32°F (0°C):	0.0489
PERCENT VOLATILES BY VOLUME:	100
BOILING POINT at 1 atm:	-297.4°F (-183°C)
FREEZING POINT at 1 atm:	-361.1°F (-218.4°C)

APPEARANCE, ODOR, AND STATE: Colorless, odorless, tasteless gas at normal temperature and pressure.

10. Stability and Reactivity

STABILITY: ☐ Unstable ☒ Stable

INCOMPATIBILITY (materials to avoid): Combustible materials, asphalt, flammable materials, especially oils and greases. Oxygen reacts with many materials.

HAZARDOUS DECOMPOSITION PRODUCTS: None known.

HAZARDOUS POLYMERIZATION: ☐ May Occur ☒ Will Not Occur

CONDITIONS TO AVOID: None known.

11. Toxicological Information

The welding process may generate hazardous fumes and gases. (See sections 3, 10, 15, and 16.)

At atmospheric concentration and pressure, oxygen poses no toxicity hazards. At high concentrations, newborn premature infants may suffer delayed retinal damage (retrolental fibroplasia) that can progress to retinal detachment and blindness. Retinal damage may also occur in adults exposed to 100% oxygen for extended periods (24 to 48 hours) or at pressures exceeding atmospheric pressure, particularly in individuals whose retinal circulation has been previously compromised. All individuals exposed for long periods to oxygen at high pressure and all who exhibit overt oxygen toxicity should have ophthalmologic examinations.

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: WARNING! High-pressure, oxidizing gas. Shut off flow if without risk. Ventilate area or move cylinder to a well-ventilated area. Remove all flammable materials from vicinity. Oxygen must never be permitted to strike an oily surface, greasy clothes, or other combustible material.

WASTE DISPOSAL METHOD: Prevent waste from contaminating the surrounding environment. Keep personnel away. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with federal, state, and local regulations. If necessary, call your local supplier for assistance.

7. Handling and Storage

PRECAUTIONS TO BE TAKEN IN STORAGE: Store and use with adequate ventilation, away from oil, grease, and other hydrocarbons. Separate oxygen cylinders from flammables by at least 20 ft (6.1 m) or use a barricade of noncombustible material. This barricade should be at least 5 ft (1.53 m) high and have a fire resistance rating of at least ½ hour. Firmly secure cylinders upright to keep them from falling or being knocked over. Screw valve protection cap firmly in place by hand. Store only where temperature will not exceed 125°F (52°C). Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full cylinders for long periods.

PRECAUTIONS TO BE TAKEN IN HANDLING: Protect cylinders from damage. Use a suitable hand truck to move cylinders; do not drag, roll, slide, or drop. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. Never insert an object (e.g., wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Open valve slowly. If valve is hard to open, discontinue use and contact your supplier. Never apply flame or localized heat directly to any part of the cylinder. High temperatures may damage the cylinder and could cause the pressure relief device to fail prematurely, venting the cylinder contents. For other precautions in using this mixture, see section 16.

For further information on storage, handling, and use of this product, see NFPA 55, *Standard for the Storage, Use, and Handling of Compressed and Liquefied Gases in Portable Cylinders*, published by the National Fire Protection Association.

8. Exposure Controls/Personal Protection

VENTILATION/ENGINEERING CONTROLS:

LOCAL EXHAUST–Use a local exhaust system, if necessary, to prevent increased oxygen concentration and, in welding, to keep hazardous fumes and gases below applicable TLVs in the worker's breathing zone.

MECHANICAL (general)–General exhaust ventilation may be acceptable if it can maintain a supply of air that is not too rich in oxygen and, during welding, can keep hazardous fumes and gases below applicable TLVs in the worker's breathing zone.

SPECIAL–None

OTHER–None

RESPIRATORY PROTECTION: None required under normal use. However, air-supplied respirators are required while working in confined spaces with this product. For welding, use air-purifying or air-supplied respirators, as appropriate, where local or general exhaust ventilation is inadequate. Adequate ventilation must keep worker exposure below applicable TLVs for fumes, gases, and other by-products of

1-XO

ExxonMobil

MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: **MOBILGEAR 600 XP 150**
Product Description: Base Oil and Additives
Product Code: 201560401215, 613620-00, 97AE98
Intended Use: Gear oil

COMPANY IDENTIFICATION

Supplier: **EXXON MOBIL CORPORATION**
3225 GALLOWS RD.
FAIRFAX, VA. 22037 USA

24 Hour Health Emergency	609-737-4411
Transportation Emergency Phone	800-424-9300
ExxonMobil Transportation No.	281-834-3296
MSDS Requests	713-613-3661
Product Technical Information	800-662-4525, 800-947-9147
MSDS Internet Address	http://www.exxon.com, http://www.mobil.com

SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

No Reportable Hazardous Substance(s) or Complex Substance(s).

SECTION 3 HAZARDS IDENTIFICATION

This material is not considered to be hazardous according to regulatory guidelines (see (M)SDS Section 15).

POTENTIAL HEALTH EFFECTS

Low order of toxicity. Excessive exposure may result in eye, skin, or respiratory irritation. High-pressure injection under skin may cause serious damage.

NFPA Hazard ID:	Health: 0	Flammability: 1	Reactivity: 0
HMIS Hazard ID:	Health: 0	Flammability: 1	Reactivity: 0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 4 FIRST AID MEASURES

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use

mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Hazardous Combustion Products: Smoke, Fume, Oxides of carbon, Incomplete combustion products, Aldehydes, Sulfur oxides

FLAMMABILITY PROPERTIES

Flash Point [Method]: >200C (392F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.

SPILL MANAGEMENT

Land Spill: Stop leak if you can do it without risk. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do it without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Prevent small spills and leakage to avoid slip hazard.

Static Accumulator: This material is a static accumulator.

STORAGE

Do not store in open or unlabelled containers.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits/standards for materials that can be formed when handling this product: When mists / aerosols can occur, the following are recommended: 5 mg/m³ - ACGIH TLV, 10 mg/m³ - ACGIH STEL, 5 mg/m³ - OSHA PEL.

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

No special requirements under ordinary conditions of use and with adequate ventilation.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator

selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

No special requirements under ordinary conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Work conditions can greatly affect glove durability; inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

No protection is ordinarily required under normal conditions of use.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS

See Sections 6, 7, 12, 13.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Typical physical and chemical properties are given below. Consult the Supplier in Section 1 for additional data.

GENERAL INFORMATION

Physical State: Liquid
Color: Amber
Odor: Characteristic
Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 C): 0.888
Flash Point [Method]: >200C (392F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D
Boiling Point / Range: > 316C (600F)
Vapor Density (Air = 1): > 2 at 101 kPa
Vapor Pressure: < 0.013 kPa (0.1 mm Hg) at 20 C
Evaporation Rate (n-butyl acetate = 1): N/D
pH: N/A
Log Pow (n-Octanol/Water Partition Coefficient): > 3.5
Solubility in Water: Negligible

Viscosity: 150 cSt (150 mm2/sec) at 40 C | 14.7 cSt (14.7 mm2/sec) at 100C
Oxidizing Properties: See Sections 3, 15, 16.

OTHER INFORMATION
Freezing Point: N/D
Melting Point: N/A
Pour Point: -9°C (16°F)
DMSO Extract (mineral oil only), IP-346: < 3 %wt

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.

MATERIALS TO AVOID: Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Route of Exposure	Conclusion / Remarks
Inhalation	
Toxicity (Rat): LC50 > 5000 mg/m3	Minimally Toxic. Based on test data for structurally similar materials.
Irritation: Data available.	Negligible hazard at ambient/normal handling temperatures. Based on assessment of the components.
Ingestion	
Toxicity (Rat): LD50 > 2000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Skin	
Toxicity (Rabbit): LD50 > 2000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Irritation (Rabbit): Data available.	Negligible irritation to skin at ambient temperatures. Based on test data for structurally similar materials.
Eye	
Irritation (Rabbit): Data available.	May cause mild, short-lasting discomfort to eyes. Based on test data for structurally similar materials.

CHRONIC/OTHER EFFECTS

For the product itself:
Repeated and/or prolonged exposure may cause irritation to the skin, eyes, or respiratory tract.

Contains:
Base oil severely refined: Not carcinogenic in animal studies. Representative material passes IP-346, Modified Ames test, and/or other screening tests. Dermal and inhalation studies showed minimal effects; lung non-specific infiltration of immune cells, oil deposition and minimal granuloma formation. Not sensitizing in test animals.

Additional information is available by request.

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

1 = NTP CARC	3 = IARC 1	5 = IARC 2B
2 = NTP SUS	4 = IARC 2A	6 = OSHA CARC

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- Not expected to be harmful to aquatic organisms.

MOBILITY

Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Base oil component -- Expected to be inherently biodegradable

BIOACCUMULATION POTENTIAL

Base oil component -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

REGULATORY DISPOSAL INFORMATION

RCRA Information: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed as hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrositivity or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be

completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14 TRANSPORT INFORMATION

LAND (DOT) : Not Regulated for Land Transport

LAND (TDG) : Not Regulated for Land Transport

SEA (IMDG) : Not Regulated for Sea Transport according to IMDG-Code

AIR (IATA) : Not Regulated for Air Transport

SECTION 15 REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD: When used for its intended purposes, this material is not classified as hazardous in accordance with OSHA 29 CFR 1910.1200.

NATIONAL CHEMICAL INVENTORY LISTING: AICS, EINECS, KECI, PICCS, TSCA
Special Cases:

Inventory	Status
NDSL	Restrictions Apply

EPCRA: This material contains no extremely hazardous substances.

SARA (311/312) REPORTABLE HAZARD CATEGORIES: None.

SARA (313) TOXIC RELEASE INVENTORY: This material contains no chemicals subject to the supplier notification requirements of the SARA 313 Toxic Release Program.

The Following Ingredients are Cited on the Lists Below: None.

--REGULATORY LISTS SEARCHED--

1 = ACGIH ALL	6 = TSCA 5a2	11 = CA P65 REPRO	16 = MN RTK
2 = ACGIH A1	7 = TSCA 5e	12 = CA RTK	17 = NJ RTK
3 = ACGIH A2	8 = TSCA 6	13 = IL RTK	18 = PA RTK
4 = OSHA Z	9 = TSCA 12b	14 = LA RTK	19 = RI RTK
5 = TSCA 4	10 = CA P65 CARC	15 = MI 293	

Code key: CARC=Carcinogen; REPRO=Reproductive

SECTION 16 OTHER INFORMATION

N/D = Not determined, N/A = Not applicable

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:
Revision Changes:
Section 13: Empty Container Warning was modified.
Section 08: Hand Protection was modified.
Section 06: Notification Procedures was modified.

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MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: **MOBIL DELVAC MX 15W-40**
Product Description: Base Oil and Additives
Product Code: 201520402010, 441048-00, 97E501
Intended Use: Engine oil

COMPANY IDENTIFICATION

Supplier: **EXXON MOBIL CORPORATION**
3225 GALLOWS RD.
FAIRFAX, VA. 22037 USA

24 Hour Health Emergency	609-737-4411
Transportation Emergency Phone	800-424-9300
ExxonMobil Transportation No.	281-834-3296
Product Technical Information	800-662-4525, 800-947-9147
MSDS Internet Address	http://www.exxon.com, http://www.mobil.com

SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

Reportable Hazardous Substance(s) or Complex Substance(s)

Name	CAS#	Concentration*
ZINC DITHIOPHOSPHATE	68649-42-3	< 2.5%

* All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

SECTION 3 HAZARDS IDENTIFICATION

This material is not considered to be hazardous according to regulatory guidelines (see (M)SDS Section 15).

POTENTIAL HEALTH EFFECTS

Low order of toxicity. Excessive exposure may result in eye, skin, or respiratory irritation. High-pressure injection under skin may cause serious damage.

NFPA Hazard ID:	Health: 0	Flammability: 1	Reactivity: 0
HMIS Hazard ID:	Health: 0	Flammability: 1	Reactivity: 0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 4 FIRST AID MEASURES

Inhalation

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

Ingestion

First aid is normally not required. Seek medical attention if discomfort occurs.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Hazardous Combustion Products: Smoke, Fume, Aldehydes, Sulfur Oxides, Incomplete combustion products, Oxides of carbon

FLAMMABILITY PROPERTIES

Flash Point [Method]: 215C (419F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The

National Response Center can be reached at (800)424-8802.

SPILL MANAGEMENT

Land Spill: Stop leak if you can do it without risk. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do it without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Avoid contact with used product. Prevent small spills and leakage to avoid slip hazard.

Static Accumulator: This material is a static accumulator.

STORAGE

Do not store in open or unlabelled containers.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMIT VALUES

Exposure limits/standards for materials that can be formed when handling this product: When mists / aerosols can occur, the following are recommended: 5 mg/m³ - ACGIH TLV, 10 mg/m³ - ACGIH STEL, 5 mg/m³ - OSHA PEL.

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

No special requirements under ordinary conditions of use and with adequate ventilation.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use

with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

No special requirements under ordinary conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

No protection is ordinarily required under normal conditions of use.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS

See Sections 6, 7, 12, 13.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Typical physical and chemical properties are given below. Consult the Supplier in Section 1 for additional data.

GENERAL INFORMATION

Physical State: Liquid
Color: brown
Odor: Characteristic
Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 C): 0.879
Flash Point [Method]: 215C (419F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D
Boiling Point / Range: > 316C (600F)

Vapor Density (Air = 1): N/D
Vapor Pressure: < 0.013 kPa (0.1 mm Hg) at 20 C
Evaporation Rate (N-Butyl Acetate = 1): N/D
pH: N/A
Log Pow (n-Octanol/Water Partition Coefficient): > 3.5
Solubility in Water: Negligible
Viscosity: 123 cSt (123 mm²/sec) at 40 C | 15.6 cSt (15.6 mm²/sec) at 100C
Oxidizing Properties: See Sections 3, 15, 16.

OTHER INFORMATION
Freezing Point: N/D
Melting Point: N/A
Pour Point: -27°C (-17°F)
DMSO Extract (mineral oil only), IP-346: < 3 %wt

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.

MATERIALS TO AVOID: Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Route of Exposure	Conclusion / Remarks
Inhalation	
Toxicity (Rat): LC50 > 5000 mg/m³	Minimally Toxic. Based on test data for structurally similar materials.
Irritation: No end point data.	Negligible hazard at ambient/normal handling temperatures. Based on assessment of the components.
Ingestion	
Toxicity (Rat): LD50 > 5000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Skin	
Toxicity (Rabbit): LD50 > 5000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Irritation (Rabbit): Data available.	Negligible irritation to skin at ambient temperatures. Based on test data for structurally similar materials.
Eye	
Irritation (Rabbit): Data available.	May cause mild, short-lasting discomfort to eyes. Based on test data for structurally similar materials.

CHRONIC/OTHER EFFECTS
For the product itself:

Diesel engine oils: Not carcinogenic in animals tests. Used and unused diesel engine oils did not produce any carcinogenic effects in chronic mouse skin painting studies.
Oils that are used in gasoline engines may become hazardous and display the following properties: Carcinogenic in animal tests. Caused mutations in vitro. Possible allergen and photoallergen. Contains polycyclic aromatic compounds (PAC) from combustion products of gasoline and/or thermal degradation products.

Contains:
Base oil severely refined: Not carcinogenic in animal studies. Representative material passes IP-346, Modified Ames test, and/or other screening tests. Dermal and inhalation studies showed minimal effects; lung non-specific infiltration of immune cells, oil deposition and minimal granuloma formation. Not sensitizing in test animals.

Additional information is available by request.

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

1 = NTP CARC	3 = IARC 1	5 = IARC 2B
2 = NTP SUS	4 = IARC 2A	6 = OSHA CARC

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY
Material -- Not expected to be harmful to aquatic organisms.

MOBILITY
Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY
Biodegradation:
Base oil component -- Expected to be inherently biodegradable

BIOACCUMULATION POTENTIAL
Base oil component -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

REGULATORY DISPOSAL INFORMATION

RCRA Information: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed as hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrositivity or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14 TRANSPORT INFORMATION

LAND (DOT) : Not Regulated for Land Transport

LAND (TDG) : Not Regulated for Land Transport

SEA (IMDG) : Not Regulated for Sea Transport according to IMDG-Code

AIR (IATA) : Not Regulated for Air Transport

SECTION 15 REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD: When used for its intended purposes, this material is not classified as hazardous in accordance with OSHA 29 CFR 1910.1200.

NATIONAL CHEMICAL INVENTORY LISTING: DSL, KECI, TSCA

Special Cases:

Inventory	Status
AICS	Restrictions Apply
ELINCS	Restrictions Apply

EPCRA: This material contains no extremely hazardous substances.

SARA (311/312) REPORTABLE HAZARD CATEGORIES: None.

SARA (313) TOXIC RELEASE INVENTORY:

Chemical Name	CAS Number	Typical Value
ZINC DITHIOPHOSPHATE	68649-42-3	< 2.5%

The following ingredients are cited on the lists below:

Chemical Name	CAS Number	List Citations
DIPHENYLAMINE	122-39-4	5, 18
ZINC DITHIOPHOSPHATE	68649-42-3	13, 15, 17

--REGULATORY LISTS SEARCHED--

1 = ACGIH ALL	6 = TSCA 5a2	11 = CA P65 REPRO	16 = MN RTK
2 = ACGIH A1	7 = TSCA 5e	12 = CA RTK	17 = NJ RTK
3 = ACGIH A2	8 = TSCA 6	13 = IL RTK	18 = PA RTK
4 = OSHA Z	9 = TSCA 12b	14 = LA RTK	19 = RI RTK
5 = TSCA 4	10 = CA P65 CARC	15 = MI 293	

Code key: CARC=Carcinogen; REPRO=Reproductive

SECTION 16 OTHER INFORMATION

N/D = Not determined, N/A = Not applicable

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:

Revision Changes:
Section 04: First Aid Inhalation - Header was modified.
Section 04: First Aid Ingestion - Header was modified.
Section 06: Notification Procedures - Header was modified.
Section 10 Stability and Reactivity - Header was modified.
Section 13: Disposal Recommendations - Note was modified.
Section 09: Phys/Chem Properties Note was modified.
Section 09: Color was modified.
Section 09: Evaporation Rate - Header was modified.
Section 08: Personal Protection was modified.
Section 08: Hand Protection was modified.
Section 07: Handling and Storage - Handling was modified.
Section 11: Dermal Lethality Test Data was modified.
Section 11: Oral Lethality Test Data was modified.
Section 11: Inhalation Lethality Test Data was modified.
Section 05: Hazardous Combustion Products was modified.
Section 09: Relative Density - Header was modified.
Section 09: Viscosity was modified.
Section 09: Viscosity was modified.
Section 15: List Citations Table was modified.
Section 15: List Citation Table - Header was modified.
Section 15: National Chemical Inventory Listing was modified.
Section 16: Code to MHCs was modified.
Section 08: Exposure limits/standards was modified.
Hazard Identification: OSHA - May be Hazardous Statement was modified.
Section 06: Notification Procedures was modified.

Section 01: Company Contact Methods Sorted by Priority was modified.

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Material Safety Data Sheet

Airgas

Oxygen

Section 1. Chemical product and company identification

Product name	: Oxygen
Supplier	: AIRGAS INC., on behalf of its subsidiaries 259 North Radnor-Chester Road Suite 100 Radnor, PA 19087-5283 1-610-687-5253
Product use	: Synthetic/Analytical chemistry.
Synonym	: Molecular oxygen; Oxygen molecule; Pure oxygen; O2; Liquid-oxygen-; UN 1072; UN 1073; Dioxygen
MSDS #	: 001043
Date of Preparation/Revision	: **4/22/2010.**
In case of emergency	: 1-866-734-3438

Section 2. Hazards identification

Physical state	: Gas.
Emergency overview	: DANGER! GAS: OXIDIZER. CONTACT WITH COMBUSTIBLE MATERIAL MAY CAUSE FIRE. CONTENTS UNDER PRESURE. Do not puncture or incinerate container. May cause severe frostbite. LIQUID: OXIDIZER. CONTACT WITH COMBUSTIBLE MATERIAL MAY CAUSE FIRE. Extremely cold liquid and gas under pressure. May cause severe frostbite. Do not puncture or incinerate container. Store in tightly-closed container. Avoid contact with combustible materials. Contact with rapidly expanding gases or liquids can cause frostbite.
Routes of entry	: Inhalation
Potential acute health effects	
Eyes	: May cause eye irritation. Contact with rapidly expanding gas may cause burns or frostbite. Contact with cryogenic liquid can cause frostbite and cryogenic burns.
Skin	: May cause skin irritation. Contact with rapidly expanding gas may cause burns or frostbite. Contact with cryogenic liquid can cause frostbite and cryogenic burns.
Inhalation	: Acts as a simple asphyxiant.
Ingestion	: Ingestion is not a normal route of exposure for gases. Contact with cryogenic liquid can cause frostbite and cryogenic burns.
Potential chronic health effects	: **CARCINOGENIC EFFECTS**: Not available. **MUTAGENIC EFFECTS**: Not available. **TERATOGENIC EFFECTS**: Not available.
Medical conditions aggravated by over-exposure	: Acute or chronic respiratory conditions may be aggravated by overexposure to this gas.

ee toxicological information (section 11)

Section 3. Composition, Information on Ingredients

Name	CAS number	% Volume	Exposure limits
Oxygen	7782-44-7	100	

Section 4. First aid measures

No action shall be taken involving any personal risk or without suitable training.If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus.It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Eye contact : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.

Skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.

Frostbite : Try to warm up the frozen tissues and seek medical attention.

Inhalation : If inhaled, remove to fresh air. If not breathing, give artificial respiration. Get medical attention.

Ingestion : As this product is a gas, refer to the inhalation section.

Section 5. Fire-fighting measures

Flammability of the product : Non-flammable.

Products of combustion : No specific data.

Fire hazards in the presence of various substances : Extremely flammable in the presence of the following materials or conditions: reducing materials, combustible materials and organic materials.

Fire-fighting media and instructions : Use an extinguishing agent suitable for the surrounding fire.

Apply water from a safe distance to cool container and protect surrounding area. If involved in fire, shut off flow immediately if it can be done without risk.

Contains gas under pressure. Contact with combustible material may cause fire. This material increases the risk of fire and may aid combustion. In a fire or if heated, a pressure increase will occur and the container may burst or explode.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions : Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment (section 8). Eliminate all ignition sources if safe to do so. Do not touch or walk through spilled material. Shut off gas supply if this can be done safely. Isolate area until gas has dispersed.

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods for cleaning up : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see section 1 for emergency contact information and section 13 for waste disposal.

Section 7. Handling and storage

Handling : High pressure gas. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Store in tightly-closed container. Avoid contact with combustible materials. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

Never allow any unprotected part of the body to touch uninsulated pipes or vessels that contain cryogenic liquids. Prevent entrapment of liquid in closed systems or piping without pressure relief devices. Some materials may become brittle at low temperatures and will easily fracture.

Oxygen

Storage : Keep container tightly closed. Keep container in a cool, well-ventilated area. Separate from acids, alkalies, reducing agents and combustibles. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).
For additional information concerning storage and handling refer to Compressed Gas Association pamphlets P-1 Safe Handling of Compressed Gases in Containers and P-12 Safe Handling of Cryogenic Liquids available from the Compressed Gas Association, Inc.

Section 8. Exposure controls/personal protection

Engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Personal protection

Eyes : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

When working with cryogenic liquids, wear a full face shield.

Skin : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

The applicable standards are (US) 29 CFR 1910.134 and (Canada) Z94.4-93

Hands : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Insulated gloves suitable for low temperatures

Personal protection in case of a large spill : Self-contained breathing apparatus (SCBA) should be used to avoid inhalation of the product.

Product name

oxygen

Consult local authorities for acceptable exposure limits.

Section 9. Physical and chemical properties

Molecular weight : 32 g/mole

Molecular formula : O2

Boiling/condensation point : -183.1°C (-297.6°F)

Melting/freezing point : -218.6°C (-361.5°F)

Critical temperature : -118.6°C (-181.5°F)

Vapor density : 1.105 (Air = 1) Liquid Density@BP: 71.23 lb/ft3 (1141 kg/m3)

Specific Volume (ft ^{3}/lb) : 12.0482

Gas Density (lb/ft ^{3}) : 0.083

Section 10. Stability and reactivity

Stability and reactivity : The product is stable.

Incompatibility with various substances : Extremely reactive or incompatible with the following materials: oxidizing materials, reducing materials and combustible materials.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Toxicity data

Other toxic effects on humans : No specific information is available in our database regarding the other toxic effects of this material to humans.

Specific effects

Carcinogenic effects : No known significant effects or critical hazards.

Mutagenic effects : No known significant effects or critical hazards.

Reproduction toxicity : No known significant effects or critical hazards.

Section 12. Ecological information

Aquatic ecotoxicity

Not available.

Environmental fate : Not available.

Environmental hazards : No known significant effects or critical hazards.

Toxicity to the environment : Not available.

Section 13. Disposal considerations

Product removed from the cylinder must be disposed of in accordance with appropriate Federal, State, local regulation.Return cylinders with residual product to Airgas, Inc.Do not dispose of locally.

Section 14. Transport information

Regulatory information	UN number	Proper shipping name	Class	Packing group	Label	Additional information
DOT Classification	UN1072 UN1073	OXYGEN, COMPRESSED Oxygen, refrigerated liquid	2.2	Not applicable (gas).	 	**Limited quantity** Yes. **Packaging instruction** **Passenger aircraft** Quantity limitation: 75 kg **Cargo aircraft** Quantity limitation: 150 kg **Special provisions** A52
TDG Classification	UN1072 UN1073	OXYGEN, COMPRESSED Oxygen, refrigerated liquid	2.2	Not applicable (gas).	 	**Explosive Limit and Limited Quantity Index** 0.125 **ERAP Index** 3000 **Passenger Carrying Ship**

Oxygen						
						Index 50 **Passenger Carrying Road or Rail Index** 75 **Special provisions** 42
Mexico Classification	UN1072 UN1073	OXYGEN, COMPRESSED Oxygen, refrigerated liquid	2.2	Not applicable (gas).	 	-

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Section 15. Regulatory information

United States

U.S. Federal regulations : TSCA 8(a) IUR: oxygen
United States inventory (TSCA 8b): This material is listed or exempted.

SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: oxygen
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: oxygen: Fire hazard, Sudden release of pressure, Delayed (chronic) health hazard

Clean Water Act (CWA) 307: No products were found.

Clean Water Act (CWA) 311: No products were found.

Clean Air Act (CAA) 112 accidental release prevention: No products were found.

Clean Air Act (CAA) 112 regulated flammable substances: No products were found.

Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

State regulations : **Connecticut Carcinogen Reporting:** This material is not listed.
Connecticut Hazardous Material Survey: This material is not listed.
Florida substances: This material is not listed.
Illinois Chemical Safety Act: This material is not listed.
Illinois Toxic Substances Disclosure to Employee Act: This material is not listed.
Louisiana Reporting: This material is not listed.
Louisiana Spill: This material is not listed.
Massachusetts Spill: This material is not listed.
Massachusetts Substances: This material is listed.
Michigan Critical Material: This material is not listed.
Minnesota Hazardous Substances: This material is not listed.
New Jersey Hazardous Substances: This material is listed.
New Jersey Spill: This material is not listed.
New Jersey Toxic Catastrophe Prevention Act: This material is not listed.
New York Acutely Hazardous Substances: This material is not listed.
New York Toxic Chemical Release Reporting: This material is not listed.
Pennsylvania RTK Hazardous Substances: This material is listed.
Rhode Island Hazardous Substances: This material is not listed.

Canada

WHMIS (Canada) : Class A: Compressed gas.
Class C: Oxidizing material.

CEPA Toxic substances: This material is not listed.
Canadian ARET: This material is not listed.
Canadian NPRI: This material is not listed.
Alberta Designated Substances: This material is not listed.
Ontario Designated Substances: This material is not listed.
Quebec Designated Substances: This material is not listed.

Section 16. Other information

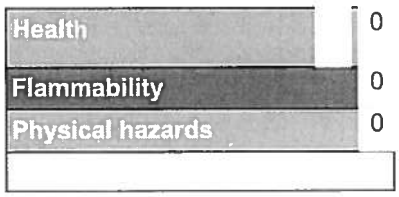
United States

Label requirements : GAS:
OXIDIZER.
CONTACT WITH COMBUSTIBLE MATERIAL MAY CAUSE FIRE.
CONTENTS UNDER PRESURE.
Do not puncture or incinerate container.
May cause severe frostbite.
LIQUID:
OXIDIZER.
CONTACT WITH COMBUSTIBLE MATERIAL MAY CAUSE FIRE.
Extremely cold liquid and gas under pressure.
May cause severe frostbite.

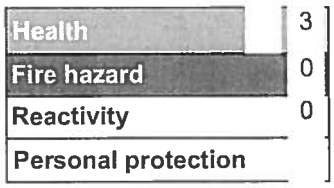
Canada

Label requirements : Class A: Compressed gas.
Class C: Oxidizing material.

Hazardous Material Information System (U.S.A.) :

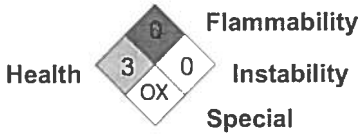


liquid:



National Fire Protection Association (U.S.A.) :

liquid:



Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

4-0

RECYCLING OIL SAVES THE ENVIRONMENT

R · O · S · E

MATERIAL SAFETY DATA SHEET (MSDS)
USED LUBRICATING OIL

MSDS
USED LUBRICATING OIL

INDEX

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MSDS

USED Lubricating Oil

1. PRODUCT AND COMPANY IDENTIFICATION

Trade name: Used Oil

APPLICATION:

Used lubricating oil or waste oil typically from the crankcase of internal combustion engines (mainly run on petrol or diesel). Used oil is also produced and collected from other operating equipment and includes products such as hydraulic oils, gear and transmission oils. It is not recommended that used oils from transformers and switchgear be mixed with other waste oils but this MSDS also accommodates the possibility of unwanted dumping of used transformer oils.

COMPANY IDENTIFICATION

ROSE Foundation	Phone: (021) 448 7492
Suite A9	Fax: (021) 448 7563/0866527384
Waverley Court	e-mail: usedoil@iafrica.com
Kotze Road	Web site: www.rosefoundation.org.za
Mowbray 7700	Mobile: 082 378 8556

2. COMPOSITION

Material is of variable composition depending on the composition of the original oil and the degree of degradation.

This material is a complex mixture of paraffinic, naphthenic and aromatic petroleum hydrocarbons that may contain one or more of the following: carbon deposits, sludge, aromatic and non-aromatic solvents, water (as a water-in-oil emulsion), glycols, wear metals and metallic salts, silicon-based antifoaming compounds, fuels, polycyclic aromatic hydrocarbons (PCAH's) and miscellaneous lubricating oil additive materials. In the unlikely event that used transformer oils are

mixed with other waste oil then polychlorinated biphenyls and terpenyls (PCB's/PCT's) may also be present

3. HAZARD IDENTIFICATION

Used engine oils may contain hazardous components (Polycyclic aromatic hydrocarbons, PCAH's) which have the potential to cause skin cancer. See Toxicological Information, section 11 of this Material Safety Data Sheet.
Used oils may contain components that are harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Used oils may contain fuel which may reduce the flash point and make the material flammable. **It is probably necessary to assign R10 – Flammable, as the presence of fuels at greater than 3.5% w/w in the used oil will potentially reduce the flash point to below 55°C.**

4. FIRST AID MEASURES

- *Eyes*
  Flush eyes immediately with fresh water for **at least 15 minutes.** Obtain medical advice if any pain or redness develops or persists.

- *Skin*
  Wash skin thoroughly with soap and water. Remove contaminated clothing and wash underlying skin as soon as reasonably practicable.

- *Ingestion*
  If swallowed and person is conscious, give water or milk. DO NOT make person vomit except on advice of medical personnel. If advice cannot be obtained, take person with container to nearest emergency treatment centre. Never give anything by mouth to an unconscious person.

- *Aspiration*
  Aspiration of product is unlikely, but should it occur, transport casualty to hospital immediately.

- *Inhalation*

If inhalation of mists, fumes, or vapour causes irritation to the nose or throat, or coughing, remove to fresh air. If symptoms persist obtain medical advice.

- *Advice to Doctor*
  Gastric lavage by qualified medical personnel may be considered, depending on quantity or material ingested.

5. FIRE FIGHTING MEASURES

***Specific hazard*: Combustible liquid. Emits toxic fumes under fire conditions.**
This material is harmful to aquatic organisms. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Extinguish using foam, dry powder or water fog. DO NOT USE WATER JETS. Avoid spraying directly into storage containers because of the danger of boil over. Fires in confined spaces should be dealt with by trained personnel wearing approved breathing apparatus **and protective clothing to prevent contact with skin and eyes.** Water may be used to cool nearby exposed areas/objects/packages.

Explosion Hazards
For fires involving this material, do not enter any enclosed or confined space without self-contained breathing apparatus to protect against the hazardous effects of combustion products or oxygen deficiency.

6. ACCIDENTAL RELEASE MEASURES

It may be necessary to evacuate the contaminated area in case of serious spills or leaks,

Methods for cleaning up
Contain and recover spilled material using sand or other suitable inert material.

- *Precautions*
  It is advised that stocks of suitable absorbent material should be held in quantities sufficient to deal with any spillage which may be reasonably anticipated. Spilled material may make surfaces slippery.

- *Environmental Precautions*
  Protect drains from potential spills to minimize contamination. DO NOT wash product into drainage system. Contact the appropriate authorities in all cases where the consequences cannot be quickly and effectively controlled.

  In the case of spillage on water, prevent the spread of product by the use of suitable barrier equipment. Recover product from the surface. Protect environmentally sensitive areas and water supplies.

  In the case of spillage at sea approved dispersants may be used where authorized by the appropriate governmental/regulatory authorities. Regular surveillance on the location of the spillage should be maintained.

- *In Case of Spill*
  Stop the source of the leak or release and contain spill if possible. Ventilate area. Use respirator and protective clothing as discussed in this MSDS. Cover spill with a generous amount of inert absorbent. Use a stiff broom to mix thoroughly.

  Sweep up and place in a disposable container. Scrub contaminated area with detergent and water using a stiff broom. Pick up liquid with additional absorbent and place in a disposable container. Prevent contamination of groundwater or surface water.

7. HANDLING AND STORAGE

- *Handling and Precautions*
  Avoid contact with eyes. If splashing is likely to occur wear a full face visor or chemical goggles as appropriate.

  If skin contact is likely, wear impervious protective clothing and/or gloves. High standards of personal hygiene and plant cleanliness must be maintained. Wash hands thoroughly after use, and always wash hands before eating, drinking and smoking, and before and after using the toilet.

Change heavily contaminated clothing as son as reasonably practicable and launder before re-use. Wash any contaminated underlying skin with soap and water.

The application of barrier cream on the hands before commencing work may be helpful. After washing, the application of a suitable conditioning cream may help prevent cracking, fissuring or dryness of the skin.

Avoid, as far as reasonably practicable, inhalation of mists, fumes, or vapour generated during use.

Take particular care to avoid prolonged skin contact with used engine oils.

- *Storage Conditions*
  Keep out of reach of children.
  Store under cover away from heat and sources of ignition.
  Keep containers tightly closed. Used lubricating oil should be stored in accordance with local regulations and should be separated from other waste streams such as coolants, brake fluids, degreasers and solvents.

- *Handling and Storage*
  Minimum feasible handling temperatures should be maintained. Periods of exposure to high temperatures should be minimized. Water contamination should be avoided. Misuse of empty containers can be hazardous.
  DO NOT cut, weld, or drill containers. Residue may ignite with explosive violence if heated sufficiently. Do not pressurize or expose to open flames or heat. Keep container closed and drum bungs in place and label correctly with appropriate hazardous waste signage where applicable

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

- *Eyes*
  No special eye protection is mandated but safety glasses with side shields can be recommended when handling used oils.

- *Skin*
  Exposed employees should exercise reasonable personal cleanliness; this includes cleansing exposed skin several times daily with soap and water, and laundering or drycleaning soiled work clothing at least weekly.

  Any routine contact with used motor oil should require the use of protective clothing such as gloves or apron made of neoprene, nitrile, or n-butyl rubber suitable for the application.

- *Inhalation*
  Respiratory protection is normally not required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standard(s), the use of an approved respirator is recommended.

  Wear approved respiratory protection such as toxic dust, mist and fume respirator.

- *Ventilation*
  Use adequate ventilation to keep the airborne concentrations of this material below the ACGIH TLV for mineral oil mists. Local exhausts ventilation and/or enclosure of the process is preferred in these cases.

- *Exposure Limits*
  Due to possible carcinogenic effects, exposure should be reduced to the lowest feasible level.

9. PHYSICAL AND CHEMICAL PROPERTIES

Grades: Used Lubricating Oil	**Test method**	**Units**	**Typical Values**
Physical State			Liquid
Colour			Black
Odour			Oily/Oxidised
Density at 20°C	ASTM D 4052	kg/L	Varies, usually below 0.9
Flash Point (PMCC)	ASTM D 93	°C	>60 (will be reduced

			if contaminated with fuel or solvent)
Solubility in Water		Mass @ 20C	Varies, usually <0.1%
Viscosity at 40°C	ASTM D 445	mm^2/s	80
Water	ASTM D95	%	10-20
Ash	ASTM D482	%	1.0
Fuel Solvents	ASTM D322	%	>3.5
Elemental Analysis	Atomic Absorption		ppm (mg/l)
Sulphur (S)			7300
Calcium (Ca)			1150
Zinc (Zn)			650
Lead (Pb)			140
Phosphorous (P)			600
Iron (Fe)			100
Magnesium (Mg)			65
Sodium (Na)			55
Silicon (Si)			50
Boron (B)			40
Manganese (Mn)			15
Copper (Cu)			20
Molybdenum (Mo)			15
Aluminum (Al)			15
Tin, Chromium, Barium, Nickel, Vanadium			<5

The above data represents an average taken from a range of typical values for this material. When precise physical & chemical properties are needed these should be obtained from analysis of a representative sample of the material in question.

10. STABILITY AND REACTIVITY

- *Hazardous Polymerizations*
  DO NOT OCCUR

- *Products of Combustion*
  Carbon monoxide, carbon dioxide, and aldehydes and ketones, combustion products of nitrogen or sulphur.

- *Conditions to Avoid*
  Strong monoxides such as chlorates, nitrates, peroxides, etc.

11. TOXOLOGICAL INFORMATION

- **Acute Toxicity**
  Unlikely to cause more than transient stinging or redness if accidental eye contact occurs.
  Unlikely to cause harm to the skin on brief or occasional contact but prolonged or repeated exposure may lead to dermatitis and should be avoided.
  Harmful if swallowed
  As with all such products containing potentially harmful levels of PCAH's, prolonged or repeated skin contact may eventually result in dermatitis or more serious irreversible skin disorders including cancer.
  At normal ambient temperatures this product will be unlikely to present an inhalation hazard because of its low volatility. It may be harmful by inhalation if exposure to vapour, mists or fumes resulting from thermal decomposition products occurs.

- **Chronic Toxicity**
  Used motor oils
  Combustion products resulting from the operation of internal combustion engines contaminate engine oils during use. Used motor oil may contain hazardous components which have been shown to cause skin cancer in mice following repeated application and continuous exposure. Frequent or prolonged contact with all types and makes of used engine oil must therefore be avoided and high standard of personal hygiene maintained. Brief or intermittent skin contact with used motor oil is not expected to have serious effects in humans if the oil is thoroughly removed by washing with soap and water.

  Transformer/switchgear oils
  Use transformer/switchgear oil may contain hazardous components that have limited evidence for human carcinogenicity. These products should be stored and handled separately from other used oil.

12. ECOLOGICAL INFORMATION

- *Environmental effects*
  This material is inherently biodegradable

Where present, components such as polychlorinated biphenyls and terpenyls (PCB's and PCT's) are harmful to aquatic organisms and may cause long term adverse effects in the aquatic environment. Spillages may penetrate the soil causing ground water contamination.
Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired.

13. DISPOSAL CONSIDERATIONS

- *Waste Disposal*
  Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

- *Remarks*
  This material may present risks common to oil spills. Contact oil spill response group and applicable government agencies if a spill occurs.

14. TRANSPORT INFORMATION

Used oils should be classed under IMDG Dangerous goods class as:
UN Number: 3082
Dangerous Goods Class: Class 9 (Miscellaneous dangerous substances and articles
Proper Shipping Name: Waste Environmental hazardous substance, liquid, N.O.S.
Hazchem Code: Not known
Additional Information: None determined

15. REGULATORY INFORMATION

In terms of Department of Environmental Affairs and Tourism (DEAT) Regulations Used Oil is classed as Hazardous Waste.

Respirator Information

Respirators must follow AS/NZS 1715/1716 standard for approved respirators.
In the absence of local approved authorities, follow U.S. NIOSH/MSHA, U.K. BSI, or joint Australia-New Zealand AS/NZS 1715/1716.

Risk Phases
R10 – Flammable
R45 – May cause cancer
R52/53 – Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment

16. ADDITIONAL INFORMATION

To the best of our knowledge, the information provided in this MSDS document is correct. Access to this information is also being provided via the Internet so that it can be made available to as many potential users as possible. The ROSE Foundation does not assume any liability for consequences of the use of this information since it may be applied under conditions beyond our control or knowledge.
Also, it is possible that additional data could be made available after this MSDS is issued. Certain hazards are described herein. However, these may not be the only hazards that exist. All materials may present unknown hazards and should be used with caution. Customers are encouraged to review this information, follow precautions, and comply with all applicable laws and regulations regarding the use and disposal of this product. For specific technical data or advice concerning this product as supplied in your area of operation please contact:

ROSE Foundation
e-mail: usedoil@iafrica.com
Website: www.rosefoundation.org.za
Telephone: (0)21 448 7492
Fax: (0)21 449 7563/0866 527 384

The final determination of the suitability of any material is the sole responsibility of the user.

SHERWIN-WILLIAMS CO -- G-2 AEROSOL SPRAY LINE-1 (PAINTS), G2B101 -- 8010-00N054712

========== Product Identification ==========

Product ID:G-2 AEROSOL SPRAY LINE-1 (PAINTS), G2B101
MSDS Date:08/01/1992
FSC:8010
NIIN:00N054712
MSDS Number: BVYSB
=== Responsible Party ===
Company Name:SHERWIN-WILLIAMS CO
Address:101 PROSPECT AVE N W
City:CLEVELAND
State:OH
ZIP:44115
Country:US
Info Phone Num:216-566-2902
Emergency Phone Num:216-566-2917
CAGE:54636
=== Contractor Identification ===
Company Name:SHERWIN-WILLIAMS CO THE
Address:101 PROSPECT AVE NW
Box:City:CLEVELAND
State:OH
ZIP:44115-1042
Country:US
Phone:800-251-2486/216-566-2242
CAGE:54636

========== Composition/Information on Ingredients ==========

Ingred Name:PROPANE (PROPELLANT). VP:760.
CAS:74-98-6
RTECS #:TX2275000
Fraction by Wt: 15%
OSHA PEL:1000 PPM
ACGIH TLV:ASPHYXIANT

Ingred Name:PROPANE, 2-METHYL-; (2-METHYLPROPANE) (PROPELLANT). VP:760.
CAS:75-28-5
RTECS #:TZ4300000
Fraction by Wt: 15%
OSHA PEL:N/K
ACGIH TLV:N/K

Ingred Name:TOLUENE (SARA III). VP:22.
CAS:108-88-3
RTECS #:XS5250000
Fraction by Wt: 15%
OSHA PEL:200 PPM
ACGIH TLV:50 PPM, S
EPA Rpt Qty:1000 LBS
DOT Rpt Qty:1000 LBS

Ingred Name:BENZENE, ETHYL-; (ETHYLBENZENE) (SARA III). VP:7.1.
CAS:100-41-4
RTECS #:DA0700000
Fraction by Wt: 2%

OSHA PEL:100 PPM
ACGIH TLV:100 PPM;125 STEL
EPA Rpt Qty:1000 LBS
DOT Rpt Qty:1000 LBS

Ingred Name:XYLENE (SARA III). VP:5.9.
CAS:1330-20-7
RTECS #:ZE2100000
Fraction by Wt: 8%
OSHA PEL:100 PPM
ACGIH TLV:100 PPM;150 STEL
EPA Rpt Qty:1000 LBS
DOT Rpt Qty:1000 LBS

Ingred Name:ACETONE (SARA III). VP:100.
CAS:67-64-1
RTECS #:AL3150000
Fraction by Wt: 35%
OSHA PEL:1000 PPM
ACGIH TLV:750 PPM;1000 STEL
EPA Rpt Qty:5000 LBS
DOT Rpt Qty:5000 LBS

Ingred Name:SUPDAT:HARMFUL/FATAL. NOTE:TOLUENE APPEARS ON NAVY LIST OF OCCUP CHEM REPRO HAZS. SEEK CONSULTATION FROM APPROP (ING 8)
RTECS #:9999999ZZ

Ingred Name:ING 7:HLTH PROFESSIONALS CONCERNING LATEST HAZ LIST INFO & SAFE HANDLING & EXPOSURE INFO .
RTECS #:9999999ZZ

Ingred Name:OTHER PREC:INCIN/EXPOS TO TEMP >120F. HEAT FROM SUNLIGHT, RADIATORS, STOVES, HOT WATER & OTHER HEAT SOURCES (ING 10)
RTECS #:9999999ZZ

Ingred Name:ING 9:COULD CAUSE CNTNR TO BURST. DO NOT TAKE INTERNALLY. KEEP OUT OF REACH OF CHILDREN. USE ONLY W/ADEQ VENT. (ING 11)
RTECS #:9999999ZZ

Ingred Name:ING 10:AVOID BRTHG VAP & SPRAY MIST. AVOID CONT W/SKIN & EYES. THIS COATING MAY CONTAIN MATLS CLASSIFIED AS (ING 12)
RTECS #:9999999ZZ

Ingred Name:ING 11:NUISANCE PARTICULATES WHICH MAY BE PRESENT AT HAZ LEVELS ONLY DURING SANDING/ABRADING OF DRIED FILM. IF (ING 13)
RTECS #:9999999ZZ

Ingred Name:ING 12:NO SPECIFIC DUSTS ARE LISTED IN ING SECTION, APPLIC LIMS FOR NUISANCE DUSTS ARE ACGIH TLV 10 MG/M3 TDUST,(ING 14)
RTECS #:9999999ZZ

Ingred Name:ING 13:OSHA PEL 15 MG/M3 TDUST; 5 MG/M3 RESP.
RTECS #:9999999ZZ

Ingred Name:RESP PROT:MSHA APPRVD PARTICULATE RESP FOR PROT AGAINST NON-VOLATILE MATLS IN INGREDIENT SECTION.
RTECS #:9999999ZZ

Ingred Name:VENT:1910.94, 1910.107, 1910.108.
RTECS #:9999999ZZ

Hazards Identification

LD50 LC50 Mixture:NONE SPECIFIED BY MANUFACTURER.
Routes of Entry: Inhalation:YES Skin:NO Ingestion:NO
Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
Health Hazards Acute and Chronic:EXPOS MAY BE BY INHAL &/OR SKIN/EYE CONT, DEPENDING ON CNDTNS OF USE. TO MIN EXPOS, FOLLOW RECS FOR PROPER USE, VENT & PERSONAL PROT EQUIP. ACUTE:IRRIT OF EYES, SKIN & RESP SYS. MAY CAUSE NERV SYS DEP RESS. EXTREME OVEREXP MAY RSLT IN UNCON& POSS DEATH. HDCH, DIZZ, NAUS & LOSS OF COORD ARE INDICATIONS (EFTS OF OVEREXP)
Explanation of Carcinogenicity:NOT RELEVANT
Effects of Overexposure:HLTH HAZ:OF EXCESSIVE EXPOS TO VAPS/SPRAY MISTS. REDNESS & ITCH/BURNING SENSATION MAY INDICATE EYE/EXCESSIVE SKIN EXPOS. CHRONIC:PRLNG OVEREXP TO SOLV INGS MAY CAUSE ADVERSE EFTS TO LIVER, URINARY, BL OOD-FORMING, CVS & REPRO SYS. RPTS HAVEASSOC RPTD & PRLNG OVEREXP TO SOLVS W/PERM BRAIN & NERV SYS DMG. (SUPP DATA)
Medical Cond Aggravated by Exposure:NONE GENERALLY RECOGNIZED.

First Aid Measures

First Aid:INHAL:IF ANY BREATHING PROBLEMS OCCUR DURING USE, LEAVE AREA & GET FRESH AIR. IF PROBLEMS REMAIN OR OCCUR LATER, IMMEDIATELY GET MEDICAL ATTENTION. SKIN:WASH AFFECTED AREA THOROUGHLY W/SOAP & WATER. R EMOVE CONTAMINATED CLOTHING & LAUNDER BEFORE RE-USE. EYES:FLUSH W/LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. GET MEDICAL ATTENTION. INGEST:GET MEDICAL ATTENTION.

Fire Fighting Measures

Flash Point:<21F,<-6C
Lower Limits:0.5%
Upper Limits:12.8%
Extinguishing Media:CARBON DIOXIDE, DRY CHEMICAL, FOAM.
Fire Fighting Procedures:USE NIOSH/MSHA APPRVD SCBA & FULL PROT EQUIP. WATER SPRAY MAY BE INEFT. IF WATER IS USED, FOG NOZZ ARE PREF. WATER MAY BE USED TO COOL CLSD CNTNRS(SUPDAT)
Unusual Fire/Explosion Hazard:KEEP CNTNRS TIGHTLY CLSD. ISOLATE FROM HEAT, ELEC EQUIP, SPKS & OPEN FLAME. CLSD CNTNRS MAY EXPLODE WHEN EXPOS TO EXTREME HEAT. APPLICATION TO HOT SURFS(SUPDAT)

Accidental Release Measures

Spill Release Procedures:REMOVE ALL SOURCES OF IGNITION. VENTILATE & REMOVE W/INERT ABSORBENT.
Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

Handling and Storage

Handling and Storage Precautions:DOL STOR CATEGORY - 1A. CONTENTS ARE EXTREMELY FLAMM. KEEP AWAY FROM HEAT, SPKS & OPEN FLAME. CONSULT NFPA CODE. USE APPRVD BONDING & GROUNDING PROCS.
Other Precautions:DURING USE & UNTIL ALL VAPS ARE GONE: KEEP AREA VENTILATED; DO NOT SMOKE; EXTING ALL FLAMES, PILOT LIGHTS & HEATERS; TURN OFF STOVES, ELEC TOOLS & APPLIANCES & ANY OTHER SOURCES OF IGNIT. CONTENTS UND ER PRESS. DO NOT PUNCTURE, (ING 9)

Exposure Controls/Personal Protection

Respiratory Protection:IF PERSONAL EXPOS CANNOT BE CONTROLLED BELOW APPLIC LIMS BY VENT, WEAR PROPERLY FITTED NIOSH/MSHA APPRVD ORG VAP/PARTICULATE RESP FOR PROT AGAINST INGS. WHEN SANDING, WIREBRUSHING, ABRADING, BURNING/W ELDING DRIED FILM, WEAR NIOSH/ (ING 15)
Ventilation:LOC EXHST PREF. GEN EXHST ACCEPT IF EXPOS TO INGS IS MAINTAINED BELOW APPLIC EXPOS LIMS. REFER TO OSHA STDS (ING 16)
Protective Gloves:IMPERVIOUS GLOVES .
Eye Protection:ANSI APPROVED CHEM WORKERS GOGGS .
Other Protective Equipment:NONE SPECIFIED BY MANUFACTURER.
Work Hygienic Practices:WASH HANDS AFTER USING.
Supplemental Safety and Health
FIRE FIGHT PROC:TO PVNT PRESS BUILD-UP & POSS AUTOIGNIT/EXPLO WHEN EXPOS TO EXTREME HEAT. EXPLO HAZ:REQS SPECIAL PRECS. DURING EMER CNDTNS OVEREXP TO DECOMP PRODS MAY CAUSE HLTH HAZ. SYMPS MAY NOT BE IMMED APPARENT. OBTAIN MED ATTN. EFTS OF OVEREXP:INTENTIONAL MISUSE BY DELIB CONC & INHALING CONTENTS CAN BE (ING 7)

Physical/Chemical Properties

Boiling Pt:B.P. Text:<0F,<-18C
Vapor Pres:SEE INGS
Vapor Density:HVR/AIR
Evaporation Rate & Reference:FASTER THAN ETHER
Appearance and Odor:NONE SPECIFIED BY MANUFACTURER.
Percent Volatiles by Volume:>75

Stability and Reactivity Data

Stability Indicator/Materials to Avoid:YES
NONE KNOWN.
Stability Condition to Avoid:NONE SPECIFIED BY MANUFACTURER.
Hazardous Decomposition Products:BY FIRE: CARBON DIOXIDE, CARBON MONOXIDE, OXIDES OF METALS IN INGS.

Disposal Considerations

Waste Disposal Methods:WASTE FROM THIS PROD MAY BE HAZ AS DEFINED UNDER RCRA 40 CFR 1910.261. WASTE MUST BE TESTED FOR IGNITABILITY TO DETERM APPLIC EPA WASTE NUMBERS. DO NOT INCIN. DEPRESSURIZE CNTNR. DISP OF I/A/W FED, ST ATE & LOC REGS REGARDING POLLUTION.

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2-P

The Armor All/STP Products Company
1221 Broadway
Oakland, CA 94612
Tel. (510) 271-7000

Material Safety Data Sheet

I Product: STP® POWER STEERING FLUID

Description: LIGHT TO DARK AMBER LIQUID WITH A HYDROCARBON ODOR

Other Designations	Distributor	Emergency Telephone Nos.
Power Steering Lubricant	The Armor All/STP Products Company 1221 Broadway Oakland, CA 94612	For Medical emergencies call: (800) 446-1014 For Transportation Emergencies call: (800) 424-9300 (Chemtrec)

II Health Hazard Data

May cause mild eye irritation. Prolonged skin contact may cause irritation, defatting of the skin or dermatitis. Vapors or mists may cause respiratory irritation, headache, dizziness or drowsiness. Swallowing may cause irritation, nausea, vomiting and diarrhea. Aspiration from ingestion may cause lipid pneumonia. Individuals with preexisting skin disorders may be at increased risk from exposure to this product.
Under normal consumer use and conditions, the likelihood of adverse health effects is low.

FIRST AID:
EYE CONTACT: Immediately flush eyes with plenty of water for 15 minutes. If irritation persists, get medical attention.
SKIN CONTACT: Remove contaminated clothing. Wash contact area with soap and water. If irritation persists, get medical attention.
INGESTION: Do not induce vomiting. Get medical attention by calling Poison control center or doctor. If vomiting occurs, keep head below hips to prevent aspiration.
INHALATION: If symptoms develop, remove to fresh air. If breathing becomes difficult, give oxygen or administer artificial respiration. Get medical attention.

III Hazardous Ingredients

Ingredients	Concentration	Worker Exposure Limit
Petroleum Distillates CAS# 64742-54-7 64742-65-0	90-100%	5 mg/ m^3 - TWA PEL/TLV TWA

TLV-TWA = ACGIH Threshold Limit Value - Time Weighted Average.
PEL = Permissible Exposure Limit

None of the ingredients in this product are on the IARC, NTP or OSHA carcinogen list.

Petroleum Distillates: Oral Rat LD50 >5 g/kg; LD50 Skin rabbit: >5 g/kg

IV Special Protection and Precautions

Hygienic Practices: Wash hands thoroughly after contact. Do not handle or store at temperatures greater than 100°F.
Engineering Controls: Use local and/or general ventilation to minimize exposure to vapor or mists.
Personal Protective Equipment: Wear safety glasses or splash-proof goggles. Wear neoprene or nitrile gloves to prevent skin contact. Use a NIOSH-approved respirator if exposure exceeds occupational limits.
Keep container closed when not in use.
KEEP OUT OF REACH OF CHILDREN

V Transportation and Regulatory Data

DOT/IMO/IATA: Not Restricted
TSCA Status: All ingredients in this product are listed on the TSCA inventory.
EPA - SARA Title III/CERCLA:
This product is regulated under Sections 311/312. This product contains no chemicals, which are regulated under Section 313 and Section 304/CERCLA.

VI Spill Procedures/Waste Disposal

Spill Procedures: Wear personal protective equipment. Collect with suitable absorbent material and place into a container for disposal. Report spills and releases as required. For spills of multiple products, responders should evaluate the MSDS's of the products for incompatibility with this product.
Waste Disposal: Dispose of in accordance with all applicable federal, state and local regulations.

VII Reactivity Data

Stability: Stable
Hazardous Polymerization: Will not occur.
Hazardous Decomposition: Carbon monoxide, carbon dioxide and reactive hydrocarbons.
Incompatibilities: Strong oxidizing agents. Keep away from excessive heat and open flames.

VIII Fire and Explosion Data

Flash Point: 300°F (COC)
Fire Extinguishing Agents: Foam, carbon dioxide, dry chemical or water fog. Cool fire exposed containers with water.
Products of Combustion: Carbon monoxide, carbon dioxide and reactive hydrocarbons.

IX Physical Data

Boiling Point.....>620°F
Specific Gravity..... 0.88
Solubility in Water.....Negligible

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DATA SUPPLIED IS FOR USE ONLY IN CONNECTION WITH OCCUPATIONAL SAFETY AND HEALTH

DATE PREPARED 4/03

SECTION 1 - PRODUCT IDENTIFICATION

Distributor : TRI-STAR INDUSTRIAL PRODUCTS	**Emergency Phone :** INFOTRAC - HOT LINE (800) 535 - 5053
Address : 12049 Regentview Ave. Downey, Ca. 90241	**Product Type :** Heavy Duty Cleaner
Trade Name : SOLVO	**Chemical Family :** Compounded Product

SECTION 2 - HAZARDOUS INGREDIENTS

CHEMICAL NAME/COMMON NAME :	CAS. NO.	% OPT.	TLV (Source)	OSHA PEL
Sodium Metasilicate (Pentahydrate).	6834-92-0		Not Determined	Not Determined
2-Butoxyethanol *	111-76-2		25ppm (SKIN:TWA)	TWA:120 MG/M3
Sodium Hydroxide	1310-58-3		2mg/m3 (CEILING)	2mg/m3 (CEILING)
Nonylphenol polyethylene glycol ether	127087-87-0		Not Determined	Not Determined

* These materials are subject to the reporting requirment under the Superfund Amendments and Reauthorization act of 1986 (SARA) Title III, section 313 and CFR part 372

** Proposition 65 ; This product contains detectable amounts of chemicals known to the State of California to cause cancer and/or birth defects or other reproductive toxicity.

SECTION 3 - PHYSICAL DATA

Boiling Point :	Specific Gravity (H2O=1) :	pH
Approximately 212'F.	1.054	12.5-13.0
Vapor Pressure (mmHg)	**Vapor Density (Air=1)**	
Not Determined	ND	
Solubility		**Evaporation Rate (ETHER=1)**
Complete in water at all ratios.		Slower

Appearance and odor : Clear, yellow liquid with a slight ethereal, odor.

SECTION 4 - FIRE AND EXPLOSION HAZARD DATA

Flash Point : Above 93 C (199.4 F) Flammable Limits : Upper--- NDA

Extinguishing Media : Use water spray or carbon dioxide, dry chemicals. Lower--- NDA

Special Firefighting Procedures : Wear self- contained breathing apparatus with full face-piece operated in the positive pressure mode when fighting fires.

Unusual Fire and Explosion Hazards : None Known

SECTION 5 - REACTIVITY DATA

Stability : STABLE -- ■ UNSTABLE -- □

Hazardous polymerization : WILL OCCUR - □ WILL NOT OCCUR - ■

Incapatability : Strong acids and oxidizing agents.

Decomposition Products : Burning may produce oxides of carbon.

Conditions to Avoid : Keep away from strong acids and oxidizing agents.

SECTION 6 - HEALTH HAZARD DATA

SYMPTOMS OF ACUTE HEALTH HAZARDS

ROUTES OF EXPOSURE EYES ■ SKIN ■ ORAL □ INHALATION □

EYES : May cause permanent damage including blindness.

SKIN : Prolonged or repeated direct skin contact can cause irritation, redding, drying and edema.

INGESTION : May cause burns to mouth, throat, and stomach

INHALATION : Generated mists may be irritating to the respiratory tract.

CHRONIC HEALTH HAZARDS : Existing dermatitis may be aggravated by overexposure.

SECTION 7 - EMERGENCY AND FIRST AID PROCEDURES

EYES : Immediately flush eyes with plenty of clear, running cool water for at least 15 minutes while holding eye lids open and apart. Seek medical attention.

SKIN : Wash off affected area with plenty of runnig water for at least 15 minutes. Wash contaminated clothing prior to reuse. If irritation persists seek medical attention.

INGESTION : Do not induce vomiting. If victim is conscious, dilute by giving two glasses of water or milk. Seek immediate medical attention.

INHALATION : If symptoms occur , remove to fresh air. Start artificial respiration if necessary. Oxygen may be administered. Seek a physician.

SECTION 8 - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION : None required under normal use conditions.

VENTILATION REQUIREMENTS : Good local and mechanical exhaust is recommended to keep below the TLV levels.

PROTECTIVE CLOTHING :

Safety glasses/Goggles	■
Gloves, Rubber or Chemical Resistant :	■
Apron :	☐
Other :	☐

Wear protective clothing appropriate to minimize contact with this product in concentrated form. (i.e.; boots, apron)

Provide nearby safety shower & eye washing facilities.

WORK/HYGIENIC PRACTICES : Wash thoroughly after handling.

SECTION 9 - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF RELEASED OR SPILLED : Dike area to prevent spread of the liquid. Pump or transfer spilled uncontaminated product into clean containers for reuse. Absorb contaminated product with an inert material and place the contaminate into an appropriate waste container for disposal.

WASTE DISPOSAL METHODS : Consult local, state and federal regulations before disposing of this material.

SECTION 10 - STORAGE AND HANDLING INFORMATION

PRECAUTIONS TO BE TAKEN FOR HANDLING AND STORAGE : Keep container closed when not in use. Avoid contact with eyes and skin. Store between 40' - 100' F. Keep away from children and pets.

ADDITIONAL INFORMATION

TRANSPORTATION DOT: CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S. (SODIUM HYDROXIDE) 8, UN3266, PGII

Contains no materials known to be on the California Proposition 65 List.

The information herein is given in good faith. No warranty expressed on implied is made. Any use of this data and information must be determined by the user to be in accordance with applicable Federal, State, and Local laws and regulations.

NA = Not Applicable ND = Not Determined NDA = No Data Available

HMIS HAZARD RATING

	2
FLAMMABILITY	1
REACTIVITY	0
SPECIAL	B

0-LEAST
1-SLIGHT
2-MODERATE
3-HIGH
4-EXTREME

1-S

Material Safety Data Sheet
(Natural Sand or Gravel)

1. IDENTIFICATION

Chemical Name:	Natural Sand or Gravel	Chemical Formula:	N/A
Trade Name:	Sand or Gravel	Molecular Weight:	N/A
Synonyms:	Construction Aggregate	DOT Identification No:	None

2. PRODUCT AND COMPONENT DATA

Component(s) Chemical Name	CAS Registry No.	% (Approx)	Exposure Limits
Natural Sand* or Gravel*	None	100	See section 6
*Composition varies naturally – typically contains quartz (crystalline silica).	14808-60-7	>1	

3. PHYSICAL DATA

Appearance and odor: Angular or round multicolored particles. No odor.

Specific Gravity: 2.55 – 2.80

Boiling point (At 1 Atm.): N/A

Vapor Density in Air (Air = 1): N/A

Vapor Pressure (mmHg @ 20°C): 0

% Volatile, By Volume: 0%

Evaporation Rate (at 1Atm, and 25°C; n-butyl acetate = 1): 0

Solubility in Water: Negligible

4. REACTIVITY DATA

Stability: Stable

Conditions to Avoid: Avoid contact with incompatible materials (see below).

Incompatibility (materials to avoid): Contact with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride may cause fire and/or explosion. Silica dissolves readily in hydrofluoric acid producing a corrosive gas – silicon tetrafluoride.

Hazardous Decomposition Products: Silica-containing respirable dust particles may be generated by handling.

Hazardous Polymerization: Not known to polymerize

5. FIRE AND EXPLOSION HAZARD DATA

Flashpoint (Method used): Not flammable

Flammable Limits in Air: Not Flammable

Extinguishing Agents: None required

Unusual Fire and Explosion Hazards: Contact with powerful oxidizing agents may cause fire and/or explosions (see section 4 of this MSDS).

6. TOXICITY AND FIRST AID

EXPOSURE LIMITS (When exposure to this product and other chemicals is concurrent, the exposure limit must be defined in the workplace.)

Unless specified otherwise, limits are expressed as eight-hour time-weighted averages (TWA). Limits for cristobalite and tridymite (other forms of crystalline silica) are equal to one-half of the limits for quartz.

ABBREVIATIONS: TLV = threshold limit value of the American Conference of Governmental Industrial Hygienists (ACGIH); MSHA PEL = permissible exposure limit of the Mine Safety and Health Administration (MSHA); OSHA PEL= permissible exposure limit of the Occupational Safety and Health Administration (OSHA); mg/m^3 = milligrams of substance per cubic meter of air.

Other Particulates: TLV=10mg/m^3 (inhalable/total particulate, not otherwise classified), TLV = 3mg/m^3 (respirable particulate, not otherwise classified); OSHA PEL = 15 mg/m^3 (total particulate, not otherwise regulated), OSHA PEL = 5 mg/ m^3 (respirable particulate, not otherwise regulated)

Respirable Crystalline Silica (quartz): TLV = 0.05 mg/m^3; MSHA and OSHA PEL = 10 mg/m^3 + (%SiO_2 + 2); MSHA-Proposed and OSHA-Proposed PEL = 0. 1 mg/m^3

Respirable Dust: MSHA and OSHA PEL = 10 mg/m^3 ÷ (%SiO_2 + 2)

Total Dust: MSHA PEL= 30 mg/m^3 + (%SiO_2 + 3); OSHA PEL = 30 mg/m^3 ÷ (%SiO_2 + 2)

ACGIH. MSHA, and OSHA have determined that adverse effects are not likely to occur in the workplace provided exposure levels do not exceed the appropriate TLVs/PELs. However, because of the wide variation in individual susceptibility, lower exposure limits may be appropriate for some individuals including persons with pre-existing medical conditions such as those described below.

Medical Conditions Aggravated By Exposure

Inhaling respirable dust and/or crystalline silica may aggravate existing respiratory system disease(s) and/or dysfunctions. Exposure to dust may aggravate existing skin and/or eye conditions.

Primary Route(s) of Exposure:

_X_ Inhalation ___ Skin ___ Ingestion

Acute Toxicity

EYE CONTACT: Direct contact with dust may cause irritation by mechanical abrasion.

SKIN CONTACT: Direct contact may cause irritation by mechanical abrasion.

SKIN ABSORPTION: Not expected to be a significant exposure route.

INGESTION: Expected to be practically non-toxic. Ingestion of large amounts may cause gastrointestinal irritation and blockage.

INHALATION: Dusts may irritate the nose, throat, and respiratory tract by mechanical abrasion. Coughing, sneezing, and shortness of breath may occur following exposures in excess of appropriate exposure limits.

Use of natural sand and gravel for construction purposes is not believed to cause additional acute toxic effects. However, repeated overexposures to very high levels of respirable crystalline silica (quartz, cristobalite, tridymite) for periods as short as six months have caused acute silicosis. Acute silicosis is a rapidly progressive, incurable lung disease that is typically fatal. Symptoms include (but are not limited to): shortness of breath, cough, fever, weight loss, and chest pain.

First Aid

EYES: Immediately flush eye(s) with plenty of clean water for at least 15 minutes, while holding the eyelid(s) open. Occasionally lift the eyelid(s) to ensure thorough rinsing. Beyond flushing, do not attempt to remove material from the eye(s). Contact a physician if irritation persists or later develops.

SKIN: Wash with soap and water. Contact a physician if irritation persists or later develops.

INGESTION: If person is conscious, give large quantity of water and induce vomiting; however, never attempt to make an unconscious person drink or vomit. Get immediate medical attention.

INHALATION: Remove to fresh air. Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists or later develops.

For emergencies, contact _____
(your company's designated emergency contact)

Chronic Toxicity

Prolonged and repeated inhalation of respirable crystalline silica-containing dust in excess of appropriate exposure limits has caused silicosis, a lung disease. Not all individuals with silicosis will exhibit symptoms (signs) of the disease. However, silicosis can be progressive, and symptoms can appear at any time, even years after exposure has ceased. Symptoms of silicosis may include, but are not limited to, the following: shortness of breath; difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; right heart enlargement and/or failure. Smoking may increase the risk of developing lung disorders, including emphysema and lung cancer. Persons with silicosis have an increased risk of pulmonary tuberculosis infection.

Respirable dust containing newly broken silica particles has been shown to be more hazardous to animals in laboratory tests than respirable dust containing older silica particles of similar size. Respirable silica particles which had aged for sixty days or more showed less lung injury in animals than equal exposures of respirable dust containing newly broken particles of silica.

There are reports in the literature suggesting that excessive crystalline silica exposure may be associated with adverse health effects involving the kidney, scleroderma (thickening of the skin caused by swelling and thickening of fibrous tissue) and other autoimmune disorders. However, this evidence has been obtained primarily from case reports involving individuals working in high exposure situations or those who have already developed silicosis; and therefore, this evidence does not conclusively prove a causal relationship between silica or silicosis and these adverse health effects. Several studies of persons with silicosis also indicate an increased risk of developing lung cancer, a risk that increases with the duration of exposure. Many of these studies of silicotics do not account for lung cancer confounders, especially smoking.

Sand or gravel is not listed as a carcinogen by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or the Occupational Safety and Health Administration (OSHA). In October 1996, an IARC Working Group re-assessing crystalline silica, a component of this product, designated respirable crystalline silica as carcinogenic (Group 1). The NTP'S Report on Carcinogens, 9th edition, lists respirable crystalline silica as a "known human carcinogen." In year 2000, the American Conference of Governmental Industrial Hygienists (ACGIH) listed respirable crystalline silica (quartz) as a suspected human carcinogen (A-2). These classifications are based on sufficient evidence of carcinogenicity in certain experimental animals and on selected epidemiological studies of workers exposed to crystalline silica.

7. PERSONAL PROTECTION AND CONTROLS

Respiratory Protection

For respirable quartz levels that exceed or are likely to exceed an 8-hr TWA of 0.1 mg/m^3, a NIOSH approved dust respirator must be worn. For respirable quartz levels that exceed or are likely to exceed an 8-hr TWA of 0.5 mg/m^3, a NIOSH approved HEPA filter respirator must be worn. If respirable quartz levels exceed or are likely to exceed an 8-hr TWA of 5 mg/m^3, a NIOSH approved positive pressure, full face respirator or equivalent is required. Respirator use must comply with applicable MSHA or OSHA standards, which include provisions for a user training program, respirator repair and cleaning, respirator fit testing, and other requirements.

Ventilation

Local exhaust or general ventilation adequate to maintain exposures below appropriate exposure limits.

Skin Protection

See "Hygiene" section below.

Eye Protection

Safety glasses with side shields should be worn as minimum protection. Dust goggles should be worn when excessively (visible) dusty conditions are present or are anticipated.

Hygiene

Wash dust-exposed skin with soap and water before eating, drinking, smoking, and using toilet facilities. Wash work clothes after each use.

Other Control Measures

Respirable dust and quartz levels should be monitored regularly. Dust and quartz levels in excess of appropriate exposure limits should be reduced by all feasible engineering controls, including (but not limited to) wet suppression, ventilation, process enclosure, and enclosed employee work stations.

8. STORAGE AND HANDLING PRECAUTIONS

This product is not intended or designed for use as an abrasive blasting medium or for foundry applications, and should not be used for these purposes.

Follow the personal protection and controls set forth in Section 7 of this MSDS when handling this product. Respirable crystalline silica-containing dust may be generated during processing, handling, and storage.

Do not store near food and beverages or smoking materials.

9. SPILL, LEAK AND DISPOSAL PRACTICES

Steps to be Taken in Case Material is Released or Spilled

The personal protection and controls identified in Section 7 of the MSDS should be used as appropriate. Spilled material, where dust can be generated, may overexpose cleanup personnel to respirable crystalline silica-containing dust. Wetting of spilled material and/or use of respiratory protective equipment may be necessary. Do not dry sweep spilled material.

Prevent spilled materials from inadvertently entering streams, drains, or sewers.

For emergencies, contact _____
(your company's designated emergency contact)

Waste Disposal Method

Pick up and reuse clean materials. Dispose of waste materials only in accordance with applicable federal, state, and local laws and regulations.

10. TRANSPORTATION

DOT Hazard Classification: None
Placard Required: None
Label Required: Label as required by the OSHA Hazard Communication Standard [29 CFR 1910.1200 (f) and applicable state and local laws and regulations.

For Further Information Contact: Place here the name, address, and telephone number of the operator or responsible party who can provide more info about the hazardous chemical.

Date of Preparation:

Emergency Information: Your company's designated emergency contact.

Notice: _____ believes the information contained herein is accurate; however, _____ makes no guarantees with respect to such accuracy and assumes no liability in connection with the use of the information contained herein by any party. The provision of the information contained herein is not intended to be and should not be construed as legal advice or as ensuring compliance with any federal, state or local laws and regulations. Any party using this product should review all such laws, rules or regulations prior to use.

NO WARRANTY IS MADE, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE.

ASHLAND OIL,INC -- MAC'S STARTING FLUID 7200/7216 -- 6850-00N006263

========== Product Identification ==========

Product ID:MAC'S STARTING FLUID 7200/7216
MSDS Date:01/01/1985
FSC:6850
NIIN:00N006263
MSDS Number: BCMJN
=== Responsible Party ===
Company Name:ASHLAND OIL,INC
Address:1409 WINCHESTER AVE
Box:391
City:ASHLAND
State:KY
ZIP:41114
Country:US
CAGE:81355
=== Contractor Identification ===
Company Name:ASHLAND INC
Address:1409 WINCHESTER AVE
Box:391
City:ASHLAND
State:KY
ZIP:41114
Country:US
Phone:800-622-6846
CAGE:81355

========== Composition/Information on Ingredients ==========

Ingred Name:ETHYL ETHER (SARA III)
CAS:60-29-7
RTECS #:KI5775000
Fraction by Wt: >60%
OSHA PEL:400 PPM/500 STEL
ACGIH TLV:400PPM/500STEL; 9192
EPA Rpt Qty:100 LBS
DOT Rpt Qty:100 LBS

Ingred Name:ALIPHATIC HYDROCARBON
10-30%
ACGIH TLV:500 PPM (MFR)

========== Hazards Identification ==========

Effects of Overexposure:EYE/SKIN: IRRITATION/DEFATTING. VAPORS: DROWSINESS,VOMITING,RESP TRACT IRRIT,HEADACHE

========== First Aid Measures ==========

First Aid:EYE: FLUSH WITH WATER 15 MIN. SKIN: WASH WITH SOAP & WATER,REMOVE CONTAMINATED CLOTHING. INHALATION: REMOVE TO FRESH AIR,GIVE ARTIFICAL RESPIRATION,IF NEEDED,CONSULT PHYSICIAN. INGESTION: GIVE TWO GLA SSES OF WATER,INDUCE VOMITING,GET MEDICAL ATTN

========== Fire Fighting Measures ==========

Flash Point:<73F/22C
Lower Limits:1.9
Extinguishing Media:DRY CHEMICAL
Fire Fighting Procedures:SELF-CONTAIN BREATH APP,WATER FOG TO COOL EXPOSED CONTAINER
Unusual Fire/Explosion Hazard:VAPORS MAY TRAVEL ALONG GROUND TO DISTANT IGNITION SOURCES AND FLASH BACK TO MATERIAL

========== Accidental Release Measures ==========

Spill Release Procedures:ELIMINATE ALL IGNITION SOURCES. EXCLUD NON-PROTECTED PERSONS FROM AREA. STOP SPILL AT SOURCE,DIKE TO PREVENT SPRADING SPILL,PUMP LIQUID TO SALVAGE TANK,ABSORB REMAINING LIQUID ON ABSORBENT MATERIAL & SHOVEL IN TO CONTAINERS.

========== Handling and Storage ==========

Handling and Storage Precautions:STORE AWAY FROM HEAT & OTHER SOURCES OF IGNITION. DO NOT SMOKE,WELD,FLAME CUT OR BRAZE IN AREA OF USE OR ON EMPTY CONTAINERS
Other Precautions:EMPTY CONTAINERS RETAIN PRODUCT RESIDUES WHICH MAYBE HAZARDOUS,OBSERVE ALL PRECAUTIONS GIVEN ON THIS SHEET.

========== Exposure Controls/Personal Protection ==========

Respiratory Protection:NIOSH/MSHA APPROVED RESP DEVICE IN ACCORD WITH EXPOSURE OF CONCERN.
Ventilation:LOCAL/MECHANICAL TO MAINTAIN BELOW TLV.
Protective Gloves:CHEM RESISTANT
Eye Protection:CHEM SPLASH GOGGLES
Other Protective Equipment:TO PREVENT SKIN CONTACT
Supplemental Safety and Health

========== Physical/Chemical Properties ==========

Vapor Pres:439
Vapor Density:>1
Spec Gravity:<1
Evaporation Rate & Reference:<1 (ETHER)

========== Stability and Reactivity Data ==========

Stability Indicator/Materials to Avoid:YES
STRONG OXIDIZING AGENTS
Hazardous Decomposition Products:CO,CO*2,VARIOUS HYDROCARBONS

========== Disposal Considerations ==========

Waste Disposal Methods:COMPLY WITH LOCAL,STATE AND FEDERAL REGULATIONS.

Disclaimer (provided with this information by the compiling agencies): This information is formulated for use by elements of the Department of Defense. The United States of America in no manner whatsoever, expressly or implied, warrants this information to be accurate and disclaims all liability for its use. Any person utilizing this document should seek competent professional advice to verify and assume responsibility for the suitability of this information to their particular situation.

3-S

Material Safety Data Sheet
(Sandstone)

1. IDENTIFICATION

Chemical Name:	Sandstone	Chemical Formula:	N/A
Trade Name:	Sandstone	Molecular Weight:	N/A
Synonyms:		DOT Identification No:	None

2. PRODUCT AND COMPONENT DATA

Component(s) Chemical Name	CAS Registry No.	% (Approx)	Exposure Limits
Sandstone*	None	100	See section 6
*Composition varies naturally – typically contains high levels of quartz (crystalline silica).	14808-60-7	>1	

3. PHYSICAL DATA

Appearance and Odor: Angular gray, white and tan particles ranging in size from powder to boulders. No odor.

Specific Gravity: 2.6 – 2.75

Boiling point (At 1 Atm.): N/A

Vapor Density in Air (Air = 1): N/A

Vapor Pressure (mmHg @ 20°C): N/A

% Volatile, By Volume (@ 100° F): 0%

Evaporation Rate (at 1Atm, and 25°C; n-butyl acetate = 1): 0

Solubility in Water: 0

4. REACTIVITY DATA

Stability: Stable

Conditions to Avoid: Avoid contact with incompatible materials (see below).

Incompatibility (materials to avoid): Contact with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride may cause fire and/or explosions. Silica dissolves in hydrofluoric acid producing a corrosive gas – silicon tetrafluoride.

Hazardous Decomposition Products: Silica-containing respirable dust particles may be generated by handling. When heated, quartz is slowly transformed into tridyrmite (above 860°C / 1580°F) and cristobalite (above 1470°C / 2678°F). Both tridymite and cristobalite are considered more fibrogenic to the lungs than quartz.

Hazardous Polymerization: Not known to polymerize

5. FIRE AND EXPLOSION HAZARD DATA

Flashpoint (Method used): Not flammable

Flammable Limits in Air: Not Flammable

Extinguishing Agents: None required

Unusual Fire and Explosion Hazards: Contact with powerful oxidizing agents may cause fire and/or explosions (see section 4 of this MSDS).

6. TOXICITY AND FIRST AID

EXPOSURE LIMITS (When exposure to this product and other chemicals is concurrent, the exposure limit must be defined in the workplace.)

Unless specified otherwise, limits are expressed as eight-hour time-weighted averages (TWA). Limits for cristobalite and tridymite (other forms of crystalline silica) are equal to one-half of the limits for quartz.

ABBREVIATIONS: TLV = threshold limit value of the American Conference of Governmental Industrial Hygienists (ACGIH); MSHA PEL = permissible exposure limit of the Mine Safety and Health Administration (MSHA); OSHA PEL= permissible exposure limit of the Occupational Safety and Health Administration (OSHA); mg/m^3 = milligrams of substance per cubic meter of air.

Other Particulates: TLV=10mg/m^3 (inhalable/total particulate, not otherwise classified), TLV = 3mg/m^3 (respirable particulate, not otherwise classified); OSHA PEL = 15 mg/m^3 (total particulate, not otherwise regulated), OSHA PEL = 5 mg/ m^3 (respirable particulate, not otherwise regulated)

Respirable Crystalline Silica (quartz): TLV = 0.05 mg/m^3; MSHA and OSHA PEL = 10 mg/m^3 ÷ (%SiO_2 + 2); MSHA-Proposed and OSHA-Proposed PEL = 0. 1 mg/m^3

Respirable Dust: MSHA and OSHA PEL = 10 mg/m^3 ÷ (%SiO_2 + 2)

Total Dust: MSHA PEL= 30 mg/m^3 ÷ (%SiO_2 + 3); OSHA PEL = 30 mg/m^3 ÷ (%SiO_2 + 2)

ACGIH, MSHA, and OSHA have determined that adverse effects are not likely to occur in the workplace provided exposure levels do not exceed the appropriate TLVs/PELs. However, because of the wide variation in individual susceptibility, lower exposure limits may be appropriate for some individuals including persons with pre-existing medical conditions such as those described below.

Medical Conditions Aggravated by Exposure

Inhaling respirable dust and/or crystalline silica may aggravate existing respiratory system disease(s) and/or dysfunctions. Exposure to dust may aggravate existing skin and/or eye conditions.

Primary Route(s) of Exposure:

_X_ Inhalation ___ Skin ___ Ingestion

Acute Toxicity

EYE CONTACT: Direct contact with dust may cause irritation by mechanical abrasion.

SKIN CONTACT: Direct contact may cause irritation by mechanical abrasion.

SKIN ABSORPTION: Not expected to be a significant exposure route.

INGESTION: Expected to be practically non-toxic. Ingestion of large amounts may cause gastrointestinal irritation and blockage.

INHALATION: Dusts may irritate the nose, throat, and respiratory tract by mechanical abrasion. Coughing, sneezing, and shortness of breath may occur following exposures in excess of appropriate exposure limits.

Use of sandstone for construction purposes is not believed to cause additional acute toxic effects. However, repeated overexposures to very high levels of respirable crystalline silica (quartz, cristobalite, tridymite) for periods as short as six months have caused acute silicosis. Acute silicosis is a rapidly progressive, incurable lung disease that is typically fatal. Symptoms include (but are not limited to): shortness of breath, cough, fever, weight loss, and chest pain.

First Aid

EYES: Immediately flush eye(s) with plenty of clean water for at least 15 minutes, while holding the eyelid(s) open. Occasionally lift the eyelid(s) to ensure thorough rinsing. Beyond flushing, do not attempt to remove material from the eye(s). Contact a physician if irritation persists or later develops.

SKIN: Wash with soap and water. Contact a physician if irritation persists or later develops.

INGESTION: If person is conscious, give large quantity of water and induce vomiting; however, never attempt to make an unconscious person drink or vomit. Get immediate medical attention.

INHALATION: Remove to fresh air. Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists or later develops.

For emergencies, contact _____
(your company's designated emergency contact)

Chronic Toxicity

Prolonged and repeated inhalation of respirable crystalline silica-containing dust in excess of appropriate exposure limits has caused silicosis, a lung disease. Not all individuals with silicosis will exhibit symptoms (signs) of the disease. However, silicosis can be progressive, and symptoms can appear at any time, even years after exposure has ceased. Symptoms of silicosis may include, but are not limited to, the following: shortness of breath; difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; right heart enlargement and/or failure. Smoking may increase the risk of developing lung disorders, including emphysema and lung cancer. Persons with silicosis have an increased risk of pulmonary tuberculosis infection.

Respirable dust containing newly broken silica particles has been shown to be more hazardous to animals in laboratory tests than respirable dust containing older silica particles of similar size. Respirable silica particles which had aged for sixty days or more showed less lung injury in animals than equal exposures of respirable dust containing newly broken particles of silica.

There are reports in the literature suggesting that excessive crystalline silica exposure may be associated with adverse health effects involving the kidney, scleroderma (thickening of the skin caused by swelling and thickening of fibrous tissue) and other autoimmune disorders. However, this evidence has been obtained primarily from case reports involving individuals working in high exposure situations or those who have already developed silicosis; and therefore, this evidence does not conclusively prove a causal relationship between silica or silicosis and these adverse health effects. Several studies of persons with silicosis also indicate an increased risk of developing lung cancer, a risk that increases with the duration of exposure. Many of these studies of silicotics do not account for lung cancer confounders, especially smoking.

Sandstone is not listed as a carcinogen by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or the Occupational Safety and Health Administration (OSHA). In October 1996, an IARC Working Group re-assessing crystalline silica, a component of this product, designated crystalline silica as carcinogenic (Group 1). The NTP'S Report on Carcinogens, 9th edition, lists respirable crytalline silica as a "known human carcinogen." In year 2000, the American Conference of Governmental Industrial Hygienists (ACGIH) listed respirable crystalline silica (quartz) as a suspected human carcinogen (A-2). These classifications are based on sufficient evidence of carcinogenicity in certain experimental animals and on selected epidemiological studies of workers exposed to crystalline silica.

7. PERSONAL PROTECTION AND CONTROLS

Respiratory Protection

For respirable quartz levels that exceed or are likely to exceed an 8-hr TWA of 0.1 mg/m^3, a NIOSH approved dust respirator must be worn. For respirable quartz levels that exceed or are likely to exceed an 8-hr TWA of 0.5 mg/m^3, a NIOSH approved HEPA filter respirator must be worn. If respirable quartz levels exceed or are likely to exceed an 8-hr TWA of 5 mg/m^3, a NIOSH approved positive pressure, full face respirator or equivalent is required. Respirator use must comply with applicable MSHA or OSHA standards, which include provisions for a user training program, respirator repair and cleaning, respirator fit testing, and other requirements.

Ventilation

Local exhaust or general ventilation adequate to maintain exposures below appropriate exposure limits.

Skin Protection

See "Hygiene" section below.

Eye Protection

Safety glasses with side shields should be worn as minimum protection. Dust goggles should be worn when excessively (visible) dusty conditions are present or are anticipated.

Hygiene
Wash dust-exposed skin with soap and water before eating, drinking, smoking, and using toilet facilities. Wash work clothes after each use.

Other Control Measures
Respirable dust and quartz levels should be monitored regularly. Dust and quartz levels in excess of appropriate exposure limits should be reduced by all feasible engineering controls, including (but not limited to) wet suppression, ventilation, process enclosure, and enclosed employee work stations.

8. STORAGE AND HANDLING PRECAUTIONS

This product is not intended or designed for use as an abrasive blasting material, and should not be used for abrasive blasting.

Respirable crystalline silica-containing dust may be generated during processing, handling, and storage. The personal protection and controls identified in Section 7 of the MSDS should be applied as appropriate.

Do not store near food and beverages or smoking materials.

9. SPILL, LEAK AND DISPOSAL PRACTICES

Steps to be Taken in Case Material is Released or Spilled
The personal protection and controls identified in Section 7 of the MSDS should be used as appropriate. Spilled material, where dust can be generated, may overexpose cleanup personnel to respirable crystalline silica-containing dust. Wetting of spilled material and/or use of respiratory protective equipment may be necessary. Do not dry sweep spilled material.

Prevent spilled materials from inadvertently entering streams, drains, or sewers.

For emergencies, contact _____
(your company's designated emergency contact)

Waste Disposal Method
Pick up and reuse clean materials. Dispose of waste materials only in accordance with applicable federal, state, and local laws and regulations.

10. TRANSPORTATION

DOT Hazard Classification: None
Placard Required: None
Label Required: Label as required by the OSHA Hazard Communication Standard [29 CFR 1910.1200 (f)] and applicable state and local laws and regulations.

For Further Information Contact: Place here the name, address, and telephone number of the operator or responsible party who can provide more info about the hazardous chemical.

Date of Preparation:

Emergency Information: Your company's designated emergency contact.

Notice: _____ believes the information contained herein is accurate; however, _____ makes no guarantees with respect to such accuracy and assumes no liability in connection with the use of the information contained herein by any party. The provision of the information contained herein is not intended to be and should not be construed as legal advice or as ensuring compliance with any federal, state or local laws and regulations. Any party using this product should review all such laws, rules or regulations prior to use.

NO WARRANTY IS MADE, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE.

1-T

ITEM: 2A269 - Threadlocker 50 Ml

PICK_REQ: 1128276028 **MATERIAL SAFETY DATA SHEET (MSDS)** **MSDS: B9107**

This MSDS should be attached or kept with the respective product with which it is associated.

. iated Grainger Item: 2A269 - Threadlocker 50 Ml

LOCTITE(R*)

MATERIAL SAFETY DATA SHEET

HENKEL

REVISION NUMBER: 005.5

ISSUE DATE: 12/22/2010

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: LOCTITE(R*) 242(TM) THREADLOCKER MEDIUM STRENGTH

PRODUCT TYPE: ANAEROBIC SEALANT

IDH NUMBER: 135354

ITEM NUMBER: 24221

REGION: UNITED STATES

COMPANY ADDRESS:
HENKEL CORPORATION
ONE HENKEL WAY
ROCKY HILL, CONNECTICUT 06067

CONTACT INFORMATION:

TELEPHONE: 860.571.5100

MEDICAL EMERGENCY PHONE:
POISON CONTROL CENTER: 1-877-671-4608 (TOLL FREE) OR 1-303-592-1711

TRANSPORT EMERGENCY PHONE:
CHEMTREC: 1-800-424-9300 (TOLL FREE) OR 1-703-527-3887

INTERNET: WWW.HENKELNA.COM

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

PHYSICAL STATE: LIQUID

[illegible]: BLUE

[illegible]: MILD

HMIS:
HEALTH 2*
FLAMMABILITY 1
PHYSICAL HAZARD 1
PERSONAL PROTECTION SEE MSDS SECTION 8

WARNING:
CAUSES EYE IRRITATION.
MAY CAUSE SKIN IRRITATION.
MAY CAUSE ALLERGIC SKIN REACTION.
MAY CAUSE RESPIRATORY TRACT IRRITATION.

RELEVANT ROUTES OF EXPOSURE: SKIN, INHALATION, EYES

POTENTIAL HEALTH EFFECTS:
INHALATION: MAY CAUSE RESPIRATORY TRACT IRRITATION.
SKIN CONTACT: MAY CAUSE ALLERGIC SKIN REACTION. MAY CAUSE SKIN IRRITATION.
EYE CONTACT: CONTACT WITH EYES WILL CAUSE IRRITATION.
INGESTION: NOT EXPECTED TO BE HARMFUL BY INGESTION.

EXISTING CONDITIONS AGGRAVATED BY EXPOSURE:
EYE, SKIN, AND RESPIRATORY DISORDERS.

THIS MATERIAL IS CONSIDERED HAZARDOUS BY THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200).

SEE SECTION 11 FOR ADDITIONAL TOXICOLOGICAL INFORMATION.

3. COMPOSITION / INFORMATION ON INGREDIENTS

HAZARDOUS COMPONENTS	CAS NUMBER	%
POLYGLYCOL DIMETHACRYLATE	25852-47-5	60 - 100
OLEIC ACID 5.5EO	9004-96-0	10 - 30
SACCHARIN	81-07-2	1 - 5
SILICA, AMORPHOUS, FUMED, CRYSTAL-FREE	112945-52-5	1 - 5
CUMENE HYDROPEROXIDE	80-15-9	1 - 5
PROPANEDIOL-1,2	57-55-6	1 - 5
TITANIUM DIOXIDE	13463-67-7	0.1 - 1

4. FIRST AID MEASURES

INHALATION:
MOVE TO FRESH AIR. IF BREATHING IS DIFFICULT, GIVE OXYGEN. IF BREATHING HAS STOPPED, GIVE ARTIFICIAL RESPIRATION. KEEP WARM AND QUIET. GET MEDICAL ATTENTION.

SKIN CONTACT:
WASH WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND FOOTWEAR. WASH CLOTHING BEFORE REUSE. IF SYMPTOMS DEVELOP AND PERSIST, GET MEDICAL ATTENTION.

EYE CONTACT:
FLUSH WITH COPIOUS AMOUNTS OF WATER, PREFERABLY, LUKEWARM WATER FOR AT LEAST 15 MINUTES, HOLDING EYELIDS OPEN ALL THE TIME. GET MEDICAL ATTENTION.

INGESTION:
DO NOT INDUCE VOMITING. KEEP INDIVIDUAL CALM. GET MEDICAL ATTENTION.

5. FIRE FIGHTING MEASURES

FLASH POINT: >93.3 DEG. C (>199.94 DEG. F) TAGLIABUE CLOSED CUP

FLAME PROJECTION: NOT APPLICABLE

AUTOIGNITION TEMPERATURE: NOT DETERMINED

FLAMMABLE/EXPLOSIVE LIMITS - LOWER: 2.6% (PROPYLENE GLYCOL)
FLAMMABLE/EXPLOSIVE LIMITS - UPPER: 12.5% (PROPYLENE GLYCOL)

EXTINGUISHING MEDIA: FOAM, DRY CHEMICAL OR CARBON DIOXIDE.

SPECIAL FIREFIGHTING PROCEDURES: NONE

UNUSUAL FIRE OR EXPLOSION HAZARDS: NONE

HAZARDOUS COMBUSTION PRODUCTS:
OXIDES OF CARBON. OXIDES OF SULFUR. OXIDES OF NITROGEN. IRRITATING ORGANIC VAPORS.

6. ACCIDENTAL RELEASE MEASURES

USE PERSONAL PROTECTION RECOMMENDED IN SECTION 8, ISOLATE THE HAZARD AREA AND DENY ENTRY TO UNNECESSARY AND UNPROTECTED PERSONNEL.

ENVIRONMENTAL PRECAUTIONS: DO NOT ALLOW PRODUCT TO ENTER SEWER OR WATERWAYS.

CLEAN-UP METHODS:
SOAK UP WITH INERT ABSORBENT MATERIAL (E.G. SAND, SILICA GEL, ACID BINDER, UNIVERSAL BINDER, SAWDUST). STORE IN A PARTLY FILLED, CLOSED CONTAINER UNTIL DISPOSAL.

7. HANDLING AND STORAGE

HANDLING:
PREVENT CONTACT WITH EYES, SKIN AND CLOTHING. DO NOT BREATHE VAPOR AND MIST. WASH THOROUGHLY AFTER HANDLING.

STORAGE:
FOR SAFE STORAGE, STORE AT OR BELOW 38 DEG. C (100.4 DEG. F)
KEEP IN A COOL, WELL VENTILATED AREA AWAY FROM HEAT, SPARKS AND OPEN FLAME.
KEEP CONTAINER TIGHTLY CLOSED UNTIL READY FOR USE.

FOR INFORMATION ON PRODUCT SHELF LIFE CONTACT HENKEL CUSTOMER SERVICE AT (800) 243-4874.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EMPLOYERS SHOULD COMPLETE AN ASSESSMENT OF ALL WORKPLACES TO DETERMINE THE NEED FOR, AND SELECTION OF, PROPER EXPOSURE CONTROLS AND PROTECTIVE EQUIPMENT FOR EACH TASK PERFORMED.

HAZARDOUS COMPONENTS	ACGIH TLV	OSHA PEL	AIHA WEEL	OTHER
POLYGLYCOL DIMETHACRYLATE	NONE	NONE	NONE	NONE
OLEIC ACID 5.5EO	NONE	NONE	NONE	NONE
SACCHARIN	NONE	NONE	NONE	NONE
SILICA, AMORPHOUS, FUMED, CRYSTAL-FREE	10 MG/M3 TWA INHALABLE DUST. 3 MG/M3 TWA RESPIRABLE FRACTION.	20 MPPCF TWA 0.8 MG/M3 TWA	NONE	NONE
CUMENE HYDROPEROXIDE	NONE	NONE	1 PPM (6 MG/M3) TWA (SKIN)	NONE
PROPANEDIOL-1,2	NONE	NONE	10 MG/M3 TWA AEROSOL.	NONE
TITANIUM DIOXIDE	10 MG/M3 TWA	15 MG/M3 TWA TOTAL DUST.	NONE	NONE

ENGINEERING CONTROLS:
NO SPECIFIC VENTILATION REQUIREMENTS NOTED, BUT FORCED VENTILATION MAY STILL BE REQUIRED IF CONCENTRATIONS EXCEED OCCUPATIONAL EXPOSURE LIMITS.

RESPIRATORY PROTECTION:
USE NIOSH APPROVED RESPIRATOR IF THERE IS POTENTIAL TO EXCEED EXPOSURE LIMIT(S).

EYE/FACE PROTECTION: SAFETY GOGGLES OR SAFETY GLASSES WITH SIDE SHIELDS.

SKIN PROTECTION:
USE IMPERMEABLE GLOVES AND PROTECTIVE CLOTHING AS NECESSARY TO PREVENT SKIN CONTACT. NEOPRENE GLOVES. BUTYL RUBBER GLOVES. NATURAL RUBBER GLOVES.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: LIQUID

COLOR: BLUE

ODOR: MILD

ODOR THRESHOLD: NOT AVAILABLE

pH: NOT APPLICABLE

PRESSURE: <5 MMHg (27 DEG. C (80.6 DEG. F))

BOILING POINT/RANGE: >149 DEG. C (>300.2 DEG. F)

MELTING POINT/RANGE: NOT AVAILABLE

SPECIFIC GRAVITY: 1.1 AT 23.9 DEG. C (75.02 DEG. F)

VAPOR DENSITY: NOT AVAILABLE

FLASH POINT: >93.3 DEG. C (>199.94 DEG. F) TAGLIABUE CLOSED CUP

FLAME PROJECTION: NOT APPLICABLE

FLAMMABLE/EXPLOSIVE LIMITS - LOWER: 2.6% (PROPYLENE GLYCOL)
FLAMMABLE/EXPLOSIVE LIMITS - UPPER: 12.5% (PROPYLENE GLYCOL)

AUTOIGNITION TEMPERATURE: NOT DETERMINED

EVAPORATION RATE: NOT AVAILABLE

SOLUBILITY IN WATER: SLIGHT

PARTITION COEFFICIENT (n-OCTANOL/WATER): NOT AVAILABLE

VOC CONTENT: 4.48%; 49.3 G/L EPA METHOD 24

10. STABILITY AND REACTIVITY

STABILITY: STABLE

HAZARDOUS REACTIONS: WILL NOT OCCUR.

HAZARDOUS DECOMPOSITION PRODUCTS:
OXIDES OF CARBON. OXIDES OF SULFUR. OXIDES OF NITROGEN. IRRITATING ORGANIC VAPORS.

INCOMPATIBLE MATERIALS:
STRONG OXIDIZING AGENTS. FREE RADICAL INITIATORS. STRONG REDUCING AGENTS. ALKALIS. OXYGEN SCAVENGERS. OTHER POLYMERIZATION INITIATORS. COPPER. IRON. ZINC. ALUMINUM. RUST.

CONDITIONS TO AVOID:
SEE "HANDLING AND STORAGE" (SECTION 7) AND "INCOMPATIBILITY" (SECTION 10).

11. TOXICOLOGICAL INFORMATION

ACUTE ORAL PRODUCT TOXICITY:
(RAT): >10,000 MG/KG

DERMAL PRODUCT TOXICITY:
LD50 (RABBIT): >5,000 MG/KG

HAZARDOUS COMPONENTS	NTP CARCINOGEN	IARC CARCINOGEN	OSHA CARCINOGEN (SPECIFICALLY REGULATED)
POLYGLYCOL DIMETHACRYLATE	NO	NO	NO
OLEIC ACID 5.5EO	NO	NO	NO
SACCHARIN	NO	NO	NO
SILICA, AMORPHOUS, FUMED, CRYSTAL-FREE	NO	NO	NO
CUMENE HYDROPEROXIDE	NO	NO	NO
PROPANEDIOL-1,2	NO	NO	NO
TITANIUM DIOXIDE	NO	GROUP 2B	NO

HAZARDOUS COMPONENTS	HEALTH EFFECTS/TARGET ORGANS
POLYGLYCOL DIMETHACRYLATE	IRRITANT, ALLERGEN
OLEIC ACID 5.5EO	IRRITANT
SACCHARIN	NO TARGET ORGANS
SILICA, AMORPHOUS, FUMED, CRYSTAL-FREE	NUISANCE DUST
CUMENE HYDROPEROXIDE	ALLERGEN, CENTRAL NERVOUS SYSTEM, CORROSIVE, IRRITANT, MUTAGEN
PROPANEDIOL-1,2	IRRITANT
TITANIUM DIOXIDE	IRRITANT, RESPIRATORY, SOME EVIDENCE OF CARCINOGENICITY

12. ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION: NOT AVAILABLE

13. DISPOSAL CONSIDERATIONS

INFORMATION PROVIDED IS FOR UNUSED PRODUCT ONLY.

MENDED METHOD OF DISPOSAL:
W ALL LOCAL, STATE, FEDERAL AND PROVINCIAL REGULATIONS FOR DISPOSAL.

HAZARDOUS WASTE NUMBER: NOT A RCRA HAZARDOUS WASTE.

14. TRANSPORT INFORMATION

THE SHIPPING CLASSIFICATIONS IN THIS SECTIONS ARE FOR NON-BULK PACKAGING ONLY (UNLESS OTHERWISE SPECIFIED). SHIPPING CLASSIFICATION MAY BE DIFFERENT FOR BULK PACKAGING.

U.S. DEPARTMENT OF TRANSPORTATION GROUND (49 CFR):
PROPER SHIPPING NAME: NOT REGULATED
HAZARD CLASS OR DIVISION: NONE
IDENTIFICATION NUMBER: NONE
PACKING GROUP: NONE

INTERNATIONAL AIR TRANSPORTATION (ICAO/IATA):
PROPER SHIPPING NAME: NOT REGULATED
HAZARD CLASS OR DIVISION: NONE
IDENTIFICATION NUMBER: NONE
PACKING GROUP: NONE

WATER TRANSPORTATION (IMO/IMDG):
PROPER SHIPPING NAME: NOT REGULATED
HAZARD CLASS OR DIVISION: NONE
IDENTIFICATION NUMBER: NONE
PACKING GROUP: NONE

15. REGULATORY INFORMATION

UNITED STATES REGULATORY INFORMATION:

TSCA 8(B) INVENTORY STATUS:
ALL COMPONENTS ARE LISTED OR ARE EXEMPT FROM LISTING ON THE TOXIC SUBSTANCES CONTROL ACT INVENTORY.

TSCA 12(B) EXPORT NOTIFICATION: NONE ABOVE REPORTING DE MINIMUS

CERCLA/SARA SECTION 302 EHS: NONE ABOVE REPORTING DE MINIMUS

CERCLA/SARA SECTION 311/312: IMMEDIATE HEALTH, DELAYED HEALTH

CERCLA/SARA 313:
THIS PRODUCT CONTAINS THE FOLLOWING TOXIC CHEMICALS SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF THE EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT OF 1986 (40 CFR 372). CUMENE HYDROPEROXIDE (CAS# 80-15-9).

CALIFORNIA PROPOSITION 65:
THIS PRODUCT CONTAINS A CHEMICAL KNOWN IN THE STATE OF CALIFORNIA TO CAUSE CANCER. THIS PRODUCT CONTAINS A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

CANADA REGULATORY INFORMATION:

CEPA DSL/NDSL STATUS:
ALL COMPONENTS ARE LISTED ON OR ARE EXEMPT FROM LISTING ON THE CANADIAN DOMESTIC SUBSTANCES LIST.

WHMIS HAZARD CLASS: D.2.A, D.2.B

16. OTHER INFORMATION

THIS MATERIAL SAFETY DATA SHEET CONTAINS CHANGES FROM THE PREVIOUS VERSION IN SECTIONS: NEW MATERIAL SAFETY DATA SHEET FORMAT.

PREPARED BY: KYRA KOZAK WOODS, MANAGER, REGULATORY AFFAIRS

DISCLAIMER:
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2-T

ITEM: 5E215 - Threadlocker 50 Ml Red

PICK_REQ: 1128276028 **MATERIAL SAFETY DATA SHEET (MSDS)** **MSDS: A9735**

This MSDS should be attached or kept with the respective product with which it is associated.

. iated Grainger Item: 5E215 - Threadlocker 50 Ml Red

LOCTITE(R*)

MATERIAL SAFETY DATA SHEET

HENKEL

REVISION NUMBER: 007.0

ISSUE DATE: 01/04/2011

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: LOCTITE(R*) 262(TM) THREADLOCKER HIGH STRENGTH

PRODUCT TYPE: ANAEROBIC SEALANT

IDH NUMBER: 231926

ITEM NUMBER: 26221

REGION: UNITED STATES

COMPANY ADDRESS:
HENKEL CORPORATION
ONE HENKEL WAY
ROCKY HILL, CONNECTICUT 06067

CONTACT INFORMATION:

TELEPHONE: 860.571.5100

MEDICAL EMERGENCY PHONE:
POISON CONTROL CENTER: 1-877-671-4608 (TOLL FREE) OR 1-303-592-1711

TRANSPORT EMERGENCY PHONE:
CHEMTREC: 1-800-424-9300 (TOLL FREE) OR 1-703-527-3887

INTERNET: WWW.HENKELNA.COM

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

PHYSICAL STATE: LIQUID

': RED

: MILD

HMIS:
HEALTH 2*
FLAMMABILITY 1
PHYSICAL HAZARD 1
PERSONAL PROTECTION SEE MSDS SECTION 8

WARNING:
CAUSES EYE IRRITATION.
MAY CAUSE ALLERGIC SKIN REACTION.
MAY CAUSE RESPIRATORY TRACT IRRITATION.
MAY CAUSE SKIN IRRITATION.

RELEVANT ROUTES OF EXPOSURE: SKIN, INHALATION, EYES, RESPIRATORY SYSTEM

POTENTIAL HEALTH EFFECTS:

INHALATION: MAY CAUSE RESPIRATORY TRACT IRRITATION.

SKIN CONTACT:
MAY CAUSE ALLERGIC SKIN REACTION. MAY CAUSE SKIN IRRITATION WITH DISCOMFORT OR
RASH.

EYE CONTACT: CONTACT WITH EYES WILL CAUSE IRRITATION.

INGESTION: MAY BE HARMFUL IF SWALLOWED.

EXISTING CONDITIONS AGGRAVATED BY EXPOSURE:
EYE, SKIN, AND RESPIRATORY DISORDERS.

THIS MATERIAL IS CONSIDERED HAZARDOUS BY THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200).

SEE SECTION 11 FOR ADDITIONAL TOXICOLOGICAL INFORMATION.

3. COMPOSITION / INFORMATION ON INGREDIENTS

HAZARDOUS COMPONENTS	CAS NUMBER	%
POLYGLYCOL DIMETHACRYLATE	25852-47-5	60 - 100
BISPHENOL A FUMARATE RESIN	39382-25-7	10 - 30
SACCHARIN	81-07-2	1 - 5
CUMENE HYDROPEROXIDE	80-15-9	1 - 5
IETHYL-p-TOLUIDINE	613-48-9	1 - 5

4. FIRST AID MEASURES

INHALATION:
MOVE TO FRESH AIR. IF SYMPTOMS DEVELOP AND PERSIST, GET MEDICAL ATTENTION.

SKIN CONTACT:
WASH WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND FOOTWEAR. WASH CLOTHING BEFORE REUSE. IF SYMPTOMS DEVELOP AND PERSIST, GET MEDICAL ATTENTION.

EYE CONTACT:
FLUSH WITH COPIOUS AMOUNTS OF WATER, PREFERABLY, LUKEWARM WATER FOR AT LEAST 15 MINUTES, HOLDING EYELIDS OPEN ALL THE TIME. GET MEDICAL ATTENTION.

INGESTION:
DO NOT INDUCE VOMITING. KEEP INDIVIDUAL CALM. GET MEDICAL ATTENTION.

5. FIRE FIGHTING MEASURES

FLASH POINT: >93.3 DEG. C (>199.94 DEG. F) TAGLIABUE CLOSED CUP

AUTOIGNITION TEMPERATURE: NOT AVAILABLE

FLAMMABLE/EXPLOSIVE LIMITS - LOWER: NOT AVAILABLE
FLAMMABLE/EXPLOSIVE LIMITS - UPPER: NOT AVAILABLE

EXTINGUISHING MEDIA:
IF PRODUCT IS INVOLVED IN FIRE EXTINGUISH WITH DRY POWDER, FOAM OR CARBON DIOXIDE.

SPECIAL FIREFIGHTING PROCEDURES:
WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING, SUCH AS
TURN-OUT GEAR.

UNUSUAL FIRE OR EXPLOSION HAZARDS: NONE

HAZARDOUS COMBUSTION PRODUCTS:
THERMAL DECOMPOSITION CAN LEAD TO RELEASE OF IRRITATING GASES AND VAPORS. OXIDES OF CARBON. OXIDES OF NITROGEN.

6. ACCIDENTAL RELEASE MEASURES

USE PERSONAL PROTECTION RECOMMENDED IN SECTION 8, ISOLATE THE HAZARD AREA AND
DENY ENTRY TO UNNECESSARY AND UNPROTECTED PERSONNEL.

ENVIRONMENTAL PRECAUTIONS:
DO NOT ALLOW PRODUCT TO ENTER SEWER OR WATERWAYS. DO NOT ALLOW PRODUCT TO ENTER SEWER OR WATERWAYS.

CLEAN-UP METHODS:
ENSURE ADEQUATE VENTILATION. SOAK UP WITH INERT ABSORBENT MATERIAL (E.G. SAND,
SILICA GEL, ACID BINDER, UNIVERSAL BINDER, SAWDUST). SCRAPE UP SPILLED MATERIAL AND PLACE IN A CLOSED CONTAINER FOR DISPOSAL. ENSURE ADEQUATE VENTILATION. SOAK UP WITH INERT ABSORBENT MATERIAL (E.G. SAND, SILICA GEL, ACID BINDER, UNIVERSAL BINDER, SAWDUST). SCRAPE UP SPILLED MATERIAL AND PLACE
IN A CLOSED CONTAINER FOR DISPOSAL.

7. HANDLING AND STORAGE

HANDLING:
AVOID CONTACT WITH EYES, SKIN AND CLOTHING. AVOID BREATHING VAPORS OR MISTS OF
THIS PRODUCT. WASH THOROUGHLY AFTER HANDLING.

STORAGE:
FOR SAFE STORAGE, STORE AT OR BELOW 38 DEG. C (100.4 DEG. F)
KEEP IN A COOL, WELL VENTILATED AREA AWAY FROM HEAT, SPARKS AND OPEN FLAME.
KEEP CONTAINER TIGHTLY CLOSED UNTIL READY FOR USE.

FOR INFORMATION ON PRODUCT SHELF LIFE CONTACT HENKEL CUSTOMER SERVICE AT (800) 243-4874.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EMPLOYERS SHOULD COMPLETE AN ASSESSMENT OF ALL WORKPLACES TO DETERMINE THE NEED FOR, AND SELECTION OF, PROPER EXPOSURE CONTROLS AND PROTECTIVE EQUIPMENT
FOR EACH TASK PERFORMED.

HAZARDOUS COMPONENTS	ACGIH TLV	OSHA PEL	AIHA WEEL	OTHER
POLYGLYCOL DIMETHACRYLATE	NONE	NONE	NONE	NONE
BISPHENOL A FUMARATE RESIN	NONE	NONE	NONE	NONE
SACCHARIN	NONE	NONE	NONE	NONE
CUMENE HYDROPEROXIDE	NONE	NONE	1 PPM (6 MG/M3) TWA (SKIN)	NONE
N,N-DIETHYL-p-TOLUIDINE	NONE	NONE	NONE	NONE

ENGINEERING CONTROLS:
NO SPECIFIC VENTILATION REQUIREMENTS NOTED, BUT FORCED VENTILATION MAY STILL BE REQUIRED IF CONCENTRATIONS EXCEED OCCUPATIONAL EXPOSURE LIMITS.

RESPIRATORY PROTECTION:
USE A NIOSH APPROVED SUPPLIED AIR RESPIRATOR WITH AN ORGANIC CARTRIDGE IF THE
POTENTIAL TO EXCEED ESTABLISHED EXPOSURE LIMITS EXISTS.

EYE/FACE PROTECTION: SAFETY GOGGLES OR SAFETY GLASSES WITH SIDE SHIELDS.

SKIN PROTECTION:
USE IMPERMEABLE GLOVES AND PROTECTIVE CLOTHING AS NECESSARY TO PREVENT SKIN CONTACT. NATURAL RUBBER GLOVES. NEOPRENE GLOVES. BUTYL RUBBER GLOVES.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: LIQUID

: RED

ODOR: MILD

ODOR THRESHOLD: NOT AVAILABLE

pH: NOT APPLICABLE

VAPOR PRESSURE: <5 MMHg (27 DEG. C (80.6 DEG. F))

BOILING POINT/RANGE: >149 DEG. C (>300.2 DEG. F)

MELTING POINT/RANGE: NOT AVAILABLE

SPECIFIC GRAVITY: 1.05

VAPOR DENSITY: NOT AVAILABLE

FLASH POINT: >93.3 DEG. C (>199.94 DEG. F) TAGLIABUE CLOSED CUP

FLAMMABLE/EXPLOSIVE LIMITS - LOWER: NOT AVAILABLE
FLAMMABLE/EXPLOSIVE LIMITS - UPPER: NOT AVAILABLE

AUTOIGNITION TEMPERATURE: NOT AVAILABLE

EVAPORATION RATE: NOT AVAILABLE

SOLUBILITY IN WATER: SLIGHT

PARTITION COEFFICIENT (n-OCTANOL/WATER): NOT AVAILABLE

VOC CONTENT: 0%; 0 G/L

10. STABILITY AND REACTIVITY

STABILITY: STABLE

HAZARDOUS REACTIONS: WILL NOT OCCUR.

HAZARDOUS DECOMPOSITION PRODUCTS:
OXIDES OF CARBON. OXIDES OF SULFUR. OXIDES OF NITROGEN. PHENOLICS. IRRITATING
ORGANIC VAPORS.

INCOMPATIBLE MATERIALS:
IRON. COPPER. RUST. ALUMINUM. ZINC. REDUCING AGENTS. STRONG ACIDS AND OXIDIZING AGENTS. OXYGEN SCAVENGERS. STRONG ALKALIS.

CONDITIONS TO AVOID:
"HANDLING AND STORAGE" (SECTION 7) AND "INCOMPATIBILITY" (SECTION 10).

11. TOXICOLOGICAL INFORMATION

ACUTE ORAL PRODUCT TOXICITY:
LD50 (RAT): >10,000 MG/KG

ACUTE DERMAL PRODUCT TOXICITY:
LD50 (RABBIT): >5,000 MG/KG

HAZARDOUS COMPONENTS	NTP CARCINOGEN	IARC CARCINOGEN	OSHA CARCINOGEN (SPECIFICALLY REGULATED)
POLYGLYCOL DIMETHACRYLATE	NO	NO	NO
BISPHENOL A FUMARATE RESIN	NO	NO	NO
SACCHARIN	NO	NO	NO
CUMENE HYDROPEROXIDE	NO	NO	NO
N,N-DIETHYL-p-TOLUIDINE	NO	NO	NO

HAZARDOUS COMPONENTS	HEALTH EFFECTS/TARGET ORGANS
POLYGLYCOL DIMETHACRYLATE	IRRITANT, ALLERGEN
BISPHENOL A FUMARATE RESIN	NO TARGET ORGANS
SACCHARIN	NO TARGET ORGANS
CUMENE HYDROPEROXIDE	ALLERGEN, CENTRAL NERVOUS SYSTEM, CORROSIVE, IRRITANT, MUTAGEN
N,N-DIETHYL-p-TOLUIDINE	NO TARGET ORGANS

12. ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION: NOT AVAILABLE

13. DISPOSAL CONSIDERATIONS

INFORMATION PROVIDED IS FOR UNUSED PRODUCT ONLY.

RECOMMENDED METHOD OF DISPOSAL:
FOLLOW ALL LOCAL, STATE, FEDERAL AND PROVINCIAL REGULATIONS FOR DISPOSAL.

DOUS WASTE NUMBER: NOT A RCRA HAZARDOUS WASTE.

14. TRANSPORT INFORMATION

THE SHIPPING CLASSIFICATIONS IN THIS SECTIONS ARE FOR NON-BULK PACKAGING ONLY (UNLESS OTHERWISE SPECIFIED). SHIPPING CLASSIFICATION MAY BE DIFFERENT FOR BULK PACKAGING.

U.S. DEPARTMENT OF TRANSPORTATION GROUND (49 CFR):
PROPER SHIPPING NAME: NOT REGULATED
HAZARD CLASS OR DIVISION: NONE
IDENTIFICATION NUMBER: NONE
PACKING GROUP: NONE

INTERNATIONAL AIR TRANSPORTATION (ICAO/IATA):
PROPER SHIPPING NAME: NOT REGULATED
HAZARD CLASS OR DIVISION: NONE
IDENTIFICATION NUMBER: NONE
PACKING GROUP: NONE

WATER TRANSPORTATION (IMO/IMDG):
PROPER SHIPPING NAME: NOT REGULATED
HAZARD CLASS OR DIVISION: NONE
IDENTIFICATION NUMBER: NONE
PACKING GROUP: NONE

15. REGULATORY INFORMATION

UNITED STATES REGULATORY INFORMATION:

TSCA 8(B) INVENTORY STATUS:
ALL COMPONENTS ARE LISTED OR ARE EXEMPT FROM LISTING ON THE TOXIC SUBSTANCES CONTROL ACT INVENTORY.

TSCA 12(B) EXPORT NOTIFICATION: NONE ABOVE REPORTING DE MINIMUS

CERCLA/SARA SECTION 302 EHS: NONE ABOVE REPORTING DE MINIMUS

CERCLA/SARA SECTION 311/312: IMMEDIATE HEALTH, DELAYED HEALTH

CERCLA/SARA 313:
THIS PRODUCT CONTAINS THE FOLLOWING TOXIC CHEMICALS SUBJECT TO THE REPORTING
REQUIREMENTS OF SECTION 313 OF THE EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT OF 1986 (40 CFR 372). CUMENE HYDROPEROXIDE (CAS# 80-15-9.

CERCLA REPORTABLE QUANTITY:
CUMENE HYDROPEROXIDE (CAS# 80-15-9) 10 LBS. (4.54 KG)
SACCHARIN (CAS# 81-07-2) 100 LBS. (45.4 KG)

CALIFORNIA PROPOSITION 65:
THIS PRODUCT CONTAINS A CHEMICAL KNOWN IN THE STATE OF CALIFORNIA TO CAUSE CANCER.

CANADA REGULATORY INFORMATION:

CEPA DSL/NDSL STATUS:
ALL COMPONENTS ARE LISTED ON OR ARE EXEMPT FROM LISTING ON THE CANADIAN DOMESTIC SUBSTANCES LIST.

WHMIS HAZARD CLASS: D.2.B

16. OTHER INFORMATION

THIS MATERIAL SAFETY DATA SHEET CONTAINS CHANGES FROM THE PREVIOUS VERSION IN
SECTIONS: NEW MATERIAL SAFETY DATA SHEET FORMAT. 2, 8, 11

PREPARED BY: KYRA KOZAK WOODS, MANAGER, REGULATORY AFFAIRS

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WD-40 COMPANY -- WD-40 AEROSOL -- 9150-01-205-3116

========== Product Identification ==========

Product ID:WD-40 AEROSOL
MSDS Date:03/01/1990
FSC:9150
NIIN:01-205-3116
MSDS Number: BLFCN
=== Responsible Party ===
Company Name:WD-40 COMPANY
Address:1061 CUDAHY PLACE 92110
Box:80607
City:SAN DIEGO
State:CA
ZIP:92138-9021
Country:US
Info Phone Num:619-275-1400
Emergency Phone Num:800-424-9300 (CHEMTREC)
CAGE:09137
=== Contractor Identification ===
Company Name:WD-40 COMPANY
Address:1061 CUDAHY PLACE (92110)
Box:80607
City:SAN DIEGO
State:CA
ZIP:92138-0607
Country:US
Phone:619-275-1400
CAGE:09137

========== Composition/Information on Ingredients ==========

Ingred Name:STODDARD SOLVENT
CAS:8052-41-3
RTECS #:WJ8925000
Fraction by Wt: 50%
OSHA PEL:500 PPM
ACGIH TLV:100 PPM; 9293

Ingred Name:LPG (LIQUEFIED PETROLEUM GAS)
CAS:68476-85-7
RTECS #:SE7545000
Fraction by Wt: 25%
Other REC Limits:1000 PPM (MFR)
OSHA PEL:1000 PPM
ACGIH TLV:1000 PPM; 9192

Ingred Name:MINERAL OIL, PETROLEUM DISTILLATES, SOLVENT-DEWAXED HEAVY PARAFFINIC; (PETROLEUM BASE OIL)
CAS:64742-65-0
RTECS #:PY8038500
Fraction by Wt: >15%
Other REC Limits:10PPM STEL(OIL MIST)
OSHA PEL:400PPM(PETRO DISTIL)
ACGIH TLV:5 MG/M3 (MFR)

Ingred Name:NON HAZARDOUS INGREDIENTS
Fraction by Wt: <10%

========== Physical/Chemical Properties ==========

HCC:V3
Vapor Pres:55PSI
Vapor Density:>1
Spec Gravity:.710@70F
Solubility in Water:INSOLUBLE
Appearance and Odor:LIGHT AMBER, CHARACTERISTIC ODOR.
Percent Volatiles by Volume:80

========== Stability and Reactivity Data ==========

Stability Indicator/Materials to Avoid:YES
STRONG OXIDIZING MATERIALS.
Hazardous Decomposition Products:THERMAL DECOMPOSITION MAY YIELD CARBON MONOXIDE AND/OR CARBON DIOXIDE.

========== Disposal Considerations ==========

Waste Disposal Methods:EMPTY AEROSOL CANS SHOULD NOT BE PUNCTURED OR INCINERATED;BURY IN LAND FILL. LIQUID SHOULD BE INCINERATED OR BURIED IN LAND FILL. DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

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Hazards Identification

LD50 LC50 Mixture:NONE SPECIFIED BY MANUFACTURER.
Routes of Entry: Inhalation:YES Skin:NO Ingestion:YES
Reports of Carcinogenicity:NTP:NO IARC:YES OSHA:NO
Health Hazards Acute and Chronic:INHAL:MAY CAUSE ANESTHESIA, HEADACHE, DIZZINESS, NAUSEA & UPPER RESPIRATORY IRRITATION. SKIN: MAY CAUSE DRYING OF SKIN &/OR IRRITATION. EYE:MAY CAUSE IRRITATION, TEARING & REDNESS. INGEST: MAY CAUSE I RRITATION, NAUSEA, VOMIT, & DIARRHEA. DANGER! ASPIRATION HAZARD: IF SWALLOWED, CAN ENTER LUNGS & MAY CAUSE CHEM PNEUM.
Explanation of Carcinogenicity:PETROLEUM BASE OIL, CAS# 64742-65-0 IS LISTED BY THE RTECS AS AN IARC GROUP 1 CARCINOGEN.
Effects of Overexposure:SEE HEALTH HAZARDS.
Medical Cond Aggravated by Exposure:NONE SPECIFIED BY MANUFACTURER.

First Aid Measures

First Aid:INGEST: ASPIRATON HAZARD. DO NOT INDUCE VOMIT, SEEK MED ATTN. EYE: IMMED FLUSH WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MIN. SKIN: WASH WITH SOAP AND WATER. INHAL: REMOVE TO FRESH AIR. GIVE ARTF RE SP IF NECESSARY. IF BREATHING IS DIFFICULT, GIVE O2.

Fire Fighting Measures

Flash Point:N/A(AEROSOL)MFR
Lower Limits:1.8%
Upper Limits:9.5%
Extinguishing Media:CO2, DRY CHEMICAL, FOAM.
Fire Fighting Procedures:WEAR NIOSH/MSHA APPROVED SCBA AND FULL PROTECTVIE EQUIPMENT (FP NN).
Unusual Fire/Explosion Hazard:CONSIDERED "EXTREMELY FLAMMABLE" UNDER CONSUMER PRODUCT SAFETY COMMISION REGULATIONS.

Accidental Release Measures

Spill Release Procedures:SPILL UNLIKELY FROM AEROSOL CANS. LEAKING CANS SHOULD BE PLACED IN PLASTIC BAG OR OPEN PAIL UNTIL PRESSURE HAS DISSIPATED.
Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

Handling and Storage

Handling and Storage Precautions:KEEP FROM SOURCES OF IGNIT, DO NOT TAKE INTERNALLY. AVOID EXCESS INHAL OF SPRAY PARTICLES. DO NOT PUNCTURE/STORE CONTR ABOVE 120F. KEEP FROM CHILDREN.
Other Precautions:NONE SPECIFIED BY MANUFACTURER.

Exposure Controls/Personal Protection

Respiratory Protection:NIOSH/MSHA APPROVED RESPIRATOR ADVISED WHEN CONCENTRATIONS EXCEED TLV.
Ventilation:SUFFICIENT TO KEEP SOLVENT VAPOR LESS THAN TLV.
Protective Gloves:ADVISED TO PREVENT POSSIBLE SKIN IRRIT.
Eye Protection:CHEMICAL WORKERS GOGGLES .
Other Protective Equipment:NONE REQUIRED.
Work Hygienic Practices:NONE SPECIFIED BY MANUFACTURER.
Supplemental Safety and Health
NONE SPECIFIED BY MANUFACTURER.

HAZARDOUS MATERIALS BUSINESS EMERGENCY PLAN

AND

CHEMICAL INVENTORY FORM

FOR

STONE VALLEY MATERIALS
3940 PYRITE STREET
RIVERSIDE, CA 92509
(951) 681-7830

BY

SOUTHLAND ENGINEERING
2200 BUSINESS WAY, #100
RIVERSIDE, CA 92501
(951) 788-8488

May 23, 2011

UNIFIED PROGRAM CONSOLIDATED FORM
FACILITY INFORMATION
BUSINESS ACTIVITIES

I. FACILITY IDENTIFICATION

FACILITY ID # (Agency Use Only)	1	EPA ID # (Hazardous Waste Only)	2

BUSINESS NAME (Same as Facility Name of DBA-Doing Business As): 3
STONE VALLEY MATERIALS

BUSINESS SITE ADDRESS 103: 3940 PYRITE STREET

BUSINESS SITE CITY 104	CA	ZIP CODE 105
RIVERSIDE		92509

II. ACTIVITIES DECLARATION

NOTE: If you check YES to any part of this list, please submit the Business Owner/Operator Identification page (OES Form 2730).

Does your facility...	If YES, please complete these pages of the UPCF....	
A. HAZARDOUS MATERIALS Have on site (for any purpose) hazardous materials at or above 55 gallons for liquids, 500 pounds for solids, or 200 cubic feet for compressed gases (include liquids in ASTs and USTs); or the applicable Federal threshold quantity for an extremely hazardous substance specified in 40 CFR Part 355, Appendix A or B; or handle radiological materials in quantities for which an emergency plan is required pursuant to 10 CFR Parts 30, 40 or 70?	■ YES ☐ NO 4	BUSINESS OWNER/OPERATOR IDENTIFICATION HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION
B. REGULATED SUBSTANCES Have Regulated Substances stored onsite in quantities greater than the threshold quantities established by the California Accidental Release Prevention Program (CalARP)?	☐ YES ■ NO 4a	Coordinate with your local Agency responsible for CalARP.
C. UNDERGROUND STORAGE TANKS (USTs) Own or operate underground storage tanks?	☐ YES ■ NO 5	UST FACILITY UST TANK (one per tank)
D. ABOVE GROUND PETROLEUM STORAGE Store greater than 1,320 gallons of petroleum products (new or used) in aboveground tanks or containers.	■ YES ☐ NO 8	NO FORM REQUIRED TO CUPAs May require SPCC plan.
E. HAZARDOUS WASTE Generate hazardous waste?	☐ YES ■ NO 9	EPA ID NUMBER – provide at the top of this page
Recycle more than 100 kg/month of excluded or exempted recyclable materials (per HSC 25143.2)?	☐ YES ■ NO 10	RECYCLABLE MATERIALS REPORT (one per recycler)
Treat hazardous waste on site?	☐ YES ■ NO 11	ONSITE HAZARDOUS WASTE TREATMENT – FACILITY ONSITE HAZARDOUS WASTE TREATMENT – UNIT (one page per unit)
Treatment subject to financial assurance requirements (for Permit by Rule and Conditional Authorization)?	☐ YES ■ NO 12	CERTIFICATION OF FINANCIAL ASSURANCE
Consolidate hazardous waste generated at a remote site?	☐ YES ■ NO 13	REMOTE WASTE / CONSOLIDATION SITE ANNUAL NOTIFICATION
Need to report the closure/removal of a tank that was classified as hazardous waste and cleaned onsite?	☐ YES ■ NO 14	HAZARDOUS WASTE TANK CLOSURE CERTIFICATION
Generate in any single calendar month 1,000 kilograms (kg) (2,200 pounds) or more of federal RCRA hazardous waste, or generate in any single calendar month, or accumulate at any time, 1 kg (2.2 pounds) of RCRA acute hazardous waste; or generate or accumulate at any time more than 100 kg (220 pounds) of spill cleanup materials contaminated with RCRA acute hazardous waste?	☐ YES ■ NO 14a	Obtain federal EPA ID Number, file Biennial Report (EPA Form 8700-13A/B), and satisfy requirements for RCRA Large Quantity Generator.
Household Hazardous Waste (HHW) Collection site?	☐ YES ■ NO 14b	See CUPA for required forms.

F. LOCAL REQUIREMENTS: Note: If you have answered **"NO"** to question **"A"** listed above, complete and submit the Statement of Exemption page. 15

UNIFIED PROGRAM CONSOLIDATED FORM
FACILITY INFORMATION
BUSINESS OWNER/OPERATOR IDENTIFICATION

I. IDENTIFICATION

FACILITY ID# 1	BEGINNING DATE 100 JANUARY 1, 2010	ENDING DATE 101 JANUARY 2060	
BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3 STONE VALLEY MATERIALS		BUSINESS PHONE 102 951-681-7830	
BUSINESS SITE ADDRESS 103 3940 PYRITE STREET		BUSINESS FAX 102a 951-681-8244	
BUSINESS SITE CITY 104 RIVERSIDE	CA	ZIP CODE 105 92509	COUNTY 108 RIVERSIDE COUNTY
DUN & BRADSTREET 106		PRIMARY SIC 107 1442	PRIMARY NAICS 107a 2123210100
BUSINESS MAILING ADDRESS 108 a P.O. BOX 3679			
BUSINESS MAILING CITY 108 b RIVERSIDE		STATE 108 c CA	ZIP CODE 108 d 92519
BUSINESS OPERATOR NAME 109 STEPHEN VANDER HART		BUSINESS OPERATOR PHONE 110 951-681-7830	

II. BUSINESS OWNER

OWNER NAME 111 STONE VALLEY MATERIALS, LLC	OWNER PHONE 112 951-681-7830	
OWNER MAILING ADDRESS 113 P.O. BOX 3679		
OWNER MAILING CITY 114 RIVERSIDE	STATE 115 CA	ZIP CODE 116 92519

III. ENVIRONMENTAL CONTACT

CONTACT NAME 117 STEPHEN VANDER HART	CONTACT PHONE 118 951-681-7830	
CONTACT MAILING ADDRESS 119 P.O. BOX 3679	CONTACT EMAIL 119a STEPHENVH@STONEVALLEYMATERIALS.COM	
CONTACT MAILING CITY 120 RIVERSIDE	STATE 121 CA	ZIP CODE 122 92519

IV. EMERGENCY CONTACTS

-PRIMARY-	-SECONDARY-
NAME 123 STEPHEN VANDER HART	NAME 128 BRADY KOOIMAN
TITLE 124 VP OF OPERATIONS	TITLE 129
BUSINESS PHONE 125 951-681-7830	BUSINESS PHONE 130 951-681-7830
24-HOUR PHONE 126 (b) (6)	24-HOUR PHONE 131 (b) (6)
PAGER # 127 N/A	PAGER # 132 N/A

ADDITIONAL LOCALLY COLLECTED INFORMATION: 133

Certification: Based on my inquiry of those individuals responsible for obtaining the information, I certify under penalty of law that I have personally examined and am familiar with the information submitted and believe the information is true, accurate, and complete.

SIGNATURE OF OWNER/OPERATOR OR DESIGNATED REPRESENTATIVE Stephen Vander Hart	DATE 134 05/09/11	NAME OF DOCUMENT PREPARER 135 LISA A. MERRITT
NAME OF SIGNER (print) 136 STEPHEN VANDER HART	TITLE OF SIGNER 137 VP OF OPERATIONS	

HAZARDOUS MATERIALS BUSINESS EMERGENCY PLAN
EMERGENCY PROCEDURES

Emergency response plans and procedures are an integral part of the HMBEP. By taking the time to develop plans and procedures for your business, you will avoid complications resulting from inaction or misguided action during an emergency. Once the plans and procedures are developed, your employees will have an informative guide to follow in the event of an emergency. You must address each of the following items, however, the amount of detail you provide will depend upon the size and nature of the business, the damage potential of the hazardous materials handled and the location of the business with respect to residential or other populated areas.

1. EMERGENCY RESPONSE PLANS AND PROCEDURES

A. If you have a release or threatened release of hazardous materials, your business is required by state law to provide immediate notification to the following agencies:

IMMEDIATELY CALL:

Local emergency response personnel
(Fire, paramedics, police or sheriff).....911

State Office of Emergency Services.....(800) 852-7550
or (916) 845-8911

Immediately call the appropriate jurisdiction:

The County of Riverside
Hazardous Materials Management Division.....(951) 358-5055

CDF/Banning Fire Service.....(951) 922-3210

City of Corona Fire Department.....(951) 736-2220

City of Riverside Fire Department.....(951) 826-5737

Jurupa Community Services District.....(951) 685-7434
(only notify the JCSD if oil or spill has reached or threatens to reach sewer drains connected to the JCSD)

Person(s) within the business responding to a hazardous materials incident:

Name: STEPHEN VANDER HART **Telephone:** (b) (6) [redacted]

Name: BRADY KOOIMAN **Telephone:** (b) (6) [redacted]

B. Identify the local emergency medical facility that will be used by your business in the event of an injury caused by the release of a hazardous material:

Name: CONCENTRA URGENT CARE

Address: 1101 S. MILLIKEN AVENUE, SUITE C

City: ONTARIO

Phone: 909-390-2799

2. PREVENTION

Describe the kind of hazards associated with the materials present at your business. Provide information on the steps taken at your business, or the policies or procedures now in place, to **help prevent** an accidental release of a hazardous material. Issues for discussion may include safety, storage, and containment procedures. Be specific for each type of hazardous material at your business.

NO. 2 DIESEL FUEL –SKIN IRRITANT, ASPIRATION HAZARD, OPEN CONTAINER SLOWLY TO RELIEVE ANY PRESSURE. KEEP IN AREA WHERE THERE IS A CONCRETE SPILL CONTAINMENT DEVICE TO CAPTURE ANY CHEMICAL RELEASE. **ACETYLENE AND OXYGEN-** AIRBORNE – INHALATION. KEEP CONTAINER IN WELL VENTILATED AREA-DO NOT PUNCTURE OR INCINERATE CONTAINER AS CONTAINER MAY EXPLODE. **GREASE:** AVOID CONTAMINATION OF CIGARETTES OR OTHER TOBACCO PRODUCTS. STORE AWAY FROM INCOMPATIBLES. **MOTOR AND HYDRAULIC OIL-** KEEP AWAY FROM ELECTROSTATUS CHARGE AND/OR FLAMMABLE ATMOSPHERE (INCLUDING TANK AND CONTAINER FILLING, SPLASH FILLING, TANK CLEANING, ETC..) **ANTIFREEZE-** KEEP CONTAINER AWAY FROM OPEN FLAMES AND EXCESSIVE HEAT. DO NOT CUT, WELD, DRILL, ETC.. NEAR CONTAINERS, EVEN EMPTY. SPILL CONTAINMENT STRUCTURES (CONCRETE BERMS, CURBS AND/OR WALLS ARE CURRENTLY IN PLACE TO KEEP FROM ANY SOIL CONTAMINATION.

3. MITIGATION

Describe the procedures to be followed to **reduce the severity** of a release or threatened release of a hazardous material at your business. The procedures should detail the actions to be taken by employees to stop a release, contain a release, or to reduce the problems associated with a release. What is your immediate response to a spill, fire, explosion or airborne release at your business? Do not write procedures that exceed the capabilities of employees or equipment at your business or that violate any worker safety laws.

STAFF AT THE MINE ARE TRAINED TO USE ALL HAZARDOUS MATERIALS IN ACCORDANCE WITH THEIR RECOMMENDATIONS AND SPECIFICATIONS INDICATED ON THE MSDS PROVIDED BY THE VENDOR. NO SMOKING SIGNS SHALL BE PLACED IN AREAS WHERE HAZARDOUS MATERIALS ARE STORED AND/OR LOCATED. HAZARDOUS MATERIALS SHALL ALSO BE STORED IN AIRTIGHT CONTAINERS, TANKS AND/OR DRUMS IN WELL VENTILLATED AREAS. IF A FIRE OR LEAK OCCURS STAFF WILL TRY TO CONTAIN AND ISOLATE THE EXPOSURE OF THE MATERIAL AND REMOVE ANY CONTAINERS THAT MAY BE WITHIN THE AREA FOR POTENTIAL RISK OF EXPLOSION OR FIRE WITH FOAM, DRY CHEMICAL OR CARBON DIOXIDE (ONLY IF SAFE TO DO SO). EACH AREA IS ALSO SUPPLIED WITH A FIRE EXTINGUISHER FOR IMMEDIATE RELIEF OF ANY SMALL FIRES AND ONLY IF SAFE TO DO SO. FOR ANY POSSIBLE VAPOR LEAKS, RESPIRATORY PROTECTION AND SAFETY GLASSES OR GOGGLES SHALL BE WORN DURING CLEAN UP AND/OR EXPOSURE. IF CONTAINER IS DAMAGED AND/ OR THERE IS A VAPOR LEAK, WATER MAY BE USED TO MINIMIZE OR DISPERSE VAPORS AND TO PROTECT PERSONNEL UNTIL EMERGENCY SERVICES (FIRE DEPT, HAZ MAT, ETC...) ARRIVE AT THE SITE. WATER SHOULD BE USED ON THE SURROUNDING CONTAINERS THAT CANNOT BE MOVED OR RELOCATED TO ATTEMPT TO COOL THE CONTAINER, DRUM AND/OR TANK; INCLUDING ANY EQUIPMENT THAT MIGHT BE CLOSE TO THE AFFECTED AREA. IF EXPOSURE TO EYES FROM VAPORS OR OIL MIST OCCURS, USE EYE WASH STATION.

4. ABATEMENT

Describe what you would do to **stop** and **remove** each hazard. How do you handle the complete process of stopping a release, cleaning up, and disposing of released materials at your business? What aspects of the response are beyond your ability and need to be handled by others? Who would you call to handle the release?

DETERMINE SEVERITY OF INJURY AND CONTAMINATION, FIRE AND/OR EXPLOSION, IF NECESSARY, CALL 911, FIRE DEPARTMENT AND/OR HAZ MAT DEPENDING ON THE TYPE AND EXTENT OF THE EMERGENCY. EVACUATE STAFF FROM IMMEDIATE AREA. CONTAIN ANY SPILL WITH DIKES OR ABSORBENTS TO PREVENT MIGRATION AND ENTRY INTO DRAINS, SEWERS AND/OR BODIES OF WATER. WASH DOWN WALKING SURFACES THOROUGHLY TO REDUCE SLIPPING HAZARD. IF A FIRE OCCURS, MINING STAFF SHALL USE EITHER DRY CHEMICAL, CARBON DIOXIDE, OR FOAM TO CONTROL THE FIRE AND WATER TO COOL OR PREVENT VAPOR LEAKAGE. MINING STAFF AND FIRE DEPARTMENT STAFF SHALL WEAR BUNKER GEAR TO PROTECT THEMSELVES FROM EXPOSURE WHILE CONTROLLING FIRE AND/OR EXPLOSION. IF FIRE BECOMES OUT OF CONTROL, THE FIRE DEPARTMENT SHALL BE IN CHARGE OF EXTINGUISHING THE FIRE. ONCE THE EXPOSURE, FIRE AND/OR EXPLOSION IS CONTAINED AND EXTINGUISHED THE AREA SHALL BE CLEANED OF ALL HAZARDOUS MATERIALS. ANY SOIL CONTAMINATION SHALL BE COLLECTED AND PUT IN PROPER CONTAINER FOR DISPOSAL. REMOVE ANY CONTAMINATED CLOTHING AND CLEAN BEFORE REUSE. FOR ANY INJURY THAT MAY HAVE OCCURRED THE FIRST AID EQUIPMENT IS LOCATED IN THE OFFICE/ SCALE HOUSE FOR IMMEDIATE USE.

5. EVACUATION

Describe the procedures to be followed for immediate notification and evacuation of your business: THERE SHALL BE VERBAL COMMUNICATION WITH MINING STAFF AND A LONG CONTINUOUS SOUNDING OF LOADING HORN TO IDENTIFY THAT THERE IS IMMEDIATE DANGER. ALL MINING STAFF SHALL CONGREGATE IN THE STAGING AREA DIRECTLY IN FRONT OF THE OFFICE BY THE YELLOW POLES WHERE FURTHER INSTRUCTION BY MINING STAFF SUPERVISORS AND/OR EMERGENCY RESPONSE AGENCY(IES) WILL BE GIVEN.

6. EARTHQUAKES

Identify the areas and equipment in your business, which would require **immediate inspection or isolation** due to their vulnerability to earthquake related ground motion. Check for equipment such as gas cylinders, piping, drums, etc., that may need to be secured or spillage that may require mitigation or abatement.

IN THE EVENT OF AN EARTHQUAKE, THE VALVE FOR THE DIESEL FUEL TANKS SHALL BE TURNED TO THE OFF POSITION. ALL CONTAINERS, CYLINDERS, DRUMS AND TANKS SHALL BE INSPECTED AND STRAPPED IN A WAY TO PREVENT OVERTURNING DURING AN EARTHQUAKE. AFTER AN EARTHQUAKE, ALL CONTAINERS, CYLINDERS, DRUMS AND TANK(S) SHALL BE VISUALLY INSPECTED FOR ANY POSSIBLE LEAK OR SPILL. IF A LEAK OR SPILL HAS OCCURRED REFER TO **SECTION 4. ABATEMENT** AND **5. EVACUATION** FOR FURTHER PROCEDURES.

7. HAZARDOUS WASTE CONTINGENCY

Specific procedures for prevention, mitigation and abatement of a release of **hazardous waste** generated at your business. This section only applies to hazardous waste generators.

FOLLOW PROCEDURES IDENTIFIED IN **SECTION 4. ABATEMENT AND SECTION 5. EVACUATION**

8. UNAUTHORIZED RELEASE RESPONSE PLAN

Specific procedures for mitigation, abatement and reporting of an unauthorized release from an **underground storage tank (UST)**. The plan must address a release from a single wall or a double wall tank system as applicable. This plan should cover the entire UST system. This section only applies to UST owner/operators.

NOT APPLICABLE TO THIS OPERATION

9. SITE SECURITY

As applicable on an individual facility basis, you should assess the security and vulnerability of your business from intentional acts both from within your business (sabotage) and from the outside (vandalism and terrorist acts). This assessment should consider testing your security system and procedures on a regular basis.

Details of this assessment should not be included in this plan as it is a public document.

Employee Training Plan

Businesses that handle hazardous materials are required to have a program that provides employees with initial and refresher training. The HMBEP shall include a training program, which is reasonable and appropriate for the size of the business and the nature of the hazardous materials handled. The training program shall take into consideration the responsibilities of the employees to be trained. The training program shall, at a minimum, include:

- **A.** Methods for safe handling of hazardous materials stored at your business, Including familiarity with the characteristics and hazards of each material and measures employees can take to protect themselves from chemical hazards;
- **B.** Procedures for coordination with local emergency response organizations;
- **C.** Proper use of personal protective equipment;
- **D.** The prevention, abatement and mitigation procedures you have developed for your business and explained in the HMBEP, including proper use of emergency equipment and supplies;
- **E.** The emergency evacuation plans you have developed, the notification procedure used to alert people to evacuate, and the closest location to obtain appropriate emergency medical care;
- **F.** Procedures to coordinate with and assist the local emergency personnel that may respond to your business;
- **G.** Who and how to call for immediate assistance in the event of an accident involving hazardous materials;
- **H.** Procedures for ensuring that appropriate personnel receive initial and refresher training.

All employee training shall be documented and updated annually:

1. Personnel

A. Are there any specially trained hazardous materials emergency response personnel at your business? Yes _____ No __X__ Number Trained _____

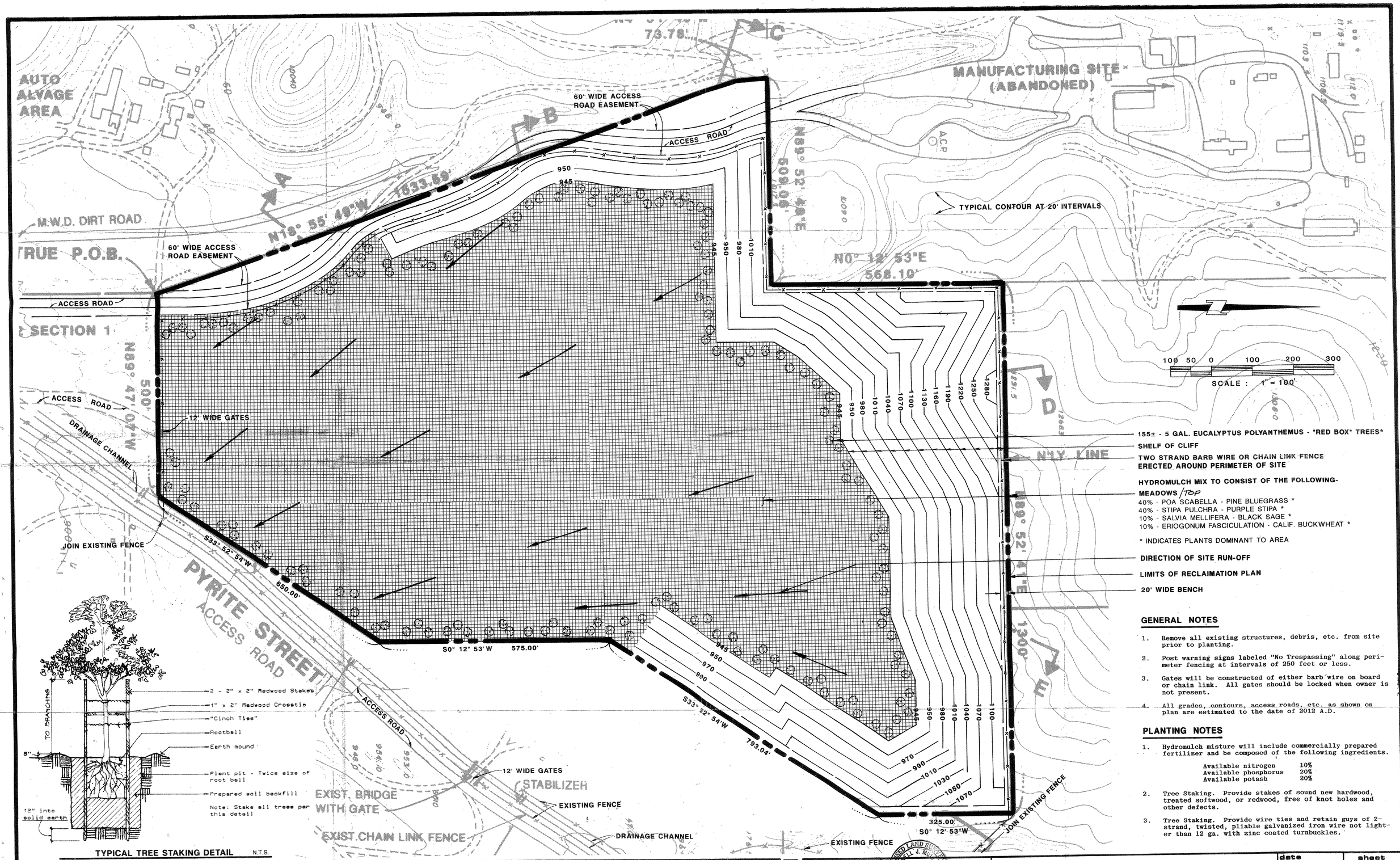
B. Do you have decontamination capabilities for victims of exposure to hazardous materials at your business? Yes _____ No __X__ Type of Decon _____

C. Do you have personnel that will provide site security at your business during and after a hazardous materials incident? Yes __X__ No _____

2. Equipment

A. List the type and location of equipment that can or will be used for response to hazardous materials incidents at your business.

FIRE AND EMERGENCY EQUIPMENT ARE LOCATED AT EACH AREA WHERE HAZARDOUS MATERIALS ARE LOCATED. FIRST AID EQUIPMENT IS LOCATED IN THE OFFICE/ SCALE HOUSE.



TYPICAL TREE STAKING DETAIL N.T.S.

GENERAL NOTES

1. Remove all existing structures, debris, etc. from site prior to planting.
2. Post warning signs labeled "No Trespassing" along perimeter fencing at intervals of 250 feet or less.
3. Gates will be constructed of either barb wire on board or chain link. All gates should be locked when owner is not present.
4. All grades, contours, access roads, etc. as shown on plan are estimated to the date of 2012 A.D.

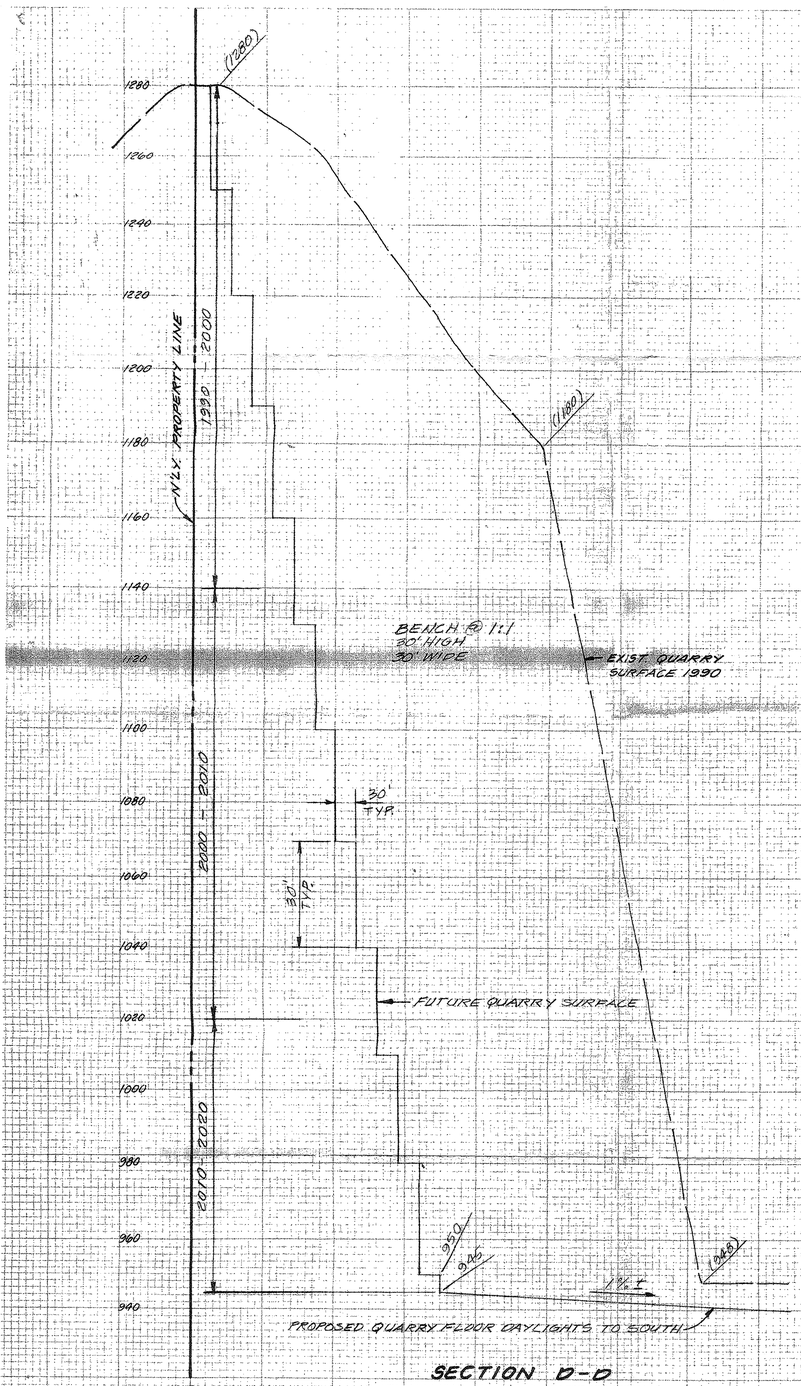
PLANTING NOTES

1. Hydromulch misture will include commercially prepared fertilizer and be composed of the following ingredients.

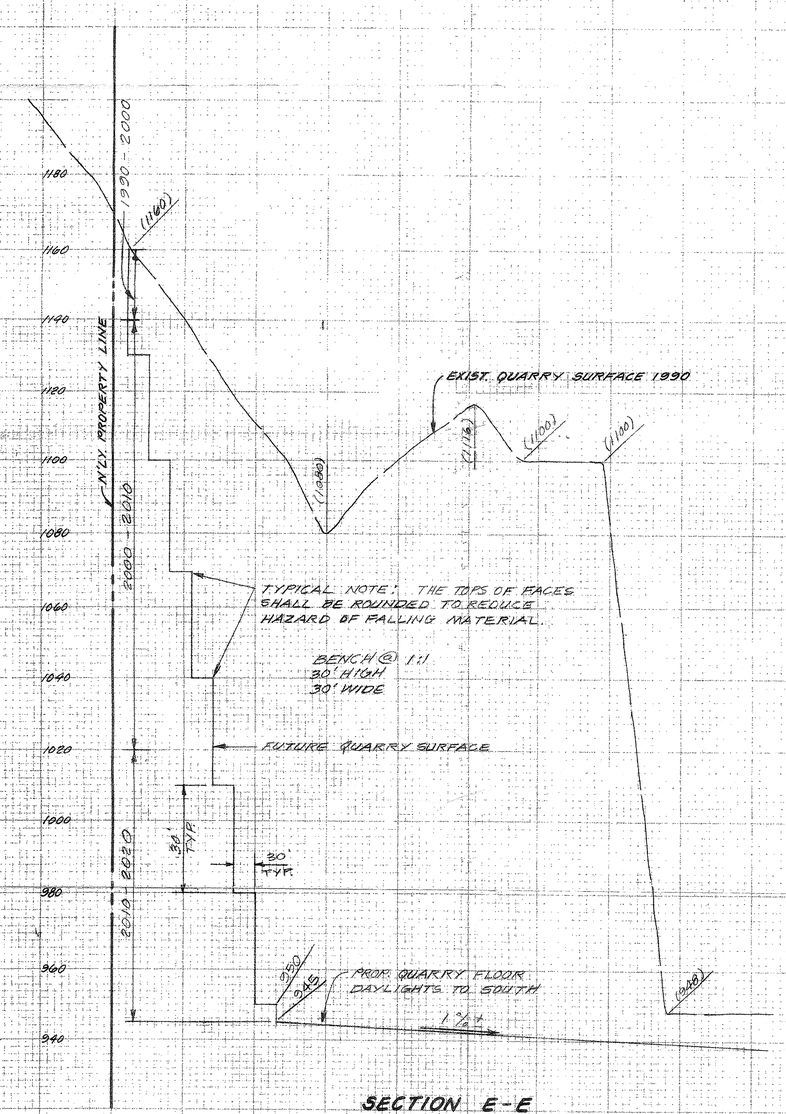
Available nitrogen	10%
Available phosphorus	20%
Available potash	20%

2. Tree Staking. Provide stakes of sound new hardwood, treated softwood, or redwood, free of knot holes and other defects.
3. Tree Staking. Provide wire ties and retain guys of 2-strand, twisted, pliable galvanized iron wire not lighter than 12 ga. with zinc coated turnbuckles.

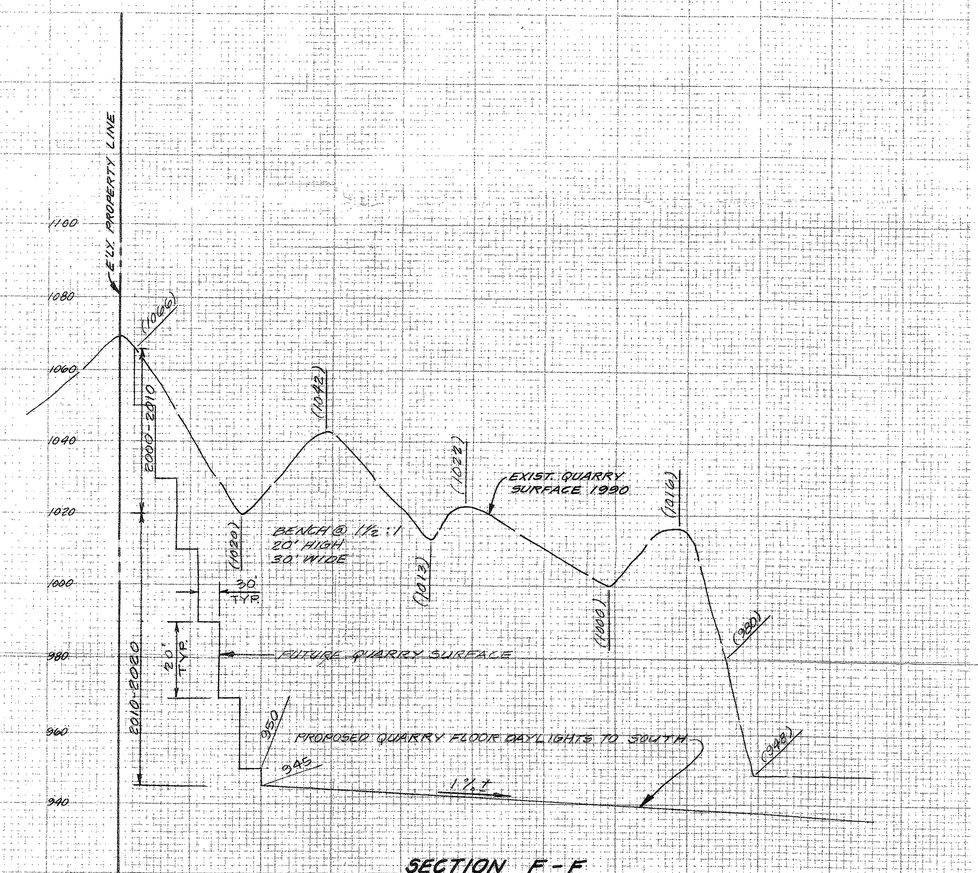
revisions	RECLAMATION PLAN - PYRITE QUARRY	brown & mullins, inc.	prepared under the direction of:	prepared for:	date	sheet
	PLANTING & FENCING	engineering • planning • surveying	RUSSELL J. MULLINS, 3712 EXP. 6/30/92	PAUL J. & LUCILE HUBBS	MAY, 1990	5 of 5
	GRADING CONTOURS, ACCESS ROADS & CLIFFS INDICATED ARE ESTIMATED TO THE DATE OF RECLAIMATION, CIRCA 2020 AD.	2150 north arrowhead avenue san bernardino, california 92405	(714) 886-4768	140 WEST VALLEY BLVD RIALTO, CALIF. 92376 (714) 877-2726	j.o.no. 89-5-6	
			drawn: checked:		DWG. NO.	E-1724



SECTION D-D



SECTION E-E



SECTION F-F

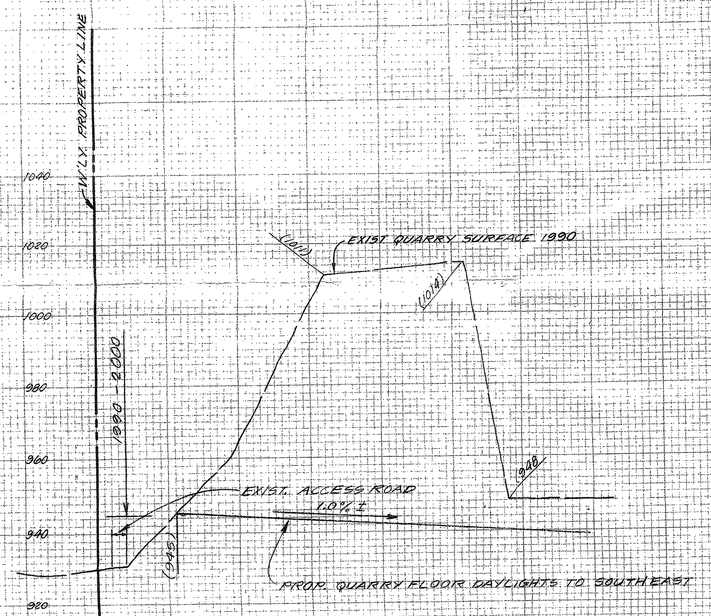
SCALES:
HORIZ. 1" = 100'
VERT. 1" = 20'

PYRITE QUARRY

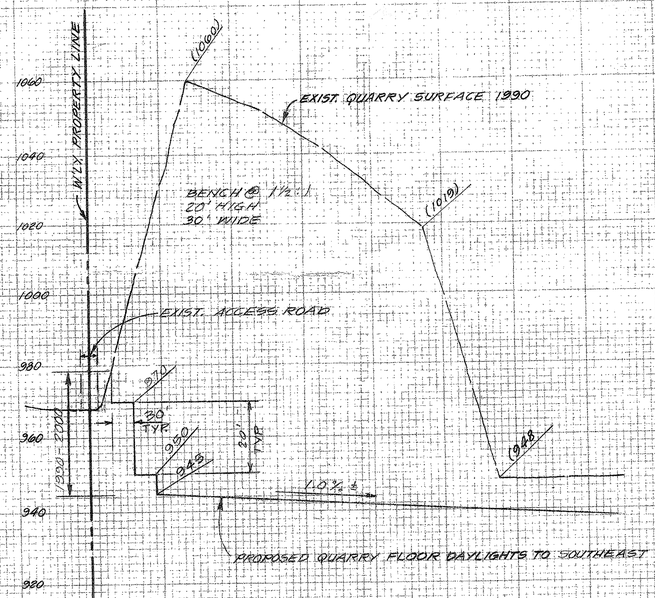
NO. 1294—CROSS SECTION 10 x 10
"CLEARPRINT PAPER CO."
MADE IN U.S.A.

NO. 1294—CROSS SECTION 10 x 10
"CLEARPRINT PAPER CO."
MADE IN U.S.A.

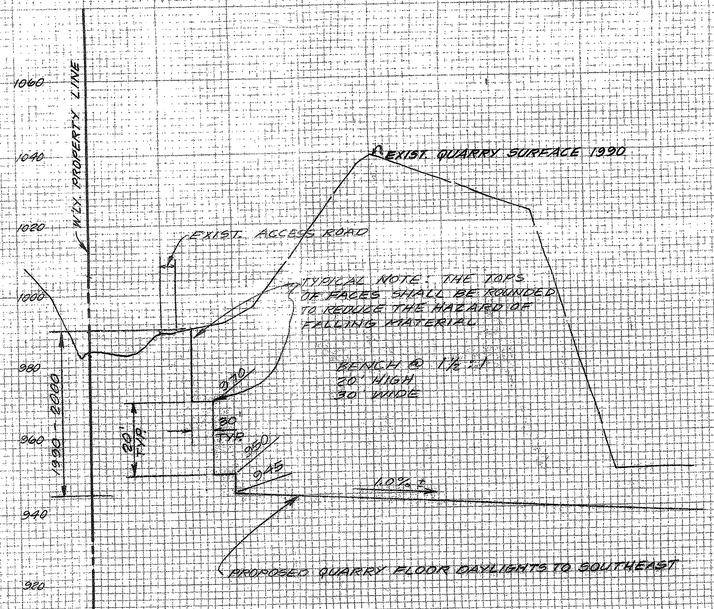
MAY, 1990
SHT. 4



SECTION A-A



SECTION B-B



SECTION C-C

SCALES:
HORIZ. 1" = 100'
VERT. 1" = 20'

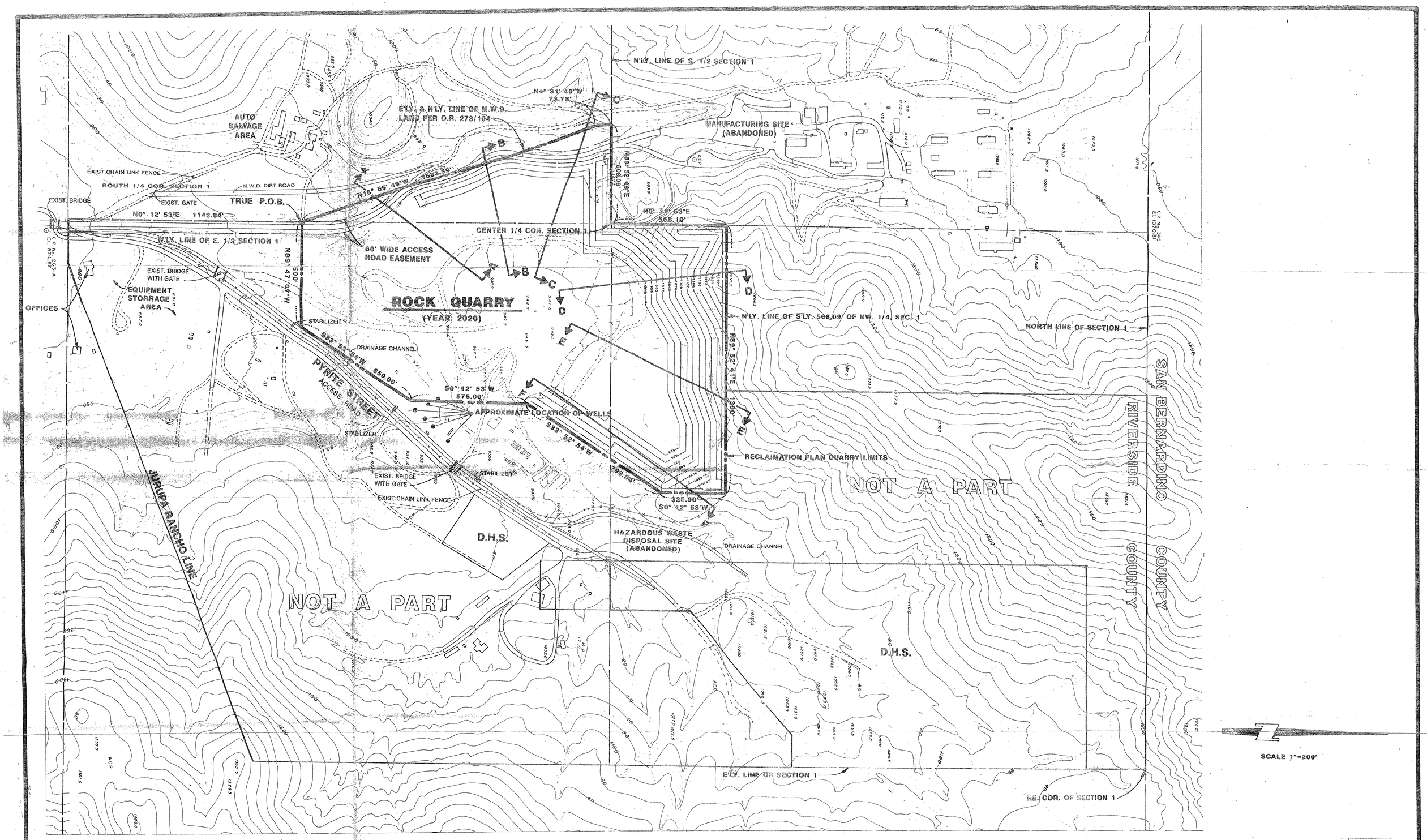
REVISED SECTION C-C 8-30-90

PYRITE QUARRY

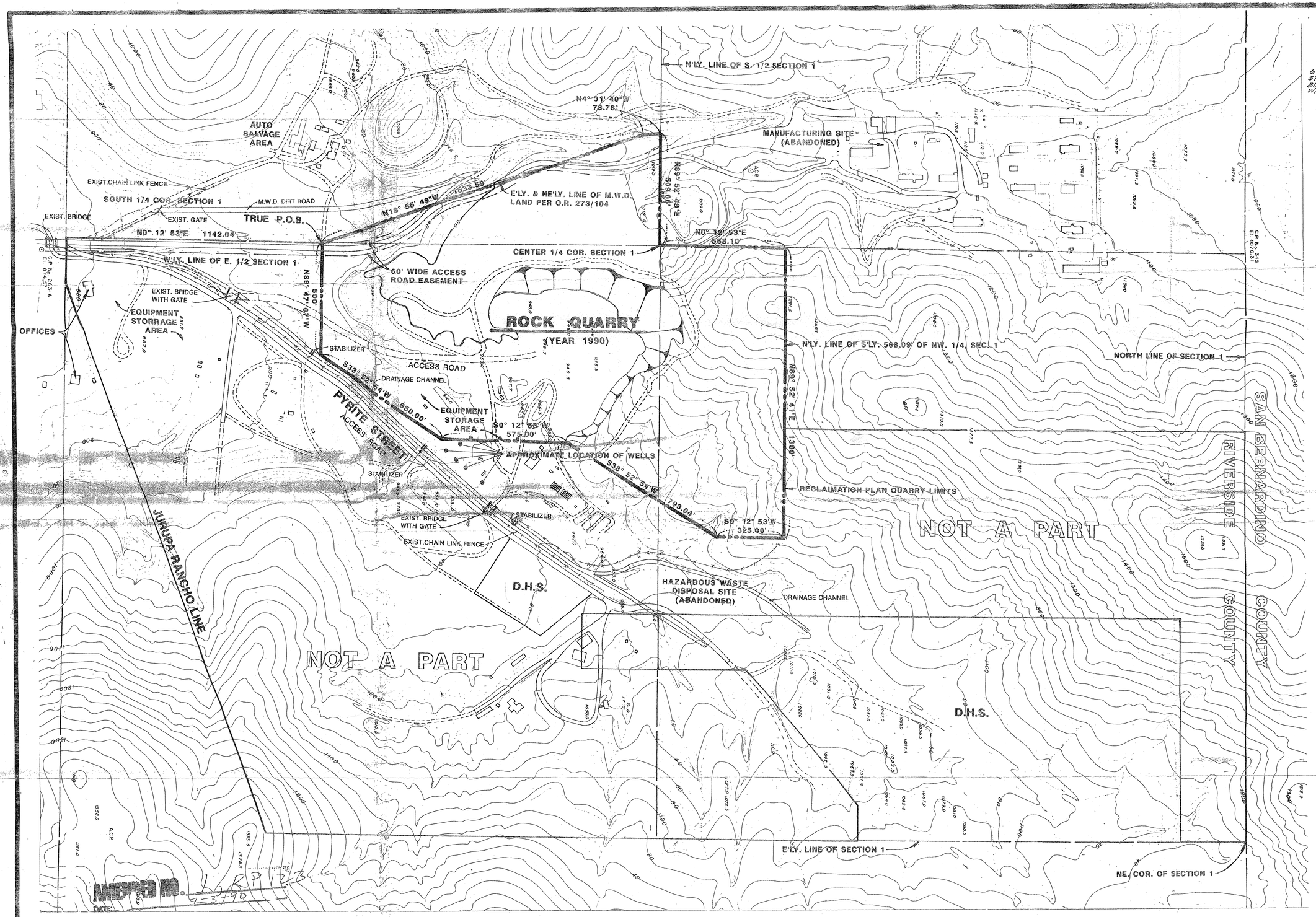
NO. 1294—CROSS SECTION 10 x 10
"CLEARPRINT PAPER CO."
MADE IN U.S.A.

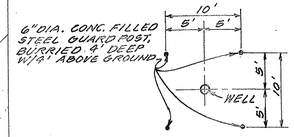
MAY, 1990
SHT. 3

E - 1724



revisions	RECLAMATION PLAN PYRITE QUARRY PORTION OF THE EAST 1/2 OF SECTION 1, T2S, R6W, S.B.M.	brown & mullins, inc. engineering • planning • surveying 2150 north arrowhead avenue san bernardino, california 92405	(714) 886-4768	bmi	prepared under the direction of: RUSSELL J. MULLINS LS 3742 EXP. 6/30/92 drawn: checked:	prepared for: PAUL J. & LUCILE HUBBS 140 WEST VALLEY BLVD RIALTO, CALIF. 92376 (714) 877-2726	date MAY, 1990 j.o. no. 89-5-6	sheet 2 of 5 DWG. NO. E-1724





GUARD POST PLACEMENT DETAIL FOR THE PROTECTION OF EXTRACTION &OBSERVATION WELLS

LEGAL DESCRIPTION

That certain real property in the County of Riverside, State of California described as,

That portion of Section 1, Township 2 South, Range 6 West, San Bernardino Meridian, described as follows:

Commencing at the South one-quarter corner of said Section 1;

Thence North 0°12'53" East, along the Westerly line of the East one-half of said Section, a distance of 1142.04 feet to its intersection with the Northeasterly line of the land described in deed to the Metropolitan Water District of Southern California, recorded March 27, 1936 in Book 273 of Official Records, page 104, said point being the True Point Of Beginning;

Thence North 18°55'49" West, along said Northeasterly line, a distance of 1533.59 feet to an angle point therein;

Thence continuing along the Easterly line of said Water District land, North 4°31'40" West, a distance of 73.78 feet to Northerly line of the South one-half of said Section;

Thence North 89°52'41" East along said Northerly line a distance of 509.06 feet to the center one-quarter corner of said section;

Thence North 0°12'53" East, along said Westerly line of the East one-half of said Section, a distance of 568.10 feet to the Northerly line of the Southerly 568.09 feet of the Northwest one-quarter of said Section;

Thence North 89°52'41" East along the last described Northerly line, a distance of 1300.00 feet;

Thence South 0°12'53" West, parallel with said Westerly line of the East one-half of Section 1, a distance of 325.00 feet;

Thence South 33°52'54" West, a distance of 793.04 feet;

Thence South 0°12'53" West, a distance of 575.00 feet;

Thence South 33°52'54" West, a distance of 650.00 feet to a point that bears South 89°47'07" East, 500.00 feet from the True Point Of Beginning;

Thence North 89°47'07" West, 500.00 feet to the True Point Of Beginning.

Containing approximately 54.2 acres.

SCALE 1"=200'

revisions	TOPOGRAPHIC SURVEY PYRITE QUARRY PORTION OF THE EAST 1/2 OF SECTION 1, T2S, R6W, S.B.M.	brown & mullins, inc. engineering • planning • surveying 2150 north arrowhead avenue san bernardino, california 92405 (714) 886-4768	bmi	prepared under the direction of: RUSSELL J. MULLINS LS 3732 EXP. 6/30/92 drawn: checked:	prepared for: PAUL J. & LUCILE HUBBS 140 WEST VALLEY BLVD RIALTO, CALIF. 92376 (714) 877-2726	date MAY, 1990 j.o.no. 89-5-6 DWG. NO. E-1724	sheet 1 of 5

TRANSPORTATION and LAND MANAGEMENT AGENCY
DEPARTMENT OF BUILDING AND SAFETY

Environmental Compliance Division

NPDES Inspection for Industrial/Commercial Facilities

Type of Inspection: ☒ Initial ☐ Routine ☐ Follow-up ☐ Special ☐ Complaint

BIC 091191 Date of Inspection: 05/17/2010
Business License Number 022725
Site Contact Signature: Inspector: Phil C. Broesamle

A. CONTACT INFORMATION:
Facility Name: Rivrside Mining Limited, Pyrite Quarry
Address: 3500 Pyrite ST, B
City: Riverside, Ca 92519
Contact Party: Nanu Patel
Telephone Number: __(714) 337-9000
Mailing Address (if different from above): __Patel, Nanu
__P O Box 3529
__Riverside, Ca 92519

E-Mail Address: _ _____

B. FACILITY INSPECTION INFORMATION:
Description of Site Activity(ies): __Surface Mining

SIC Code: _12210 Revised SIC Code: ___1442

Facility Priority Classification: ☐ Low ☐ Medium ☒ High Revised Priority: ☐ Low ☐ Medium ☐ High ☐ N/A

Does this facility have a current County Business License? ☒ Yes ☐ No Number: ___022725____

Is facility subject to CA Statewide General Industrial Permit? ☒ Yes ☐ No WDID#: ___ _____

If "Yes", is facility "Mandatory" or "Conditional" (circle one)

If "No", does facility have a No Exposure Certification? ☐ Yes ☒ No

Does facility maintain a SWPPP? ☐ Yes ☒ No

Are all BMPs implemented per SWPPP? ☐ Yes ☒ No

Does facility maintain a Stormwater Monitoring Plan? ☐ Yes ☒ No

Were storm water samples collected last storm season? ☐ Yes ☒ No

List surface flow path(s) from facility to US Waters: Down to highway 60, SANTA ANA RIVER

County of Riverside
Building and Safety Department- Environmental Compliance Division

BIC 091191 Date Inspection: ___05/17/2010 Inspector:_Phil C. Broesamle
Business License Number: 022725

C. BEST MANAGEMENT PRACTICES (BMP) ASSESSMENT:

1. Are BMPs implemented in outdoor storage area(s) to prevent storm water contamination? ☐ Yes ☒ No ☐ N/A
If "No", list materials stored outdoors and provide corrective actions needed.

Comments:	Actions Needed:
Tires stored on the ground and out in the open, grease containers stored without secondary containment.	Store all tires on pallets and cover. All barrels are to be st under cover

2. Are BMPs implemented in outdoor activity process areas? ☐ Yes ☒ No ☐ N/A
If "No", explain types of activities and provide actions needed.

Comments:	Actions Needed:
At time of inspection, observed open air maintenance on machinery	All work to be done under cover or indoors

3. Are facility vehicle and equipment operation (washing, maintenance, etc.) BMPs implemented to eliminate exposure of these activities to storm water? ☐ Yes ☒ No ☐ N/A
If "No", list those activities with concerns and provide actions needed.

Comments:	Actions Needed:
At time of inspection observed oil staining leaving concrete floor at garage area out onto soil.	clean up all contaminated soils on property

4. Are the contents of waste receptacles protected from storm water contact? ☒ Yes ☐ No ☐ N/A
If "No", list location(s), concern(s) and actions needed.

Comments:	Actions Needed:
All trash bin lids closed at time of inspection	N/A

Comments:	Actions Needed:
Observed 3 retention basins on site to catch all sediments from leaving property	N/A

County of Riverside
Building and Safety Department- Environmental Compliance Division

BIC 091191 Date Inspection: 05/17/2010 Inspector:__Phil C. Broesamle

Business License Number: 022725

6. Are spill prevention BMPs provided and control measures implemented on site? ☐ Yes ☒ No ☐ N/A
If "No", comment on containment level, location(s) and actions needed.

Comments:	Actions Needed:
No spill kits at garage area	Clean up all spill areas

7. Are adequate erosion prevention BMPs being implemented on site? ☐ Yes ☐ No ☒ N/A
If "No", comment on location(s) and actions needed.

Comments:	Actions Needed:
No SWPPP'S plan on site	Need SWPPP'S plan. (WDWD#)

D. ADDITIONAL CONCERNS/CORRECTIVE ACTIONS REQUIRED:
a) clean up and store all tires,
b) all maintenance to be done under cover or indoors.
c) Must file with the State for a Industrial Activities Storm Water General Permit
d) Will re-inspect for permit coverage within 60 days

E. ACTIONS TAKEN:

☐ **No Violations Observed** ☐ **Verbal Warning** ☒ **Written Warning** ☐ **Citation Issued** ☐ **RWQCB Notified:** ____ _
(Date)

ESB
BABCOCK&Sons,Inc.
Environmental Laboratories est 1906
6100 Quail Valley Court Riverside, CA 92507
(951) 653-3351 • FAX (951) 653-1662
www.babcocklabs.com

Chain of Custody & Sample Information Record

ent: STONE VALLEY MATERIALS
Contact: A
Fax No.
email: JEPHENNH@STONEVALLEYMATERIALS.COM
one No. 909-973-6048
Turn Around Time: Routine *72 Hour Rush *48 Hour Rush *24 Hour Rush
ject Name: STORM WATER
*Lab TAT Approval: By: *Additional Charges Apply
ject Location:

Additional Reporting Requests
Include QC Data Package: ☐ Yes ☐ No
FAX Results: ☐ Yes ☐ No
Email Results: ☐ Yes ☐ No
State EDT: ☐ Yes ☐ No
(Include Source Number in Notes)

Sampler Information
Name: DAVID HART
Employer: VALLEY MATERIALS
Signature: [signature]

Matrix: DW = Drinking Water; WW = Waste Water; GW = Ground Water; S = Source; SG = Sludge; L = Liquid; M = Miscellaneous

Sample ID	Date	Time	Unpreserved	H_2SO_4	HCl	HNO_3	$Na_2S_2O_3$	NaOH	NaOH/Zn Acetate	NH_4Cl	MCAA	Total # of Containers	Routine	Resample	Special	pH	TSS	GC	Oil and Grease	TDC	Matrix	Notes
DWO #1	12/28	1130p	1	2								4										
DWO #3	12/28	1135p	1	2								4										

Relinquished By (sign)	Print Name / Company	Date / Time	Received By (sign)	Print Name / Company
[signature]		12/23/10 1000	[signature]	[signature]

(For Lab Use Only) Sample Integrity Upon Receipt/Acceptance Criteria

Sample(s) Submitted on Ice? Yes No
Custody Seal(s) Intact? Yes No NA
Sample(s) Intact? Yes No
Temperature: 10 °C ☐ Cooler Blank

Sample meets laboratory acceptance criteria? Yes No
Permission to continue: Yes No
Deviation/Notes:
Signature/Date:

Lab No.
Logged in By/Date:
Page ____ of ____

Rev. 3/09

ESB
S.BABCOCK&Sons,Inc.
Environmental Laboratories est 1906
6100 Quail Valley Court Riverside, CA 92507
(951) 653-3351 • FAX (951) 653-1662
www.babcocklabs.com

Chain of Custody & Sample Information Record

Client: Stone Valley Materials
Contact: STEPHEN VANDER HART
Fax No. 951-361-3370
Phone No. 909-973-6048
email: STEPHENVH@STONEVALLEYMATERIALS.COM
Project Name: Stormwater
Project Location:
Turn Around Time: Routine *72 Hour Rush *48 Hour Rush *24 Hour Rush
*Lab TAT Approval: By: *Additional Charges Apply

Additional Reporting Requests
Include QC Data Package: ☐ Yes ☐ No
FAX Results: ☐ Yes ☐ No
Email Results: ☐ Yes ☐ No
State EDT: ☐ Yes ☐ No
(Include Source Number in Notes)

Sampler Information
Name: STEPHEN VANDER HART
Employer: STONE VALLEY MATERIALS
Signature: Steph V Hart

Sample ID	Date	Time	Unpreserved	H_2SO_4	HCl	HNO_3	$Na_2S_2O_3$	NaOH	NaOH/Zn Acetate	NH_4Cl	MCAA	Total # of Containers	Routine	Resample	Special	H	H_2S	[illegible]	[illegible]	[illegible]	Matrix	Notes
Pond #2	12/20	700	1	3								4	X			X	X	X	X	X	L	
			~~1~~	~~3~~								~~4~~	~~X~~			~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~L~~	
			~~1~~	~~3~~								~~4~~	~~X~~			~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~L~~	

Matrix: DW = Drinking Water; WW = Waste Water; GW = Ground Water; S = Source; SG = Sludge; L = Liquid; M = Miscellaneous

Relinquished By (sign)	Print Name / Company	Date / Time	Received By (sign)	Print Name / Company
Steph Vander Hart	STONE VALLEY MATERIALS	12-20-10 10:02	[signature]	E. Mata/ESB

(For Lab Use Only) Sample Integrity Upon Receipt/Acceptance Criteria

Sample(s) Submitted on Ice? Yes No
Custody Seal(s) Intact? Yes No NA
Sample(s) Intact? Yes No
Temperature: 11 °C ☐ Cooler Blank

Sample meets laboratory acceptance criteria? Yes No
Permission to continue: Yes No
Deviation/Notes:
Signature/Date:

Lab No.
Logged in By/Date:
Page ____ of ____

Rev. 3/09

Industrial

Stormwater Pollution Prevention Plan

for:

RIVERSIDE MINING LIMITED
3500B Pyrite Street
Riverside, California 92509

SWPPP Contact(s):

Riverside Mining Limited
Bart Patel
3500B Pyrite Street
Riverside, California 92509
951-571-3213
951-361-3270

SWPPP Amended Date:

07/02/2010

WDID # 8 33I022115

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Attachment G – Comprehensive site Compliance Evaluation (Form 5)
Attachment H – Maintenance Records
Attachment I – Employee Training Records
Attachment J – Inspection
Attachment K – Spec and Fact sheets for potential BMP's to be used on site

SECTION 1: FACILITY DESCRIPTION AND CONTACT INFORMATION

1.1 Facility Information

Facility Information

Name of Facility: **RIVERSIDE MINING LIMITED**

Street: **3500B PYRITE STREET**

City: **RIVERSIDE** State: **CA** ZIP Code: **92509**

County or Similar Subdivision: **RIVERSIDE**

Industrial ID Number: WDID: **8 331022115**

Is this facility considered a Federal Facility? ☐ Yes ☒ No

Estimated area of industrial activity at site exposed to stormwater: **55.86** (acres)

Discharge Information

Does this facility discharge stormwater into a City Storm Drain or Sewer? ☐ Yes ☒ No

If yes, name of City operator:

Name(s) of water(s) that receive stormwater from your facility N/A

Are any of your discharges directly into any segment of an "impaired" water? ☐ Yes ☒ No

Primary SIC Code or 2-letter Activity Code **1423**

1.2 Contact Information/Responsible Parties

Facility Operator (s):

Name: **RIVERSIDE MINING LIMITED**
Address: **3500B PYRITE STREET**
City, State, Zip Code: **RIVERSIDE, CALIFORNIA 92509**
Telephone Number: **951-571-3281**
Email address: **bart@erconusa.com**
Fax number: **951-361-3270**

Facility Owner (s):

Name: **Riverside Mining Limited**
Address: **3500B Pyrite Street**
City, State, Zip Code: **Riverside, California 92509**
Telephone Number: **951-571-3281**

SWPPP Contact:
Name: **Bart Patel**

1.3 Stormwater Pollution Prevention Team

Staff Names	Individual Responsibilities
STEPHEN VANDER HART	INSPECTIONS BMPS
JOHN FOSTER	BERMS BMPS
NICK VAN HOFWEGEN	INSPECTIONS BMPS

1.4 Activities at the Facility

Granite is blasted into manageable pieces, sorted, stockpiled and crushed to sell to the public. The quarry only operates when there is demand.

1.5 General Location Map

Riverside County

1.6 Site Map

See attachment

SECTION 2: POTENTIAL POLLUTANT SOURCES

Potential sources of sediment, which may affect the quality of stormwater discharges from the quarry, include sediment and dust from trucks/equipment working or traveling on the property and sediment from excessive rainfall. Potential sources of pollution, other than sediment, which may affect the quality of stormwater discharges include the following:

• Solid waste generated from litter.

• Diesel fuel, antifreeze, lube oil, hydraulic oil and cleaning solvents from equipment and blasting powder.

Hazardous materials are kept in secure containers. None of the aforementioned potential sources of sediment or pollution is reasonably expected to affect the quality of stormwater discharges . No adverse impact on water quality is anticipated. There are no known locations where significant spills or leaks have ever occurred on-site.

2.1 Non-Stormwater Discharges Documentation

All Non- Stormwater Discharges (Authorized and UnAuthorized) have to be cleared by the supervisor and documented on attached worksheets.

2.2 Industrial Activity and Associated Pollutants

Industrial Activity	Associated Pollutants
Mineral extraction: Blasting, loading, hauling	Dust, TSS, TDS, turbidity, fines
Mineral processing: Rock sorting, Crushing, stockpiling	Dust, TSS, TDS, turbidity, fines
Equipment/ vehicle fueling	Diesel / oil
Equipment/ vehicle maintenance	Solvents, oil, heavy metals, acids

2.3 Spills and Leaks

Areas of Site Where Potential Spills/Leaks Could Occur

Location	Outfalls
Active mining area	
Equipment fueling	
Equipment maintenance	

SECTION 3: STORMWATER CONTROL MEASURES AND BEST MANAGEMENT PRACTICES (BMP'S)

3.1 Minimize Exposure

Best Management Practices (BMPs) used to minimize pollutants from entering stormwater runoff and reducing the volume of stormwater requiring management, are diversion dikes and berms. Grading of the tiers is also used to direct runoff, which minimizes volumes. Activities and equipment are segregated into separate areas, thereby containing any leaks, spills, or sediment to manageable areas. Riverside Mining Ltd has a spill kit and heavy equipment ready to clean up any releases. No fueling is undertaken within 100 feet of a drainage ditch.

3.2 Good Housekeeping

Good housekeeping is a practical, cost-effective way to maintain a clean and orderly facility to prevent potential sources from coming into contact with stormwater. It includes establishing protocols to reduce the possibility of mishandling materials or equipment and training employees in good housekeeping techniques. Riverside Mining Ltd. provides covered trash containers and regularly maintains them. The shop area is covered and materials are kept with labels in an orderly fashion and stored in appropriate containers.

3.3 Maintenance

Riverside Mining Ltd. regularly inspects, tests, maintains and repairs its equipment to avoid situations which may result in leaks, spills and other releases of pollutants to stormwater. Personnel are trained in spill response and a spill kit and equipment is readily available, if ever needed. Employees are trained in proper waste control and disposal practices. BMPs are inspected regularly, monitored after inclement weather and modified if necessary, to achieve the effluent limits.
Inspections by qualified personnel will be required at least every 14 days and within 24 hours of the end of a storm event resulting in 0.5 inch or more of precipitation. Sediment ponds and sediment traps must be inspected for sediment accumulation which must be removed before it reaches 1/3 of the design volume. Stabilized construction exits must be monitored to ensure that they are not allowing mud to be tracked off-site.

3.4 Spill Prevention and Response

Procedures for preventing and responding to spills and leaks includes material

management practices, storage containment, personnel training, and spill and release control.

Material Management Practices

• Proper closed and covered storage of small containers of hazardous materials and oils and provision for limited access to storage areas,
• Performance of regular (monthly) inspections of oil and hazardous materials storage areas and transfer equipment,
• Plain labeling of containers (i.e. "Used Oil", "Spent Solvents") that could be susceptible to spillage or leakage, to encourage proper handling and facilitate rapid response if spills or leaks occur,
• Storage of only enough of a product to do the job and use all of the product before disposing of the container,
• Storage of products in their original containers with the original manufacturer's label attached,
• For hazardous products, adherence to manufacturer's recommendations for proper use and disposal,
• Maintenance of spill absorbents, drip pans and cleanup equipment on-board equipment; maintenance of fueling vehicles and heavy construction equipment, in oil storage areas,
• Storage of oil, fueling and maintenance of vehicles in covered areas and/or within areas whose drainage is controlled by spill containment, where possible. Solvents are particularly mobile in storm water runoff and should be carefully managed, stored in closed containers, and/or used in covered areas,
• Immediate response to all spills and leaks including performance of preventative and other maintenance for all leaks from on-site equipment.
• Centralization, as much as possible, of maintenance procedures and fueling to covered and/or diked areas, particularly for activities such as oil changes, antifreeze replacement/addition or battery replacement/maintenance,
• Immediate transfer of collected spilled, leaked or drained oil or other hazardous materials, to properly labeled , closed and covered storage containers and areas,
• Preventative measures such as barriers between material storage and traffic areas.

Storage Containment

A basic requirement of spill prevention is to provide secondary containment for all oil and hazardous materials wasted (i.e. a means of immediate containment of these materials if they are accidentally released from their primary storage containers). Secondary containment is required at all sites where it is practical.

Personnel Training

All personnel should be familiar with the concept of good materials housekeeping, general oil-spill prevention and control measures, and first response and reporting requirements. Training to ensure understanding of the importance of these practices should be incorporated into regular worker safety and training meetings, and supervisors should emphasize the importance of daily performance of good

housekeeping practices.

Inspection Requirements

Inspections of oil storage and handling facilities and equipment should be incorporated into regular inspections.

Spill and Release Control

When a spill does occur, despite the best efforts to prevent it, it is often possible to contain and even clean up spills with simple measures including use of absorbent pads and simple hand tools. For these small volumes, it may be possible to incorporate disposal into daily activities (using proper methods, containers and ultimate disposal facilities). Other spills may require a more sophisticated approach, records preparation and reporting. For spills, which do not fall into this minimal category, the following response policy is generally appropriate:
1. The highest priority is to protect the workers. No spill cleanup that will endanger employees shall be undertaken.
2. The next priority is to prevent any spill from reaching surface waters.
3. For contained (diked or otherwise isolated) areas, initial response to a spill should be to prevent any (or continued) loss of spilled materials past the containment.
4. Once fuel is adequately contained, personnel should alert supervisors who will direct all further cleanup.
Spill observers should:
1. Locate and control spill immediately
2. Alert Riverside Mining Ltd. Foreman

Foreman or Supervisor will:

1. Determine emergency response
2. Direct cleanup
3. Alert responsible party

Responsible party will:

1. If hazardous materials, waste, contaminated soil or water are encountered, all construction work in the vicinity shall be halted
2. Prepare and submit reports
If fuel spills outside of a contained area, efforts shall be focused on containing the spread of fuel; particularly in keeping it from surface waters. The specific action taken will vary. Control measures can include blocking culverts or installing underflow structures in ditches or culverts, placement of absorbent materials or skimmers in sediment traps or other control structures ponding water, construction of temporary containment dikes or ponds, or oil/water bypass dikes.

Reporting

Reporting requirements are utilized where a release of a hazardous substance in an amount equal to or in excess of a reportable quantity occurs.

3.5 Erosion and Sediment Controls

Stormwater sediment and erosion controls include sediment ponds and sediment traps, perimeter controls, rolled erosion control products and straw wattles. Surface terracing is used to direct stormwater away from the rock face. Rock check dams, sediment traps and flumes with rock outlet protection are used where possible. Additional Best Management Practices (BMPs) used to minimize sediment from entering stormwater runoff and reducing the volume of stormwater requiring management are diversion dikes and berms above active mining areas. Additional temporary bmp's including chevrons, rip rap, visqueen spillway, hydromulch and straw blankets will be used as necessary to cover exposed areas that are susceptible to erosion.

3.6 Management of Runoff

A combination of preventative and treatment BMPs will yield the most effective stormwater management for minimizing the offsite discharge of pollutants via stormwater runoff . All BMPs used at Riverside Mining Ltd discussed above under Erosion and Sediment Controls, require regular maintenance to function as intended. Inspection and maintenance procedures for BMPs at Riverside Mining Ltd are as follows:

Stabilized Construction Exits: The exits should be monitored to ensure that they are not tracking mud off-site.
Sediment Traps/Ponds and Check Dams: Inspect for sediment accumulation and excavate the accumulation before it reaches one-third of the design volume. Sediment must be disposed of in locations where it will not erode back into the construction area or into waterways.
Temporary Berms, Diversions or Barriers: Inspect for sediment accumulations and breaches. Repair at the first sign of weakness.
Dust: Re-spray area as necessary to keep dust to a minimum.

3.7 Employee Training

Training staff is an effective BMP. Annual training will be conducted for all Riverside Mining personnel for general stormwater awareness. All employees will be trained where industrial materials and activities are exposed to stormwater or who are responsible for implementing . Training will cover specific
control measures, and monitoring, inspection, planning, reporting and documentation requirements. Detailed training will be undertaken for those with specific stormwater responsibilities such as installing, inspecting and maintaining BMPs and those responsible for water quality sampling and recordkeeping. Additional training will take place in accordance with any new California general permit requirments.

3.8 Non-Stormwater Discharges
There are no non-stormwater discharges at Riverside Mining

.

3.09 Waste, Garbage and Floatable Debris
Riverside Mining Ltd. provides covered trash cans and regularly maintains them.

3.10 Dust Generation and Vehicle Tracking of Industrial Materials
Dust generation from the Riverside Mining Quarry will be managed by watering with a water truck. Vehicle tracking of industrial materials is unlikely because it is large dimensional rock.

SECTION 4: SCHEDULES AND PROCEDURES FOR MONITORING
Riverside Mining Ltd will collect and analyze stormwater samples and document monitoring activities consistent with the procedures. Permit for Stormwater Discharges Associated With Industrial Activities will be used for reporting and record keeping. All monitoring will be conducted in accordance with the
relevant sampling and analysis requirements. Analytical monitoring required at the Riverside Mining Quarry is quarterly benchmark monitoring.

1. Sample Locations. Samples will be collected from the sediment basins or (catch basin)
2. Pollutant Parameters to be Sampled. If discharges take place all samples will be taking which is required by the industrial general permit. Such as PH, Trubidity,
3. Monitoring Schedules.
Monthly between June and September.
October to May - 2 times a month or before and after a rain event. Quarterly observations of the discharge location shall take place during the year.
4. Numeric Limitations. None
5. Procedures. Samples will be collected within the first hour of the first measurable storm event or as soon as practicable. Two samples are required during the rainy season. Riverside Mining will review the selection, design, installation and implementation of the control measures to determine if modifications are necessary to meet the effluent limits in this permit and either:
1. Make the necessary modifications and continue monitoring until 4 additional samples are averaged and do not exceed the benchmark, or
2. Make a determination that no further pollutant reductions are technically available and economically practicable and achievable .
3. Riverside Mining Ltd. must review their control measures and perform any corrective action immediately.
4. Responsible staff involved with the BMPs is STEPHEN VANDER HART
5. If discharges take place all monitoring data will be submitted during the annual report.

6. **Group Monitoring Program:** If possible Riverside Mining may join a group monitoring plan. If this takes place proper certifications and reports will be submitted every July 1st with the annual report.

7. Training for Monitoring Program: Familiarity with the requirements of the stormwater monitoring plan and competence in the techniques and protocols specified in the plan are essential to ensure that stormwater samples are collected in a manner that meets the goals of the plan, while protecting the health and safety of the monitoring team members. It is recommended that all stormwater monitoring personnel receive training prior to conducting any stormwater monitoring activities. Stormwater monitoring training should include the following basic elements:

8. Visual Observations: Visual observations of both stormwater and non-stormwater discharges should be made at all facilities to document the presence of any discolorations, odors, floating and suspended material, oil and grease, etc., and to identify the source of any pollutants and non-stormwater flows. Visual observations should be made under the leadership of the SWPPP Leader, with appropriate members of the Pollution Prevention Team, according to the following schedule:

- All drainage areas within the facility should be checked for the presence of unauthorized non-stormwater discharges on a quarterly basis, during daylight hours, on days with no stormwater discharges.

- All authorized non-stormwater discharges and their sources should be observed quarterly during daylight hours, on days with no stormwater discharges.

- One storm event per month during the wet season (October 1-May 30) should be visually observed during the first hour of discharge at all discharge locations. These observations are only required of stormwater discharges that occur during daylight hours that are preceded by at least three working days without stormwater discharges and that occur during scheduled facility operating hours.

The results of the visual observations should be recorded and include: the date of the observation, locations observed, observations, response taken to eliminate unauthorized non-stormwater discharges, and actions taken to reduce or prevent pollutants from contacting non-stormwater or stormwater discharges. Results are included in the Annual Report.

9. Personal Safety: Development of a health and safety plan is recommended. Site selection should insure monitoring personnel from the following potential hazards:

- Traffic

- Uneven or slippery footing surface

- Poor night visibility (lighting)

Site Access

Ease of monitoring site access for monitoring personnel and vehicles parking is essential. Also, for sites that require installation of sample collection or flow metering equipment, adequate equipment access for maintenance and monitoring activities must be available.

10. Adequate Flow Volume: Monitoring sites should be configured such that adequate flow volume is present for sample collection. Hydraulic conditions should be well mixed and free flowing.

11. Conduct Record Keeping and Reporting:
Records of all stormwater monitoring information, inspections and visual observations, certifications, corrective actions and follow-up activities, and copies of all reports should be retained for a period of at least five years. These records should include:

- The date, place, and time of site inspections, sampling, visual observations, and measurements
- The individual(s) who performed the site inspections, sampling, visual observations, and measurements
- Flow measurements or estimates (as required by Section B.6 of the General Permit)
- The date and approximate time of analyses
- The individual who performed the analyses
- Analytical results, method detection limits, and the analytical techniques or methods used
- Quality assurance and quality control records and results
- Non-stormwater discharge inspections and visual observations and stormwater discharge visual observation records
- Visual observations and sample collection exception records
- All calibration and maintenance records of onsite instruments used
- All sampling and analysis exemption and reduction certifications and supporting documentation
- The records of any corrective actions and follow-up activities that resulted from the visual observations

It is also recommended that information regarding the rain event be collected. A nearby recording gage should be identified and used to document the start and stop times and date of precipitation event. Some industries may want to consider installing a recording gage at the monitoring site.

Photographs can be useful. Also keep a record of maintenance activities or any other BMPs that are of an "action" nature. It is easy to demonstrate that a BMP that involves a physical change, such as berming or covering, has been accomplished. But actions that relate to good housekeeping can only be demonstrated by record keeping. Keeping a record of catch basin cleaning, for example, also provides insight into how soon it takes for the catch basin sump to refill.

An Annual Report including the items listed below should be submitted by July 1 of each year to the Executive Officer of the appropriate RWQCB.

- Summary of visual observations and sampling results
- Evaluation of the visual observations and sampling and analysis results
- Documentation that the BMPs in the SWPPP are being implemented and properly maintained as necessary
- Laboratory reports (including detection limits for each analytical parameter)
- The Annual Comprehensive Site Compliance Evaluation Report (as described below)
- Documentation, including the justification, of any deviations from the General Permit requirements (if not already included in the Evaluation Report)
- Records
- Detection limits for each analytical parameter

12. Conduct Annual Site Evaluation: All facilities should conduct an annual comprehensive site compliance evaluation. It may be helpful to involve the Pollution Prevention Team (PPT) in this effort. The SWPPP should be revised within 90 days of the evaluation based on the evaluation and the revisions implemented. Evaluations should include the following:

- A review of the results of visual inspections of potential pollutant sources for evidence of, or the potential for, pollutants entering the drainage system
- A review of visual observation records, inspection records, and sampling and analysis results
- A review and evaluation of each BMP to determine whether it is adequate, properly implemented, and maintained
- A review of site activities to ascertain if change has occurred, and if so, whether new or modified BMPs are needed
- A review of the list of significant materials to ascertain if the list has changed, and if so, whether new or modified BMPs are needed
- A review of spills that have occurred over the past 12 months, with a determination of cause(s) and possible solutions, including modified or new BMPs
- A determination of whether each BMP must be modified, replaced, and whether additional BMPs are needed
- An evaluation report

SECTION 5: SPECIFICATION AND DRAWING - "BMP FACT SHEETS" and TREATMENT CONTROL BMP'S

Drawings and fact sheet that could potential be utilized in accordance with the state general permit to stay in compliance and help aide in the protection of the waterways of the United States. Note that not all of the attached fact sheet will be utilized they are only attached as reference for potential use. BMP's will be utilized in accordance with the local regulators as well as the SWPPP team for Riverside Mining Limited. Not all of the attached bmp's will be used, Riverside Mining will use the most useful and productive bmp's for the job. See separate attachment for all "SC" and "TC" Fact sheets provided by CASQA.

SECTION 6: SWPPP MODIFICATIONS

Instructions:

Your SWPPP is a "living" document and is required to be modified and updated, as necessary, in response to corrective actions.

SECTION 7: SWPPP CERTIFICATION

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

Name: Bart Patel Title: _____

Signature: _____ Date: 8. 3. 2010.

SWPPP APPENDICES

Attach the following documentation to the SWPPP:

Attachment A (Form A) – General Location Map

Attachment B (Form B) – Site Maps

Attachment C – Sampling and Analysis Results (Form 1 - First and second storm)

Attachment D – Quarterly Visual Observations of Authorized NSWD's (Form 2)

Attachment E – Quarterly Visual Observations of Unauthorized NSWD's (Form 3)

Attachment F – Monthly Visual Observations of Storm Water Discharges (Form 4)

Attachment G – Comprehensive site Compliance Evaluation (Form 5)

Attachment H – Maintenance Records

Attachment I – Employee Training Records

Attachment J – Inspections

Attachment K – Spec and Fact sheets for potential BMP's to be used on site

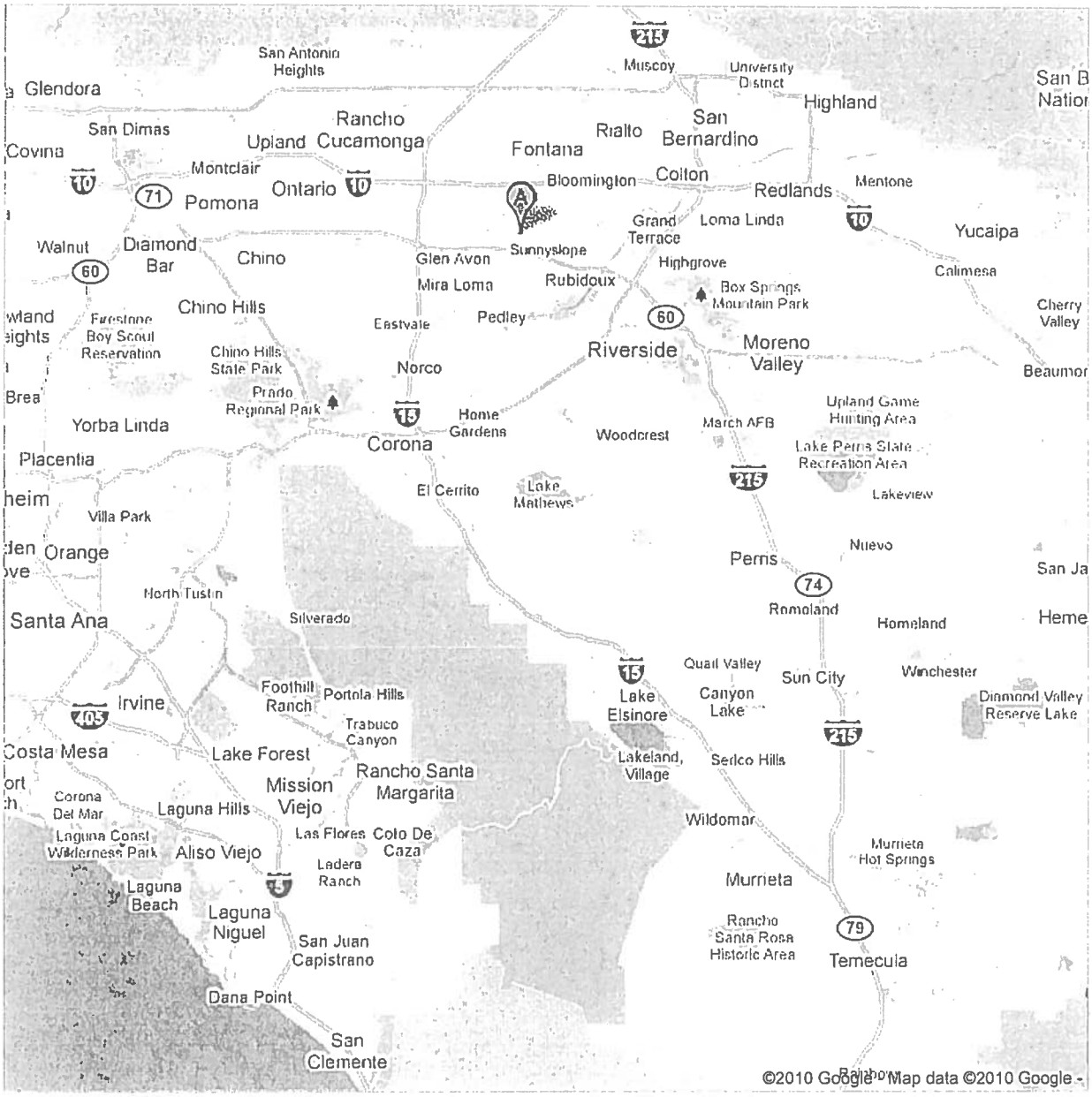
ATTACHMENT A

GENERAL VICINITY MAP

Form A

Google maps Address **3500 Pyrite St**
Riverside, CA 92509

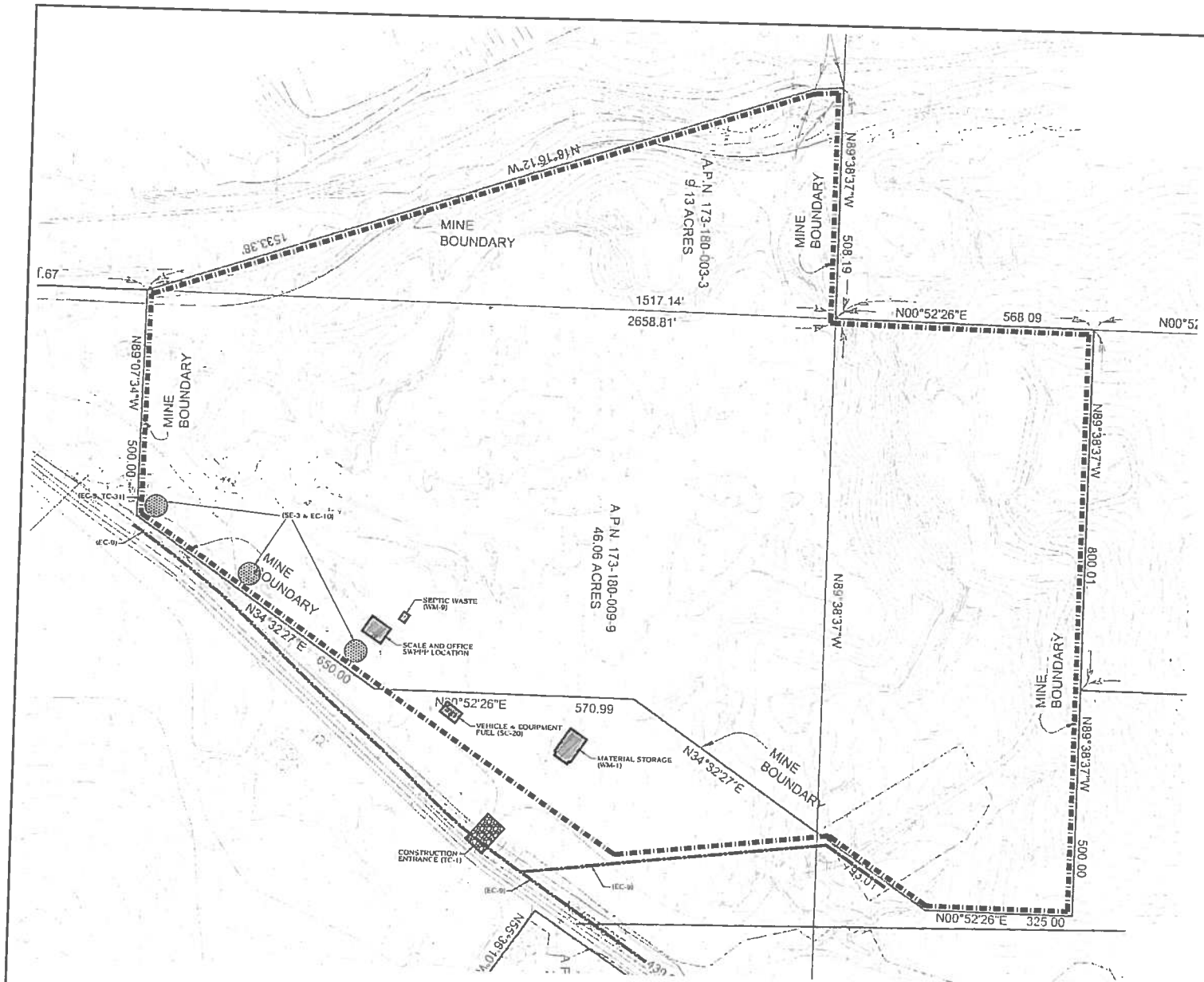
Notes FORM A
VICINITY MAP
RIVERSIDE MINING



Attachment B

Site Map

Form B. Site Maps



SWPPP LEGEND

- COMBINATION OF A VEGETATIVE BUFFER AND A DIVERSION BERM (TC-31, EC-9)
- OFF SITE DRAINAGE SWALE (EC-9)
- SEDIMENT TRAP / STORAGE BASINS (SE-3) AND VELOCITY DISSIPATION DEVICES (EC-10)
- STAGING AREAS (SC-20, WM-8, WM-1)
- CONSTRUCTION ENTRANCE (TC-1)

SWPPP NOTES

- BEST MANAGEMENT PRACTICES WILL BE USED IN CONJUNCTION WITH MINING ACTIVITIES. PLEASE REFERENCE ATTACHMENT K OF THE ON SITE SWPPP BOOK FOR ADDITIONAL BMP'S THAT CAN BE UTILIZED.
- PLEASE REFERENCE THE UPDATED ON SITE SWPPP MAP LOCATED IN THE CONSTRUCTION TRAILER FOR ANY AMENDMENT OR UPDATES.
- DUST CONTROL WILL BE IMPLEMENTED YEAR ROUND PER (WE-1) SPECIFICATIONS.
- SAMPLES OF DISCHARGED WATER WILL BE TAKEN WITHIN THE FIRST HOUR OF A RAIN EVENT. AT EACH DISCHARGE LOCATION, IF POSSIBLE.
- MONITORING OF POTENTIAL DISCHARGE LOCATIONS WILL TAKE PLACE MONTHLY BETWEEN JUNE AND SEPTEMBER. ADDITIONAL MONITORING WILL BE REQUIRED DURING THE RAINY SEASON (OCTOBER TO MAY).
- TWO SAMPLES ARE REQUIRED DURING THE RAINY SEASON.
- WIND EROSION CONTROL (WE-1) WILL BE ONGOING DURING MINING ACTIVITIES.
- STREET SWEEPING SE-7 WILL BE DONE AT THE END OF EACH BUSINESS DAY IF TRACK OUT EXISTS.

ALL ANNUAL REPORT WILL BE SUBMITTED TO THE STATE BEFORE JULY 1ST OF EACH YEAR.

SITE DESCRIPTION

THE SITE IS LOCATED JUST NORTH OF THE 60 FREEWAY AT 3500 PYRITE ST. IN RIVERSIDE CALIFORNIA. TOTAL SIZE OF THE SITE IN 46 ACRE WITH A TOTAL DISTURBED AREA CHANGING DEPENDING ON MINING ACTIVITIES.

0 100 200 300
SCALE: 1" = 100'

WDID #8 33I022115

EROSION CONTROL PLAN

DATE: JULY 2010
SCALE: 1" = 100'

RIVERSIDE MINING LIMITED
3500 B PYRITE ST.
RIVERSIDE, CA 92509

1 of 1

Attachment C
Sampling and Analysis results

Contact Information for Sampling Labratories

Industrial labratories recognized by the State of California

Industrial	NESTLE WATERS QUALITY ASSURANCE LABORATORY	1544 EAST WASHINGTON BOULEVARD	LOS ANGELES	CA	90021	LOS ANGELES	(213) 763-1350	ELAP
Industrial	SEARLES VALLEY MINERALS REGULATORY COMPLIANCE LABORATORY	13200 MAIN STREET	TRONA	CA	93562	SAN BERNARDINO	(760) 372-2233	ELAP
Industrial	SIEMENS WATER TECHNOLOGIES CORP.	5375 SOUTH BOYLE AVENUE	VERNON	CA	90058	LOS ANGELES	(323) 277-1500	ELAP
Industrial	BP OPERATION LABORATORY	1801 E SEPULVEDA BLVD	CARSON	CA	90745	LOS ANGELES	(310) 816-8719	ELAP
Industrial	CCDA WATERS, LLC	2121 EAST WINSTON ROAD	ANAHEIM	CA	92806	ORANGE	(714) 780-5365	ELAP
Industrial	CLEAN HARBORS	5756 ALBA	LOS	CA	90058	LOS ANGELES	(323) 277-2501	ELAP

Local Commerical Labs recognized by the State of California

Commercial	EDWARD S. BABCOCK & SONS, INC.	6100 & 6110 QUAIL VALLEY COURT	RIVERSIDE	CA	92507	RIVERSIDE	(951) 653-3351	NELAP
Commercial	MICROBAC LABORATORIES, INC	1401 RESEARCH PARK DRIVE, SUITE 100	RIVERSIDE	CA	92507	RIVERSIDE	(951) 779-0310	ELAP

ANNUAL REPORT

SIDE A

FORM 1-SAMPLING & ANALYSIS RESULTS

FIRST STORM EVENT

- If analytical results are less than the detection limit (or non detectable), show the value as less than the numerical value of the detection limit (example: <.05)
- If you did not analyze for a required parameter, do not report "0". Instead, leave the appropriate box blank
- When analysis is done using portable analysis (such as portable pH meters, SC meters, etc.), indicate "PA" in the appropriate test method used box.
- Make additional copies of this form as necessary.

NAME OF PERSON COLLECTING SAMPLE(S):_____ TITLE: _____ SIGNATURE: _____

DESCRIBE DISCHARGE LOCATION Example: NW Out Fall	DATE/TIME OF SAMPLE COLLECTION	TIME DISCHARGE STARTED	ANALYTICAL RESULTS For First Storm Event									
			BASIC PARAMETERS					OTHER PARAMETERS				
			PH	TSS	SC	O&G	TOC					
	___/___/___ ___:___ ☐ AM ☐ PM	___:___ ☐ AM ☐ PM										
	___/___/___ ___:___ ☐ AM ☐ PM	___:___ ☐ AM ☐ PM										
	___/___/___ ___:___ ☐ AM ☐ PM	___:___ ☐ AM ☐ PM										
	___/___/___ ___:___ ☐ AM ☐ PM	___:___ ☐ AM ☐ PM										
TEST REPORTING UNITS:			pH Units	mg/l	umho/cm	mg/l	mg/l					
TEST METHOD DETECTION LIMIT:												
TEST METHOD USED:												
ANALYZED BY (SELF/LAB):												

TSS - Total Suspended Solids SC - Specific Conductance O&G - Oil & Grease TOC - Total Organic Carbon

ANNUAL REPORT

SIDE B

FORM 1-SAMPLING & ANALYSIS RESULTS

SECOND STORM EVENT

- If analytical results are less than the detection limit (or non detectable), show the value as less than the numerical value of the detection limit (example: <.05)
- If you did not analyze for a required parameter, do not report "0". Instead, leave the appropriate box blank
- When analysis is done using portable analysis (such as portable pH meters, SC meters, etc.), indicate "PA" in the appropriate test method used box.

NAME OF PERSON COLLECTING SAMPLE(S):_____ TITLE: _____ SIGNATURE: _____

DESCRIBE DISCHARGE LOCATION Example: NW Out Fall	DATE/TIME OF SAMPLE COLLECTION	TIME DISCHARGE STARTED	ANALYTICAL RESULTS For Second Storm Event									
			BASIC PARAMETERS					OTHER PARAMETERS				
			PH	TSS	SC	O&G	TOC					
	__/__/__ ☐AM ___:___ ☐PM	___:___ ☐AM ☐PM										
	__/__/__ ☐AM ___:___ ☐PM	___:___ ☐AM ☐PM										
	__/__/__ ☐AM ___:___ ☐PM	___:___ ☐AM ☐PM										
	__/__/__ ☐AM ___:___ ☐PM	___:___ ☐AM ☐PM										
TEST REPORTING UNITS:			pH Units	mg/l	umho/cm	mg/l	mg/l					
TEST METHOD DETECTION LIMIT:												
TEST METHOD USED:												
ANALYZED BY (SELF/LAB):												

TSS - Total Suspended Solids SC - Specific Conductance O&G - Oil & Grease TOC - Total Organic Carbon

Attachment D
Quarterly Visual Observations of Authorized NSWD's
Form 2

ANNUAL REPORT

SIDE A

FORM 2-QUARTERLY VISUAL OBSERVATIONS OF AUTHORIZED NON-STORM WATER DISCHARGES (NSWDs)

* Quarterly dry weather visual observations are required of each authorized NSWD.
- Observe each authorized NSWD source, impacted drainage area, and discharge location.
- Authorized NSWDs must meet the conditions provided in Section D (pages 5-6), of the General Permit.
- Make additional copies of this form as necessary.

QUARTER: **JULY-SEPT.** DATE: __/__/__	Observers Name: _____ Title: _____ Signature: _____	**WERE ANY AUTHORIZED NSWDs DISCHARGED DURING THIS QUARTER?** ☐ YES ☐ NO If **YES**, complete reverse side of this form.
QUARTER: **OCT.-DEC.** DATE: __/__/__	Observers Name: _____ Title: _____ Signature: _____	**WERE ANY AUTHORIZED NSWDs DISCHARGED DURING THIS QUARTER?** ☐ YES ☐ NO If **YES**, complete reverse side of this form.
QUARTER: **JAN.-MARCH** DATE: __/__/__	Observers Name: _____ Title: _____ Signature: _____	**WERE ANY AUTHORIZED NSWDs DISCHARGED DURING THIS QUARTER?** ☐ YES ☐ NO If **YES**, complete reverse side of this form.
QUARTER: **APRIL-JUNE** DATE: __/__/__	Observers Name: _____ Title: _____ Signature: _____	**WERE ANY AUTHORIZED NSWDs DISCHARGED DURING THIS QUARTER?** ☐ YES ☐ NO If **YES**, complete reverse side of this form.

ANNUAL REPORT

SIDE B

FORM 2-QUARTERLY VISUAL OBSERVATIONS OF AUTHORIZED NON-STORM WATER DISCHARGES (NSWDs)

DATE /TIME OF OBSERVATION	SOURCE AND LOCATION OF AUTHORIZED NSWD EXAMPLE: Air conditioner Units on Building C	NAME OF AUTHORIZED NSWD EXAMPLE: Air conditioner condensate	DESCRIBE AUTHORIZED NSWD CHARACTERISTICS Indicate whether authorized NSWD is clear, cloudy, or discolored, causing staining, contains floating objects or an oil sheen, has odors, etc.		DESCRIBE ANY REVISED OR NEW BMPs AND PROVIDE THEIR IMPLEMENTATION DATE
			At the NSWD Source	At the NSWD Drainage Area and Discharge Location	
__/__/__ __:__ ☐AM ☐PM					
__/__/__ __:__ ☐AM ☐PM					
__/__/__ __:__ ☐AM ☐PM					
__/__/__ __:__ ☐AM ☐PM					
__/__/__ __:__ ☐AM ☐PM					

Attachment E

Quarterly Visual Observations of Unauthorized NSWD's

Form 3

ANNUAL REPORT
FORM 3-QUARTERLY VISUAL OBSERVATIONS OF UNAUTHORIZED NON-STORM WATER DISCHARGES (NSWDs)

- Unauthorized NSWDs are discharges (such as wash or rinse waters) that do not meet the conditions provided in Section D (pages 5-6) of the General Permit.
- Quarterly visual observations are required to observe current and detect prior unauthorized NSWDs.
- Quarterly visual observations are required during dry weather and at all facility drainage areas.
- Each unauthorized NSWD source, impacted drainage area, and discharge location must be identified and observed.
- Unauthorized NSWDs that can not be eliminated within 90 days of observation must be reported to the Regional Board in accordance with Section A.10.e of the General Permit.
- Make additional copies of this form as necessary.

QUARTER: **JULY-SEPT.** **DATE/TIME OF OBSERVATIONS** __/__/__ __:__ ☐ AM ☐ PM	Observers Name: _____ Title: _____ Signature: _____	**WERE UNAUTHORIZED NSWDs OBSERVED?** ☐ YES ☐ NO **WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NSWDs?** ☐ YES ☐ NO	If **YES** to either question, complete reverse side.
QUARTER: **OCT.-DEC.** **DATE/TIME OF OBSERVATIONS** __/__/__ __:__ ☐ AM ☐ PM	Observers Name: _____ Title: _____ Signature: _____	**WERE UNAUTHORIZED NSWDs OBSERVED?** ☐ YES ☐ NO **WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NSWDs?** ☐ YES ☐ NO	If **YES** to either question, complete reverse side.
QUARTER: **JAN.-MARCH** **DATE/TIME OF OBSERVATIONS** __/__/__ __:__ ☐ AM ☐ PM	Observers Name: _____ Title: _____ Signature: _____	**WERE UNAUTHORIZED NSWDs OBSERVED?** ☐ YES ☐ NO **WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NSWDs?** ☐ YES ☐ NO	If **YES** to either question, complete reverse side.
QUARTER: **APRIL-JUNE** **DATE/TIME OF OBSERVATIONS** __/__/__ __:__ ☐ AM ☐ PM	Observers Name: _____ Title: _____ Signature: _____	**WERE UNAUTHORIZED NSWDs OBSERVED?** ☐ YES ☐ NO **WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NSWDs?** ☐ YES ☐ NO	If **YES** to either question, complete reverse side.

ANNUAL REPORT

SIDE B

FORM 3 QUARTERLY VISUAL OBSERVATIONS OF UNAUTHORIZED NON-STORM WATER DISCHARGES (NSWDs)

OBSERVATION DATE (FROM REVERSE SIDE)	NAME OF UNAUTHORIZED NSWD	SOURCE AND LOCATION OF UNAUTHORIZED NSWD	DESCRIBE UNAUTHORIZED NSWD CHARACTERISTICS Indicate whether unauthorized NSWD is clear, cloudy, discolored, causing stains; contains floating objects or an oil sheen, has odors, etc.		DESCRIBE CORRECTIVE ACTIONS TO ELIMINATE UNAUTHORIZED NSWD AND TO CLEAN IMPACTED DRAINAGE AREAS. PROVIDE UNAUTHORIZED NSWD ELIMINATION DATE.
	EXAMPLE: Vehicle Wash Water	EXAMPLE: NW Corner of Parking Lot	AT THE UNAUTHORIZED NSWD SOURCE	AT THE UNAUTHORIZED NSWD AREA AND DISCHARGE LOCATION	
__/__/__ __:__ ☐AM ☐PM					
__/__/__ __:__ ☐AM ☐PM					
__/__/__ __:__ ☐AM ☐PM					
__/__/__ __:__ ☐AM ☐PM					

Attachment F
Monthly Visual Observation of Storm Water Discharges
Form 4

ANNUAL REPORT

FORM 4-MONTHLY VISUAL OBSERVATIONS OF STORM WATER DISCHARGES

SIDE A

- Storm water discharge visual observations are required for at least one storm event per month between October 1 and May 31.
- Visual observations must be conducted during the first hour of discharge at all discharge locations.
- Discharges of temporarily stored or contained storm water must be observed at the time of discharge.
- Indicate "None" in the first column of this form if you did not conduct a monthly visual observation.
- Make additional copies of this form as necessary.
- Until a monthly visual observation is made, record any eligible storm events that do not result in a storm water discharge and note the date, time, name, and title of who observed there was no storm water discharge.

Observation Date: October _____ 2009	Drainage Location Description	#1	#2	#3	#4
Observers Name: _____	Observation Time	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
Title: _____	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
Signature: _____	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: November____ 2009	Drainage Location Description	#1	#2	#3	#4
Observers Name: _____	Observation Time	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
Title: _____	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
Signature: _____	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: December_____ 2009	Drainage Location Description	#1	#2	#3	#4
Observers Name: _____	Observation Time	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
Title: _____	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
Signature: _____	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: January_____ 2010	Drainage Location Description	#1	#2	#3	#4
Observers Name: _____	Observation Time	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
Title: _____	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
Signature: _____	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐

ANNUAL REPORT

SIDE B

FORM 4-MONTHLY VISUAL OBSERVATIONS OF STORM WATER DISCHARGES

DATE/TIME OF OBSERVATION (From Reverse Side)	DRAINAGE AREA DESCRIPTION EXAMPLE: Discharge from material storage Area #2	DESCRIBE STORM WATER DISCHARGE CHARACTERISTICS Indicate whether storm water discharge is clear, cloudy, or discolored; causing staining; containing floating objects or an oil sheen, has odors, etc.	IDENTIFY AND DESCRIBE SOURCE(S) OF POLLUTANTS EXAMPLE: Oil sheen caused by oil dripped by trucks in vehicle maintenance area.	DESCRIBE ANY REVISED OR NEW BMPs AND THEIR DATE OF IMPLEMENTATION
___/___/___ ___:___ ☐ AM ☐ PM				
___/___/___ ___:___ ☐ AM ☐ PM				
___/___/___ ___:___ ☐ AM ☐ PM				
___/___/___ ___:___ ☐ AM ☐ PM				
___/___/___ ___:___ ☐ AM ☐ PM				

ANNUAL REPORT

FORM 4 (Continued)-MONTHLY VISUAL OBSERVATIONS OF STORM WATER DISCHARGES

SIDE A

- Storm water discharge visual observations are required for at least one storm event per month between October 1 and May 31.
- Visual observations must be conducted during the first hour of discharge at all discharge locations.
- Discharges of temporarily stored or contained storm water must be observed at the time of discharge.
- Indicate "None" in the first column of this form if you did not conduct a monthly visual observation.
- Make additional copies of this form as necessary.
- Until a monthly visual observation is made, record any eligible storm events that do not result in a storm water discharge and note the date, time, name, and title of who observed there was no storm water discharge.

Observation Date: February _____ 2010 Observers Name: _____ Title: _____ Signature: _____	Drainage Location Description	#1	#2	#3	#4
	Observation Time	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: March _____ 2010 Observers Name: _____ Title: _____ Signature: _____	Drainage Location Description	#1	#2	#3	#4
	Observation Time	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: April _____ 2010 Observers Name: _____ Title: _____ Signature: _____	Drainage Location Description	#1	#2	#3	#4
	Observation Time	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: May _____ 2010 Observers Name: _____ Title: _____ Signature: _____	Drainage Location Description	#1	#2	#3	#4
	Observation Time	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐

ANNUAL REPORT

SIDE B

FORM 4 (Continued)-MONTHLY VISUAL OBSERVATIONS OF STORM WATER DISCHARGES

DATE/TIME OF OBSERVATION (From Reverse Side)	DRAINAGE AREA DESCRIPTION EXAMPLE: Discharge from material storage Area #2	DESCRIBE STORM WATER DISCHARGE CHARACTERISTICS Indicate whether storm water discharge is clear, cloudy, or discolored; causing staining; containing floating objects or an oil sheen, has odors, etc.	IDENTIFY AND DESCRIBE SOURCE(S) OF POLLUTANTS EXAMPLE: Oil sheen caused by oil dripped by trucks in vehicle maintenance area.	DESCRIBE ANY REVISED OR NEW BMPs AND THEIR DATE OF IMPLEMENTATION
___/___/___ ___:___ ☐ AM ☐ PM				
___/___/___ ___:___ ☐ AM ☐ PM				
___/___/___ ___:___ ☐ AM ☐ PM				
___/___/___ ___:___ ☐ AM ☐ PM				
___/___/___ ___:___ ☐ AM ☐ PM				

Attachment G
Comprehensive site Compliance Evaluation
Form 5

ANNUAL REPORT

SIDE A

FORM 5-ANNUAL COMPREHENSIVE SITE COMPLIANCE EVALUATION
POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY BMP STATUS

EVALUATION DATE: ___/___/___ INSPECTOR NAME: _____ TITLE: _____ SIGNATURE: _____

POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY AREA (as identified in your SWPPP)	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED? ☐ YES ☐ NO	If yes, to either question, complete the next two columns of this form	Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation
	ARE ADDITIONAL/REVISED BMPs NECESSARY? ☐ YES ☐ NO			
POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY AREA (as identified in your SWPPP)	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED? ☐ YES ☐ NO	If yes, to either question, complete the next two columns of this form	Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation
	ARE ADDITIONAL/REVISED BMPs NECESSARY? ☐ YES ☐ NO			
POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY AREA (as identified in your SWPPP)	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED? ☐ YES ☐ NO	If yes, to either question, complete the next two columns of this form	Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation
	ARE ADDITIONAL/REVISED BMPs NECESSARY? ☐ YES ☐ NO			
POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY AREA (as identified in your SWPPP)	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED? ☐ YES ☐ NO	If yes, to either question, complete the next two columns of this form	Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation
	ARE ADDITIONAL/REVISED BMPs NECESSARY? ☐ YES ☐ NO			

ANNUAL REPORT

SIDE B

FORM 5 (Continued)-ANNUAL COMPREHENSIVE SITE COMPLIANCE EVALUATION
POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY BMP STATUS

EVALUATION DATE: ___/___/___ INSPECTOR NAME: _____ TITLE: _____ SIGNATURE: _____

POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY AREA (as identified in your SWPPP)	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED? ☐YES ☐NO	If yes, to either question, complete the next two columns of this form	Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation
	ARE ADDITIONAL/REVISED BMPs NECESSARY? ☐YES ☐NO			
POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY AREA (as identified in your SWPPP)	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED? ☐YES ☐NO	If yes, to either question, complete the next two columns of this form	Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation
	ARE ADDITIONAL/REVISED BMPs NECESSARY? ☐YES ☐NO			
POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY AREA (as identified in your SWPPP)	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED? ☐YES ☐NO	If yes, to either question, complete the next two columns of this form	Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation
	ARE ADDITIONAL/REVISED BMPs NECESSARY? ☐YES ☐NO			
POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY AREA (as identified in your SWPPP)	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED? ☐YES ☐NO	If yes, to either question, complete the next two columns of this form	Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation
	ARE ADDITIONAL/REVISED BMPs NECESSARY? ☐YES ☐NO			

Attachment H
Maintenance Records

Attachment I
Employee Training Records

Form 6 SWPPP TRAINING LOG

Instructor's Name: _____

Instructor's Title: _____

Course Location: _____ Date: _____

Stormwater Training Topic:

O Erosion Control BMPs

O Sediment Control BMPs

O Non-Stormwater BMPs

O Emergency Procedures

O Good Housekeeping BMPs

Specific Training Objective: _____

_____

Attendee Roster:

No.	Name of Attendee
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Attachment J

Inspections

Form 7 CO CTIVE ACTION LOG

Riverside Mining Ltd

Inspection Date	Inspector Name	Description of BMP deficiency	Corrective Action Needed (including planned date/responsible person	Date Action Taken/ responsible person

Form 8 NPPP Amendment Log

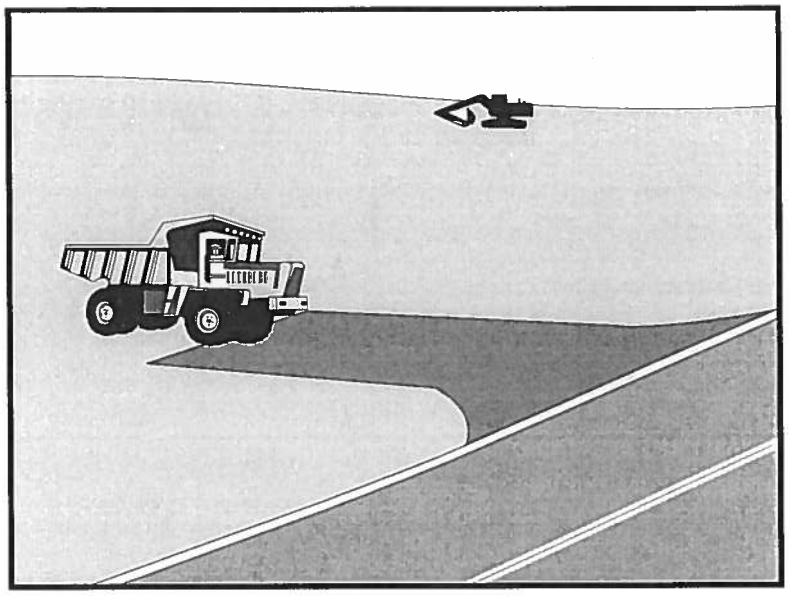
Riverside Mining Ltd

Amendment No.	Description of the Amendment	Date of Amendment	Amendment prepared by

Attachment K

Specifications and Fact sheets Of potential BMP's to be Used on site

Stabilized Construction Entrance/Exit TC-1



Categories		
EC	Erosion Control	☒
SE	Sediment Control	☒
TC	Tracking Control	☑
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

A stabilized construction access is defined by a point of entrance/exit to a construction site that is stabilized to reduce the tracking of mud and dirt onto public roads by construction vehicles.

Suitable Applications

Use at construction sites:

- Where dirt or mud can be tracked onto public roads.
- Adjacent to water bodies.
- Where poor soils are encountered.
- Where dust is a problem during dry weather conditions.

Limitations

- Entrances and exits require periodic top dressing with additional stones.
- This BMP should be used in conjunction with street sweeping on adjacent public right of way.
- Entrances and exits should be constructed on level ground only.
- Stabilized construction entrances are rather expensive to construct and when a wash rack is included, a sediment trap of some kind must also be provided to collect wash water

CASQA

Stabilized Construction Entrance/Exit TC-1

runoff.

Implementation

General

A stabilized construction entrance is a pad of aggregate underlain with filter cloth located at any point where traffic will be entering or leaving a construction site to or from a public right of way, street, alley, sidewalk, or parking area. The purpose of a stabilized construction entrance is to reduce or eliminate the tracking of sediment onto public rights of way or streets. Reducing tracking of sediments and other pollutants onto paved roads helps prevent deposition of sediments into local storm drains and production of airborne dust.

Where traffic will be entering or leaving the construction site, a stabilized construction entrance should be used. NPDES permits require that appropriate measures be implemented to prevent tracking of sediments onto paved roadways, where a significant source of sediments is derived from mud and dirt carried out from unpaved roads and construction sites.

Stabilized construction entrances are moderately effective in removing sediment from equipment leaving a construction site. The entrance should be built on level ground. Advantages of the Stabilized Construction Entrance/Exit is that it does remove some sediment from equipment and serves to channel construction traffic in and out of the site at specified locations. Efficiency is greatly increased when a washing rack is included as part of a stabilized construction entrance/exit.

Design and Layout

- Construct on level ground where possible.
- Select 3 to 6 in. diameter stones.
- Use minimum depth of stones of 12 in. or as recommended by soils engineer.
- Construct length of 50 ft minimum, and 30 ft minimum width.
- Rumble racks constructed of steel panels with ridges and installed in the stabilized entrance/exit will help remove additional sediment and to keep adjacent streets clean.
- Provide ample turning radii as part of the entrance.
- Limit the points of entrance/exit to the construction site.
- Limit speed of vehicles to control dust.
- Properly grade each construction entrance/exit to prevent runoff from leaving the construction site.
- Route runoff from stabilized entrances/exits through a sediment trapping device before discharge.
- Design stabilized entrance/exit to support heaviest vehicles and equipment that will use it.

Stabilized Construction Entrance/Exit TC-1

- Select construction access stabilization (aggregate, asphaltic concrete, concrete) based on longevity, required performance, and site conditions. Do not use asphalt concrete (AC) grindings for stabilized construction access/roadway.
- If aggregate is selected, place crushed aggregate over geotextile fabric to at least 12 in. depth, or place aggregate to a depth recommended by a geotechnical engineer. A crushed aggregate greater than 3 in. but smaller than 6 in. should be used.
- Designate combination or single purpose entrances and exits to the construction site.
- Require that all employees, subcontractors, and suppliers utilize the stabilized construction access.
- Implement SE-7, Street Sweeping and Vacuuming, as needed.
- All exit locations intended to be used for more than a two-week period should have stabilized construction entrance/exit BMPs.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMPs are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect local roads adjacent to the site daily. Sweep or vacuum to remove visible accumulated sediment.
- Remove aggregate, separate and dispose of sediment if construction entrance/exit is clogged with sediment.
- Keep all temporary roadway ditches clear.
- Check for damage and repair as needed.
- Replace gravel material when surface voids are visible.
- Remove all sediment deposited on paved roadways within 24 hours.
- Remove gravel and filter fabric at completion of construction

Costs

Average annual cost for installation and maintenance may vary from $1,200 to $4,800 each, averaging $2,400 per entrance. Costs will increase with addition of washing rack, and sediment trap. With wash rack, costs range from $1,200 - $6,000 each, averaging $3,600 per entrance.

References

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

Stabilized Construction Entrance/Exit TC-1

National Management Measures to Control Nonpoint Source Pollution from Urban Areas, USEPA Agency, 2002.

Proposed Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters, Work Group Working Paper, USEPA, April 1992.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

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Guidance Specifying Management Measures for Nonpoint Pollution in Coastal Waters, EPA 840-B-9-002, USEPA, Office of Water, Washington, DC, 1993.

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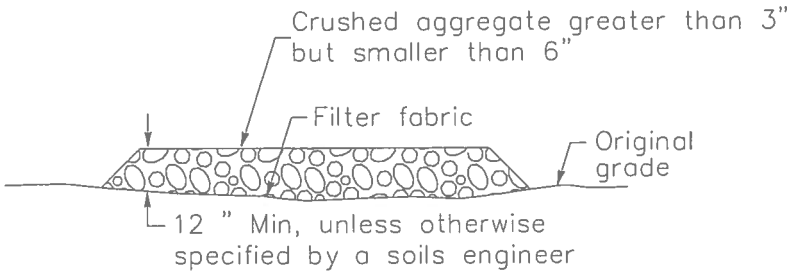
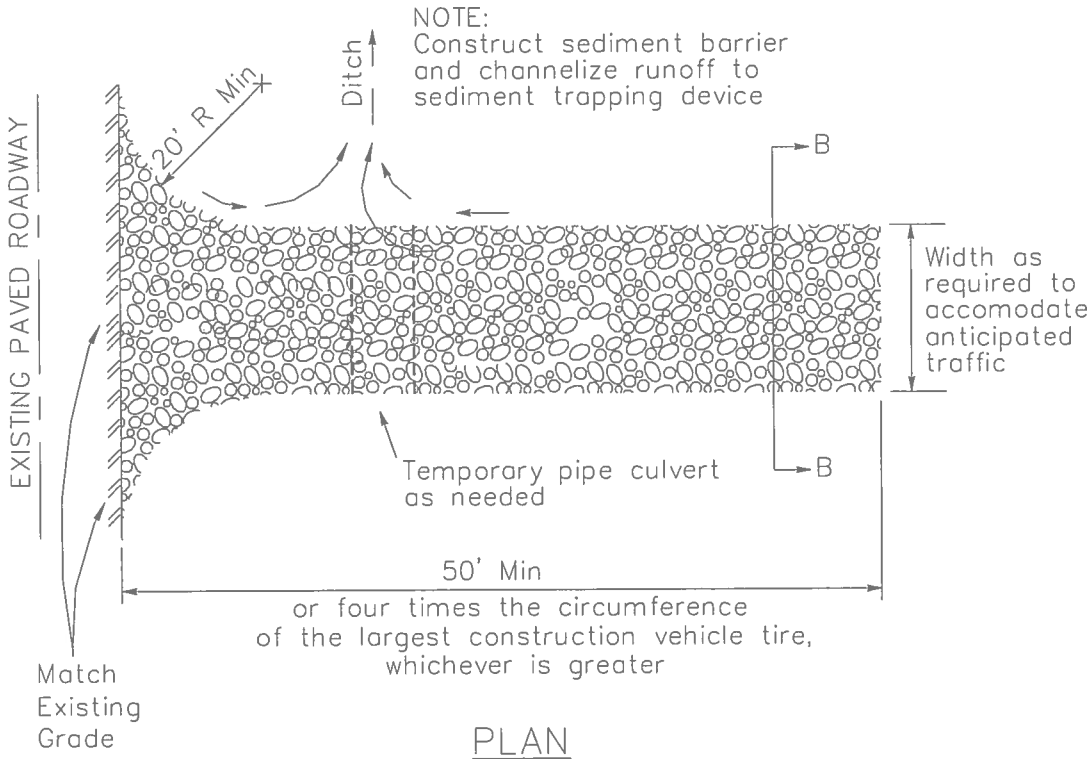
Stabilized Construction Entrance/Exit TC-1

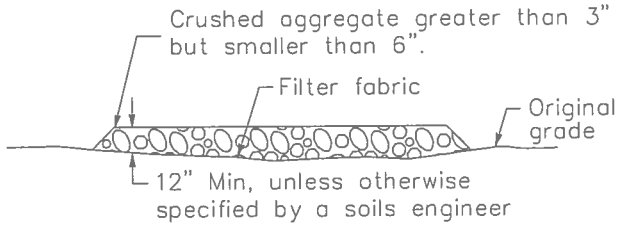


SECTION B–B
NTS



PLAN
NTS

Stabilized Construction Entrance/Exit TC-1



SECTION B–B
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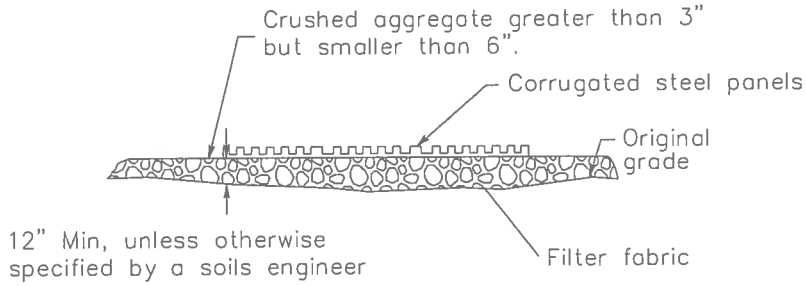
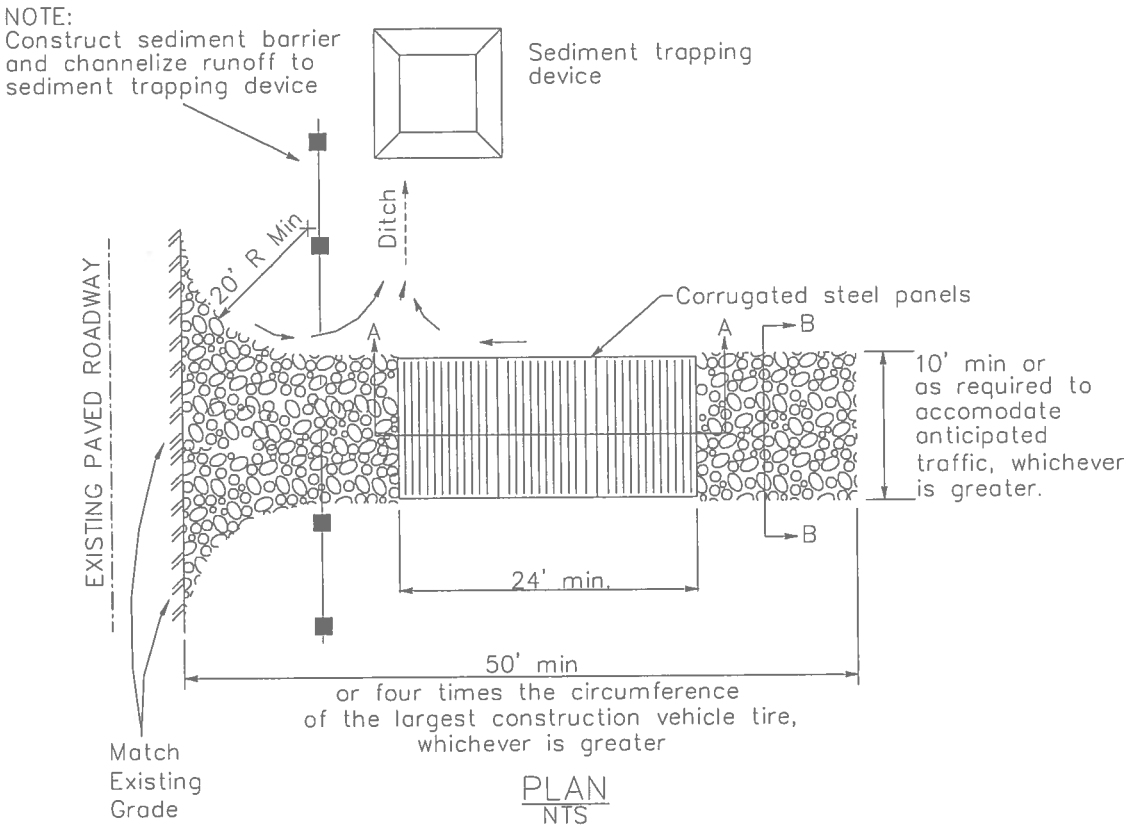


SECTION A–A
NOT TO SCALE



PLAN
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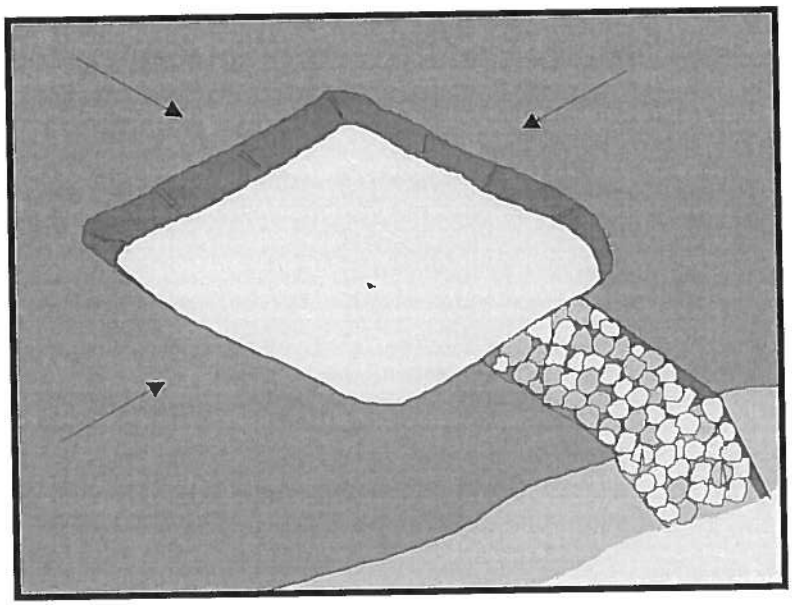
Sediment Trap

SE-3



Categories

EC	Erosion Control	
SE	Sediment Control	☑
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	☑
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-2 Sediment Basin (for larger areas)

Description and Purpose

A sediment trap is a containment area where sediment-laden runoff is temporarily detained under quiescent conditions, allowing sediment to settle out or before the runoff is discharged. Sediment traps are formed by excavating or constructing an earthen embankment across a waterway or low drainage area.

Suitable Applications

Sediment traps should be considered for use:

- At the perimeter of the site at locations where sediment-laden runoff is discharged offsite.
- At multiple locations within the project site where sediment control is needed.
- Around or upslope from storm drain inlet protection measures.
- Sediment traps may be used on construction projects where the drainage area is less than 5 acres. Traps would be placed where sediment-laden stormwater may enter a storm drain or watercourse. SE-2, Sediment Basins, must be used for drainage areas greater than 5 acres.
- As a supplemental control, sediment traps provide additional protection for a water body or for reducing sediment before it enters a drainage system.

CASQA

Sediment Trap SE-3

Limitations

- Requires large surface areas to permit infiltration and settling of sediment.
- Not appropriate for drainage areas greater than 5 acres.
- Only removes large and medium sized particles and requires upstream erosion control.
- Attractive and dangerous to children, requiring protective fencing.
- Conducive to vector production.
- Should not be located in live streams.

Implementation

Design

A sediment trap is a small temporary ponding area, usually with a gravel outlet, formed by excavation or by construction of an earthen embankment. Its purpose is to collect and store sediment from sites cleared or graded during construction. It is intended for use on small drainage areas with no unusual drainage features and projected for a quick build-out time. It should help in removing coarse sediment from runoff. The trap is a temporary measure with a design life of approximately six months to one year and is to be maintained until the site area is permanently protected against erosion by vegetation and/or structures.

Sediment traps should be used only for small drainage areas. If the contributing drainage area is greater than 5 acres, refer to SE-2, Sediment Basins, or subdivide the catchment area into smaller drainage basins.

Sediment usually must be removed from the trap after each rainfall event. The SWPPP should detail how this sediment is to be disposed of, such as in fill areas onsite, or removal to an approved offsite dump. Sediment traps used as perimeter controls should be installed before any land disturbance takes place in the drainage area.

Sediment traps are usually small enough that a failure of the structure would not result in a loss of life, damage to home or buildings, or interruption in the use of public roads or utilities. However, sediment traps are attractive to children and can be dangerous. The following recommendations should be implemented to reduce risks:

- Install continuous fencing around the sediment trap or pond. Consult local ordinances regarding requirements for maintaining health and safety.
- Restrict basin side slopes to 3:1 or flatter.

Sediment trap size depends on the type of soil, size of the drainage area, and desired sediment removal efficiency (see SE-2, Sediment Basin). As a rule of thumb, the larger the basin volume the greater the sediment removal efficiency. Sizing criteria are typically established under the local grading ordinance or equivalent. The runoff volume from a 2-year storm is a common design criteria for a sediment trap. The sizing criteria below assume that this runoff volume is 0.042 acre-ft/acre (0.5 in. of runoff). While the climatic, topographic, and soil type extremes make it difficult to establish a statewide standard, the following criteria should trap moderate to

Sediment Trap SE-3

- Locate sediment traps as near as practical to areas producing the sediment.
- Trap should be situated according to the following criteria: (1) by excavating a suitable area or where a low embankment can be constructed across a swale, (2) where failure would not cause loss of life or property damage, and (3) to provide access for maintenance, including sediment removal and sediment stockpiling in a protected area.
- Trap should be sized to accommodate a settling zone and sediment storage zone with recommended minimum volumes of 67 yd^3/acre and 33 yd^3/acre of contributing drainage area, respectively, based on 0.5 in. of runoff volume over a 24-hour period. In many cases, the size of an individual trap is limited by available space. Multiple traps or additional volume may be required to accommodate specific rainfall, soil, and site conditions.
- Traps with an impounding levee greater than 4.5 ft tall, measured from the lowest point to the impounding area to the highest point of the levee, and traps capable of impounding more than 35,000 ft^3, should be designed by a Registered Civil Engineer. The design should include maintenance requirements, including sediment and vegetation removal, to ensure continuous function of the trap outlet and bypass structures.
- The outlet pipe or open spillway must be designed to convey anticipated peak flows.
- Use rock or vegetation to protect the trap outlets against erosion.
- Fencing should be provided to prevent unauthorized entry.

Installation

Sediment traps can be constructed by excavating a depression in the ground or creating an impoundment with a small embankment. Sediment traps should be installed outside the area being graded and should be built prior to the start of the grading activities or removal of vegetation. To minimize the area disturbed by them, sediment traps should be installed in natural depressions or in small swales or drainage ways. The following steps must be followed during installation:

- The area under the embankment must be cleared, grubbed, and stripped of any vegetation and root mat. The pool area should be cleared.
- The fill material for the embankment must be free of roots or other woody vegetation as well as oversized stones, rocks, organic material, or other objectionable material. The embankment may be compacted by traversing with equipment while it is being constructed.
- All cut-and-fill slopes should be 3:1 or flatter.
- When a riser is used, all pipe joints must be watertight.
- When a riser is used, at least the top two-thirds of the riser should be perforated with 0.5 in. diameter holes spaced 8 in. vertically and 10 to 12 in. horizontally. See SE-2, Sediment Basin.
- When an earth or stone outlet is used, the outlet crest elevation should be at least 1 ft below the top of the embankment.

- When crushed stone outlet is used, the crushed stone used in the outlet should meet AASHTO M43, size No. 2 or 24, or its equivalent such as MSHA No. 2. Gravel meeting the above gradation may be used if crushed stone is not available.

Costs

Average annual cost per installation and maintenance (18 month useful life) is $0.73 per ft^3 ($1,300 per drainage acre). Maintenance costs are approximately 20% of installation costs.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- Inspect outlet area for erosion and stabilize if required.
- Inspect trap banks for seepage and structural soundness, repair as needed.
- Inspect outlet structure and spillway for any damage or obstructions. Repair damage and remove obstructions as needed.
- Inspect fencing for damage and repair as needed.
- Inspect the sediment trap for area of standing water during every visit. Corrective measures should be taken if the BMP does not dewater completely in 72 hours or less to prevent vector production.
- Sediment that accumulates in the BMP must be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the trap capacity. Sediment removed during maintenance may be incorporated into earthwork on the site or disposed of at an appropriate location.
- Remove vegetation from the sediment trap when first detected to prevent pools of standing water and subsequent vector production.
- BMPs that require dewatering shall be continuously attended while dewatering takes place. Dewatering BMPs shall be implemented at all times during dewatering activities.

References

Brown, W., and T. Schueler. The Economics of Stormwater BMPs in the Mid-Atlantic Region. Prepared for Chesapeake Research Consortium, Edgewater, MD, by the Center for Watershed Protection, Ellicott City, MD, 1997.

Draft – Sedimentation and Erosion Control, an Inventory of Current Practices, USEPA, April 1990.

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Metzger, M.E., D.F. Messer, C.L. Beitia, C.M. Myers, and V.L. Kramer, The Dark Side of Stormwater Runoff Management: Disease Vectors Associated with Structural BMPs, 2002.

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Proposed Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters, Work Group-Working Paper, USEPA, April 1992.

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Stormwater Management Manual for The Puget Sound Basin, Washington State Department of Ecology, Public Review Draft, 1991.

U.S. Environmental Protection Agency (USEPA). Guidance Specifying Management Measures for Nonpoint Pollution in Coastal Waters. EPA 840-B-9-002. U.S. Environmental Protection Agency, Office of Water, Washington, DC, 1993.

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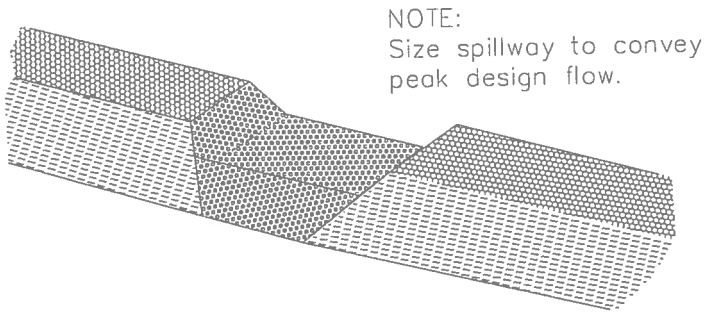
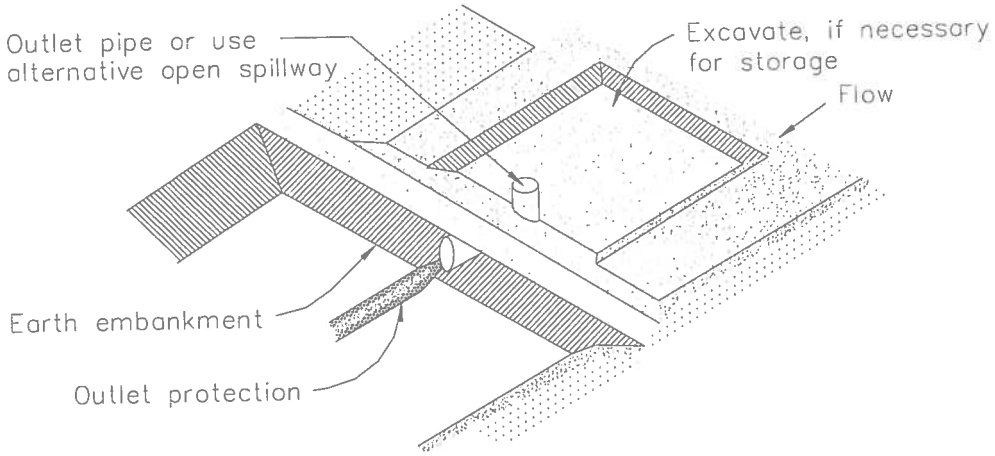
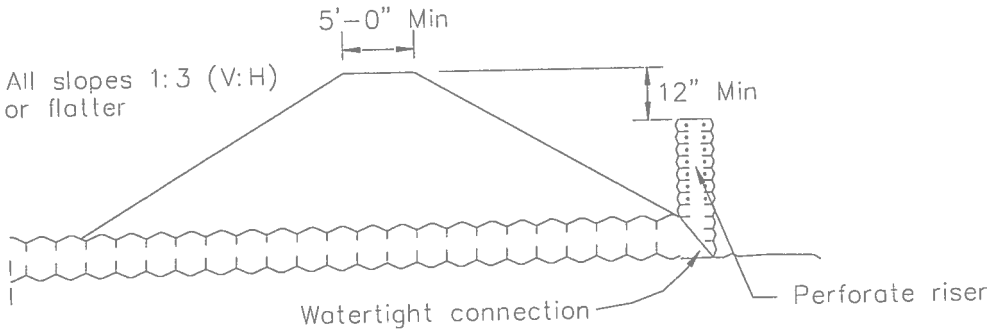
Sediment Trap

SE-3



TYPICAL OPEN SPILLWAY



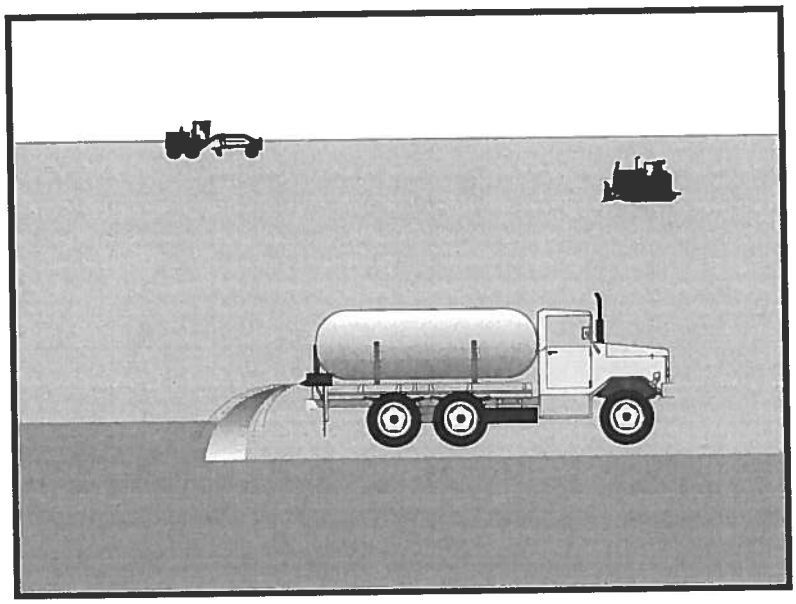


EMBANKMENT SECTION THRU RISER

TYPICAL SEDIMENT TRAP
NOT TO SCALE

Wind Erosion Control

WE-1



Categories

EC	Erosion Control	
SE	Sediment Control	☒
TC	Tracking Control	
WE	Wind Erosion Control	☑
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

EC-5 Soil Binders

Description and Purpose

Wind erosion or dust control consists of applying water or other chemical dust suppressants as necessary to prevent or alleviate dust nuisance generated by construction activities. Covering small stockpiles or areas is an alternative to applying water or other dust palliatives.

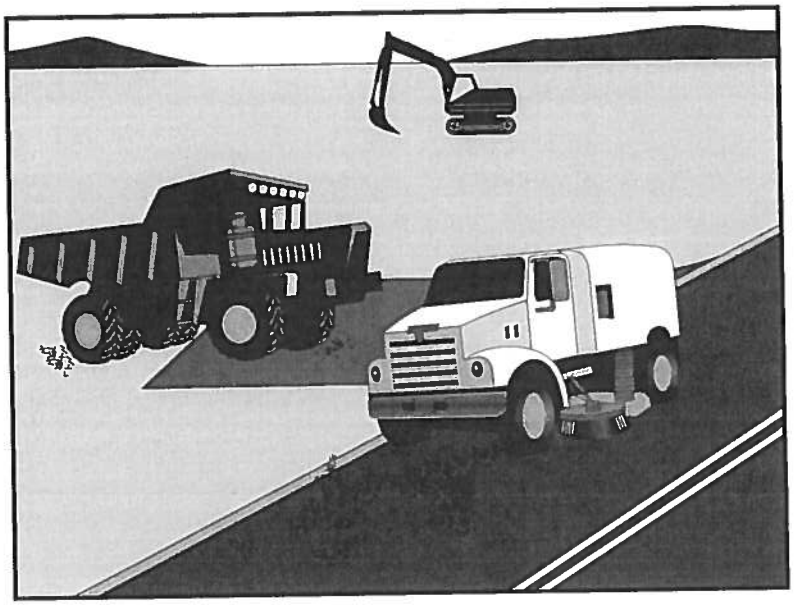
California's Mediterranean climate, with a short "wet" season and a typically long, hot "dry" season, allows the soils to thoroughly dry out. During the dry season, construction activities are at their peak, and disturbed and exposed areas are increasingly subject to wind erosion, sediment tracking and dust generated by construction equipment. Site conditions and climate can make dust control more of an erosion problem than water based erosion. Additionally, many local agencies, including Air Quality Management Districts, require dust control and/or dust control permits in order to comply with local nuisance laws, opacity laws (visibility impairment) and the requirements of the Clean Air Act. Wind erosion control is required to be implemented at all construction sites greater than 1 acre by the General Permit.

Suitable Applications

Most BMPs that provide protection against water-based erosion will also protect against wind-based erosion and dust control requirements required by other agencies will generally meet wind erosion control requirements for water quality protection. Wind erosion control BMPs are suitable during the following construction activities:

CASQA

Street Sweeping and Vacuuming SE-7



Categories

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Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	☑
Metals	
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

Description and Purpose

Street sweeping and vacuuming includes use of self-propelled and walk-behind equipment to remove sediment from streets and roadways, and to clean paved surfaces in preparation for final paving. Sweeping and vacuuming prevents sediment from the project site from entering storm drains or receiving waters.

Suitable Applications

Sweeping and vacuuming are suitable anywhere sediment is tracked from the project site onto public or private paved streets and roads, typically at points of egress. Sweeping and vacuuming are also applicable during preparation of paved surfaces for final paving.

Limitations

Sweeping and vacuuming may not be effective when sediment is wet or when tracked soil is caked (caked soil may need to be scraped loose).

Implementation

- Controlling the number of points where vehicles can leave the site will allow sweeping and vacuuming efforts to be focused, and perhaps save money.
- Inspect potential sediment tracking locations daily.
- Visible sediment tracking should be swept or vacuumed on a daily basis.
- Do not use kick brooms or sweeper attachments. These

CASQA

- If not mixed with debris or trash, consider incorporating the removed sediment back into the project

Costs

Rental rates for self-propelled sweepers vary depending on hopper size and duration of rental. Expect rental rates from $58/hour (3 yd^3 hopper) to $88/hour (9 yd^3 hopper), plus operator costs. Hourly production rates vary with the amount of area to be swept and amount of sediment. Match the hopper size to the area and expect sediment load to minimize time spent dumping.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- When actively in use, points of ingress and egress must be inspected daily.
- When tracked or spilled sediment is observed outside the construction limits, it must be removed at least daily. More frequent removal, even continuous removal, may be required in some jurisdictions.
- Be careful not to sweep up any unknown substance or any object that may be potentially hazardous.
- Adjust brooms frequently; maximize efficiency of sweeping operations.
- After sweeping is finished, properly dispose of sweeper wastes at an approved dumpsite.

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Labor Surcharge and Equipment Rental Rates, State of California Department of Transportation (Caltrans), April 1, 2002 – March 31, 2003.

Wind Erosion Control WE-1

- Construction vehicle traffic on unpaved roads
- Drilling and blasting activities
- Soils and debris storage piles
- Batch drop from front-end loaders
- Areas with unstabilized soil
- Final grading/site stabilization

Limitations

- Watering prevents dust only for a short period (generally less than a few hours) and should be applied daily (or more often) to be effective.
- Over watering may cause erosion and track-out.
- Oil or oil-treated subgrade should not be used for dust control because the oil may migrate into drainageways and/or seep into the soil.
- Chemical dust suppression agents may have potential environmental impacts. Selected chemical dust control agents should be environmentally benign.
- Effectiveness of controls depends on soil, temperature, humidity, wind velocity and traffic.
- Chemical dust suppression agents should not be used within 100 feet of wetlands or water bodies.
- Chemically treated subgrades may make the soil water repellant, interfering with long-term infiltration and the vegetation/re-vegetation of the site. Some chemical dust suppressants may be subject to freezing and may contain solvents and should be handled properly.
- In compacted areas, watering and other liquid dust control measures may wash sediment or other constituents into the drainage system.
- If the soil surface has minimal natural moisture, the affected area may need to be pre-wetted so that chemical dust control agents can uniformly penetrate the soil surface.

Implementation

Dust Control Practices

Dust control BMPs generally stabilize exposed surfaces and minimize activities that suspend or track dust particles. The following table presents dust control practices that can be applied to varying site conditions that could potentially cause dust. For heavily traveled and disturbed areas, wet suppression (watering), chemical dust suppression, gravel asphalt surfacing, temporary gravel construction entrances, equipment wash-out areas, and haul truck covers can be employed as dust control applications. Permanent or temporary vegetation and mulching can be employed for areas of occasional or no construction traffic. Preventive measures include minimizing surface areas to be disturbed, limiting onsite vehicle traffic to 15 mph or less, and controlling the number and activity of vehicles on a site at any given time.

Wind Erosion Control WE-1

Chemical dust suppressants include: mulch and fiber based dust palliatives (e.g. paper mulch with gypsum binder), salts and brines (e.g. calcium chloride, magnesium chloride), non-petroleum based organics (e.g. vegetable oil, lignosulfonate), petroleum based organics (e.g. asphalt emulsion, dust oils, petroleum resins), synthetic polymers (e.g. polyvinyl acetate, vinyls, acrylic), clay additives (e.g. bentonite, montimorillonite) and electrochemical products (e.g. enzymes, ionic products).

Site Condition	Dust Control Practices							
	Permanent Vegetation	Mulching	Wet Suppression (Watering)	Chemical Dust Suppression	Gravel or Asphalt	Temporary Gravel Construction Entrances/Equipment Wash Down	Synthetic Covers	Minimize Extent of Disturbed Area
Disturbed Areas not Subject to Traffic	x	x	x	x	x			x
Disturbed Areas Subject to Traffic			x	x	x	x		x
Material Stockpiles		x	x	x			x	x
Demolition			x			x	x	
Clearing/ Excavation			x	x				x
Truck Traffic on Unpaved Roads			x	x	x	x	x	
Tracking					x	x		

Additional preventive measures include:

- Schedule construction activities to minimize exposed area (see EC-1, Scheduling).
- Quickly treat exposed soils using water, mulching, chemical dust suppressants, or stone/gravel layering.
- Identify and stabilize key access points prior to commencement of construction.
- Minimize the impact of dust by anticipating the direction of prevailing winds.
- Restrict construction traffic to stabilized roadways within the project site, as practicable.
- Water should be applied by means of pressure-type distributors or pipelines equipped with a spray system or hoses and nozzles that will ensure even distribution.
- All distribution equipment should be equipped with a positive means of shutoff.
- Unless water is applied by means of pipelines, at least one mobile unit should be available at all times to apply water or dust palliative to the project.
- If reclaimed waste water is used, the sources and discharge must meet California Department of Health Services water reclamation criteria and the Regional Water Quality

Control Board (RWQCB) requirements. Non-potable water should not be conveyed in tanks or drain pipes that will be used to convey potable water and there should be no connection between potable and non-potable supplies. Non-potable tanks, pipes, and other conveyances should be marked, "NON-POTABLE WATER - DO NOT DRINK."

- Pave or chemically stabilize access points where unpaved traffic surfaces adjoin paved roads.
- Provide covers for haul trucks transporting materials that contribute to dust.
- Provide for rapid clean up of sediments deposited on paved roads. Furnish stabilized construction road entrances and wheel wash areas.
- Stabilize inactive areas of construction sites using temporary vegetation or chemical stabilization methods.

For chemical stabilization, there are many products available for chemically stabilizing gravel roadways and stockpiles. If chemical stabilization is used, the chemicals should not create any adverse effects on stormwater, plant life, or groundwater and should meet all applicable regulatory requirements.

Costs

Installation costs for water and chemical dust suppression vary based on the method used and the length of effectiveness. Annual costs may be high since some of these measures are effective for only a few hours to a few days.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities.
- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Check areas protected to ensure coverage.
- Most water-based dust control measures require frequent application, often daily or even multiple times per day. Obtain vendor or independent information on longevity of chemical dust suppressants.

References

Best Management Practices and Erosion Control Manual for Construction Sites, Flood Control District of Maricopa County, Arizona, September 1992.

California Air Pollution Control Laws, California Air Resources Board, updated annually.

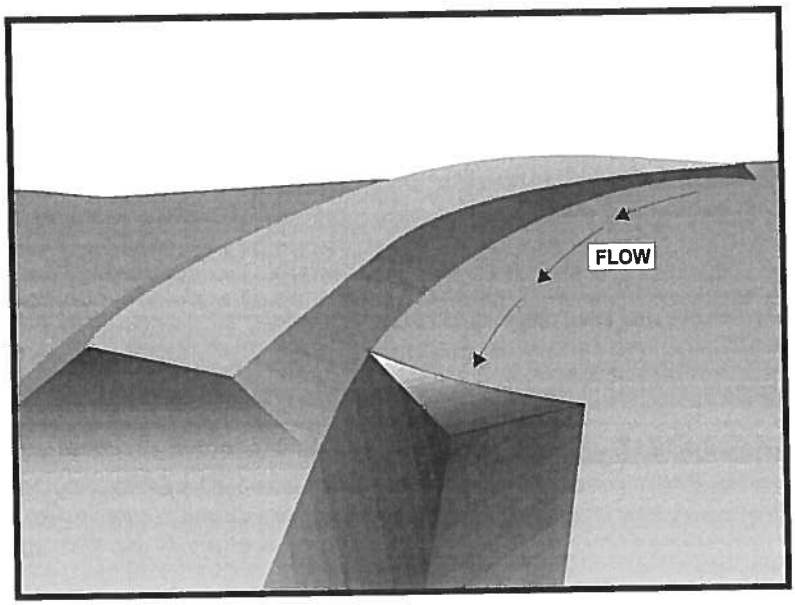
Construction Manual, Chapter 4, Section 10, "Dust Control"; Section 17, "Watering"; and Section 18, "Dust Palliative", California Department of Transportation (Caltrans), July 2001.

Wind Erosion Control WE-1

Prospects for Attaining the State Ambient Air Quality Standards for Suspended Particulate Matter (PM10), Visibility Reducing Particles, Sulfates, Lead, and Hydrogen Sulfide, California Air Resources Board, April 1991.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Earth Dikes and Drainage Swales EC-9



Categories

EC	Erosion Control	☑
SE	Sediment Control	
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Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

An earth dike is a temporary berm or ridge of compacted soil used to divert runoff or channel water to a desired location. A drainage swale is a shaped and sloped depression in the soil surface used to convey runoff to a desired location. Earth dikes and drainage swales are used to divert off site runoff around the construction site, divert runoff from stabilized areas and disturbed areas, and direct runoff into sediment basins or traps.

Suitable Applications

Earth dikes and drainage swales are suitable for use, individually or together, where runoff needs to be diverted from one area and conveyed to another.

- Earth dikes and drainage swales may be used:
  - To convey surface runoff down sloping land
  - To intercept and divert runoff to avoid sheet flow over sloped surfaces
  - To divert and direct runoff towards a stabilized watercourse, drainage pipe or channel
  - To intercept runoff from paved surfaces
  - Below steep grades where runoff begins to concentrate
  - Along roadways and facility improvements subject to flood drainage

CASQA

Earth Dikes and Drainage Swales EC-9

- At the top of slopes to divert runon from adjacent or undisturbed slopes
- At bottom and mid slope locations to intercept sheet flow and convey concentrated flows
- Divert sediment laden runoff into sediment basins or traps

Limitations

Dikes should not be used for drainage areas greater than 10 acres or along slopes greater than 10 percent. For larger areas more permanent drainage structures should be built. All drainage structures should be built in compliance with local municipal requirements.

- Earth dikes may create more disturbed area on site and become barriers to construction equipment.
- Earth dikes must be stabilized immediately, which adds cost and maintenance concerns.
- Diverted stormwater may cause downstream flood damage.
- Dikes should not be constructed of soils that may be easily eroded.
- Regrading the site to remove the dike may add additional cost.
- Temporary drains and swales or any other diversion of runoff should not adversely impact upstream or downstream properties.
- Temporary drains and swales must conform to local floodplain management requirements.
- Earth dikes/drainage swales are not suitable as sediment trapping devices.
- It may be necessary to use other soil stabilization and sediment controls such as check dams, plastics, and blankets, to prevent scour and erosion in newly graded dikes, swales, and ditches.
- Sediment accumulation, scour depressions, and/or persistent non-stormwater discharges can result in areas of standing water suitable for mosquito production in drainage swales.

Implementation

The temporary earth dike is a berm or ridge of compacted soil, located in such a manner as to divert stormwater to a sediment trapping device or a stabilized outlet, thereby reducing the potential for erosion and offsite sedimentation. Earth dikes can also be used to divert runoff from off site and from undisturbed areas away from disturbed areas and to divert sheet flows away from unprotected slopes.

An earth dike does not itself control erosion or remove sediment from runoff. A dike prevents erosion by directing runoff to an erosion control device such as a sediment trap or directing runoff away from an erodible area. Temporary diversion dikes should not adversely impact adjacent properties and must conform to local floodplain management regulations, and should not be used in areas with slopes steeper than 10%.

Slopes that are formed during cut and fill operations should be protected from erosion by runoff.

runoff to a location where it can be brought to the bottom of the slope (see EC-11, Slope Drains). A combination dike and swale is easily constructed by a single pass of a bulldozer or grader and compacted by a second pass of the tracks or wheels over the ridge. Diversion structures should be installed when the site is initially graded and remain in place until post construction BMPs are installed and the slopes are stabilized.

Diversion practices concentrate surface runoff, increasing its velocity and erosive force. Thus, the flow out of the drain or swale must be directed onto a stabilized area or into a grade stabilization structure. If significant erosion will occur, a swale should be stabilized using vegetation, chemical treatment, rock rip-rap, matting, or other physical means of stabilization. Any drain or swale that conveys sediment laden runoff must be diverted into a sediment basin or trap before it is discharged from the site.

General

- Care must be applied to correctly size and locate earth dikes, drainage swales. Excessively steep, unlined dikes, and swales are subject to erosion and gully formation.
- Conveyances should be stabilized.
- Use a lined ditch for high flow velocities.
- Select flow velocity based on careful evaluation of the risks due to erosion of the measure, soil types, overtopping, flow backups, washout, and drainage flow patterns for each project site.
- Compact any fills to prevent unequal settlement.
- Do not divert runoff onto other property without securing written authorization from the property owner.
- When possible, install and utilize permanent dikes, swales, and ditches early in the construction process.
- Provide stabilized outlets.

Earth Dikes

Temporary earth dikes are a practical, inexpensive BMP used to divert stormwater runoff. Temporary diversion dikes should be installed in the following manner:

- All dikes should be compacted by earth moving equipment.
- All dikes should have positive drainage to an outlet.
- All dikes should have 2:1 or flatter side slopes, 18 in. minimum height, and a minimum top width of 24 in. Wide top widths and flat slopes are usually needed at crossings for construction traffic.
- The outlet from the earth dike must function with a minimum of erosion. Runoff should be conveyed to a sediment trapping device such as a Sediment Trap (SE-3) or Sediment Basin

(SE-2) when either the dike channel or the drainage area above the dike are not adequately stabilized.

- Temporary stabilization may be achieved using seed and mulching for slopes less than 5% and either rip-rap or sod for slopes in excess of 5%. In either case, stabilization of the earth dike should be completed immediately after construction or prior to the first rain.
- If riprap is used to stabilize the channel formed along the toe of the dike, the following typical specifications apply:

Channel Grade	Riprap Stabilization
0.5-1.0%	4 in. Rock
1.1-2.0%	6 in. Rock
2.1-4.0%	8 in. Rock
4.1-5.0%	8 in. -12 in. Riprap

- The stone riprap, recycled concrete, etc. used for stabilization should be pressed into the soil with construction equipment.
- Filter cloth may be used to cover dikes in use for long periods.
- Construction activity on the earth dike should be kept to a minimum.

Drainage Swales

Drainage swales are only effective if they are properly installed. Swales are more effective than dikes because they tend to be more stable. The combination of a swale with a dike on the downhill side is the most cost effective diversion.

Standard engineering design criteria for small open channel and closed conveyance systems should be used (see the local drainage design manual). Unless local drainage design criteria state otherwise, drainage swales should be designed as follows:

- No more than 5 acres may drain to a temporary drainage swale.
- Place drainage swales above or below, not on, a cut or fill slope.
- Swale bottom width should be at least 2 ft
- Depth of the swale should be at least 18 in.
- Side slopes should be 2:1 or flatter.
- Drainage or swales should be laid at a grade of at least 1 percent, but not more than 15 percent.
- The swale must not be overtopped by the peak discharge from a 10-year storm, irrespective of the design criteria stated above.

- Remove all trees, stumps, obstructions, and other objectionable material from the swale when it is built.
- Compact any fill material along the path of the swale.
- Stabilize all swales immediately. Seed and mulch swales at a slope of less than 5 percent, and use rip-rap or sod for swales with a slope between 5 and 15 percent. For temporary swales, geotextiles and mats (EC-7) may provide immediate stabilization.
- Irrigation may be required to establish sufficient vegetation to prevent erosion.
- Do not operate construction vehicles across a swale unless a stabilized crossing is provided.
- Permanent drainage facilities must be designed by a professional engineer (see the local drainage design criteria for proper design).
- At a minimum, the drainage swale should conform to predevelopment drainage patterns and capacities.
- Construct the drainage swale with a positive grade to a stabilized outlet.
- Provide erosion protection or energy dissipation measures if the flow out of the drainage swale can reach an erosive velocity.

Costs

- Cost ranges from $15 to $55 per ft for both earthwork and stabilization and depends on availability of material, site location, and access.
- Small dikes: $2.50 - $6.50/linear ft; Large dikes: $2.50/yd^3.
- The cost of a drainage swale increases with drainage area and slope. Typical swales for controlling internal erosion are inexpensive, as they are quickly formed during routine earthwork.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges occur.
- Inspect ditches and berms for washouts. Replace lost riprap, damaged linings or soil stabilizers as needed.
- Inspect channel linings, embankments, and beds of ditches and berms for erosion and accumulation of debris and sediment. Remove debris and sediment and repair linings and embankments as needed.
- Temporary conveyances should be completely removed as soon as the surrounding drainage area has been stabilized or at the completion of construction

References

Erosion and Sediment Control Handbook, S.J. Goldman, K. Jackson, T.A. Bursetynsky, P.E., McGraw Hill Book Company, 1986.

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

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National Management Measures to Control Nonpoint Source Pollution from Urban Areas, United States Environmental Protection Agency, 2002.

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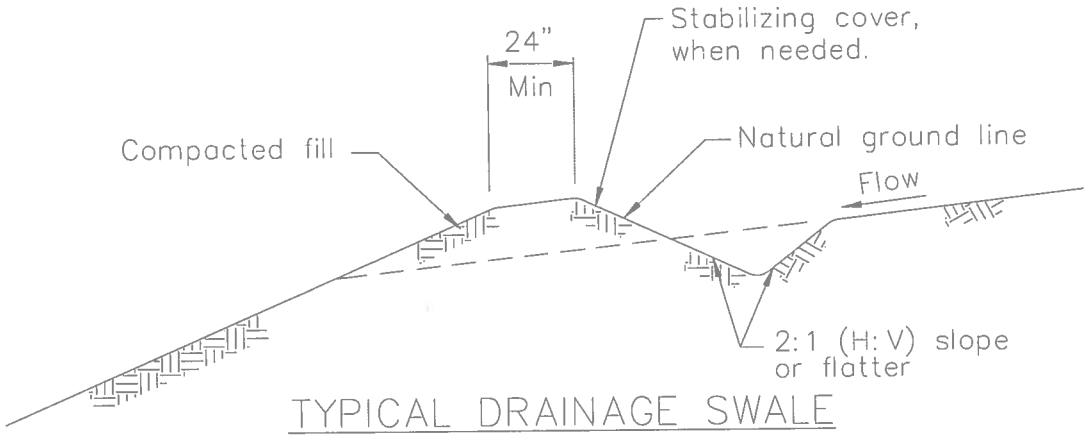
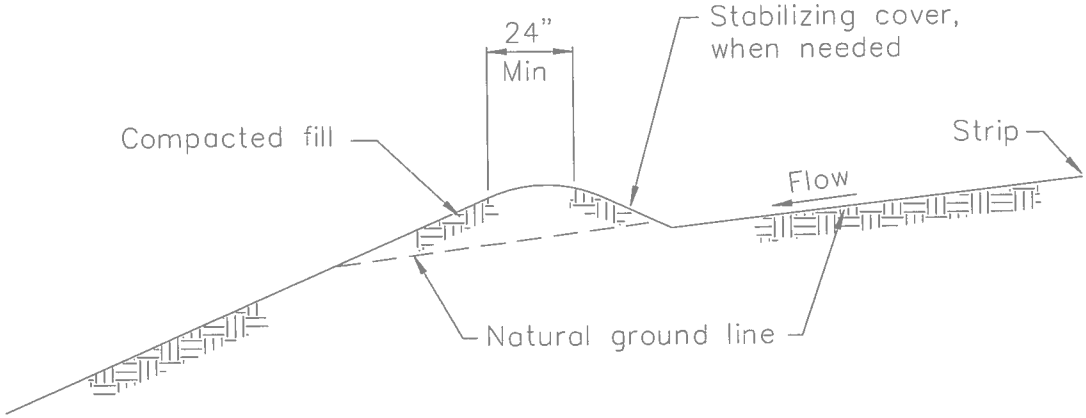
Earth Dikes and Drainage Swales EC-9



TYPICAL DRAINAGE SWALE
NOT TO SCALE

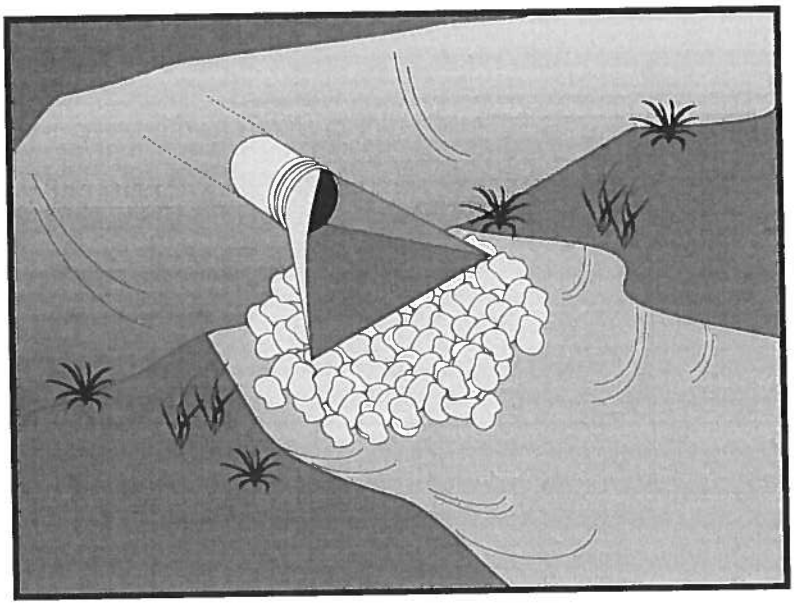
NOTES:

1. Stabilize inlet, outlets and slopes.
2. Properly compact the subgrade.



TYPICAL EARTH DIKE
NOT TO SCALE

Velocity Dissipation Devices EC-10



Categories

EC	Erosion Control	☑
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Outlet protection is a physical device composed of rock, grouted riprap, or concrete rubble, which is placed at the outlet of a pipe or channel to prevent scour of the soil caused by concentrated, high velocity flows.

Suitable Applications

Whenever discharge velocities and energies at the outlets of culverts, conduits, or channels are sufficient to erode the next downstream reach. This includes temporary diversion structures to divert runon during construction.

- These devices may be used at the following locations:
  - Outlets of pipes, drains, culverts, slope drains, diversion ditches, swales, conduits, or channels.
  - Outlets located at the bottom of mild to steep slopes.
  - Discharge outlets that carry continuous flows of water.
  - Outlets subject to short, intense flows of water, such as flash floods.
  - Points where lined conveyances discharge to unlined conveyances

Limitations

- Large storms or high flows can wash away the rock outlet protection and leave the area susceptible to erosion.

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- Sediment captured by the rock outlet protection may be difficult to remove without removing the rock.
- Outlet protection may negatively impact the channel habitat.
- Grouted riprap may break up in areas of freeze and thaw.
- If there is not adequate drainage, and water builds up behind grouted riprap, it may cause the grouted riprap to break up due to the resulting hydrostatic pressure.
- Sediment accumulation, scour depressions, and/or persistent non-stormwater discharges can result in areas of standing water suitable for mosquito production in velocity dissipation devices.

Implementation

General

Outlet protection is needed where discharge velocities and energies at the outlets of culverts, conduits or channels are sufficient to erode the immediate downstream reach. This practice protects the outlet from developing small eroded pools (plange pools), and protects against gully erosion resulting from scouring at a culvert mouth.

Design and Layout

As with most channel design projects, depth of flow, roughness, gradient, side slopes, discharge rate, and velocity should be considered in the outlet design. Compliance to local and state regulations should also be considered while working in environmentally sensitive streambeds. General recommendations for rock size and length of outlet protection mat are shown in the rock outlet protection figure in this BMP and should be considered minimums. The apron length and rock size gradation are determined using a combination of the discharge pipe diameter and estimate discharge rate: Select the longest apron length and largest rock size suggested by the pipe size and discharge rate. Where flows are conveyed in open channels such as ditches and swales, use the estimated discharge rate for selecting the apron length and rock size. Flows should be same as the culvert or channel design flow but never the less than the peak 5 year flow for temporary structures planned for one rainy season, or the 10 year peak flow for temporary structures planned for two or three rainy seasons.

- There are many types of energy dissipaters, with rock being the one that is represented in the attached figure.
- Best results are obtained when sound, durable, and angular rock is used.
- Install riprap, grouted riprap, or concrete apron at selected outlet. Riprap aprons are best suited for temporary use during construction. Grouted or wired tied rock riprap can minimize maintenance requirements.
- Rock outlet protection is usually less expensive and easier to install than concrete aprons or energy dissipaters. It also serves to trap sediment and reduce flow velocities.
- Carefully place riprap to avoid damaging the filter fabric.

- Stone 4 in. to 6 in. may be carefully dumped onto filter fabric from a height not to exceed 12 in.
- Stone 8 in. to 12 in. must be hand placed onto filter fabric, or the filter fabric may be covered with 4 in. of gravel and the 8 in. to 12 in. rock may be dumped from a height not to exceed 16 in.
- Stone greater than 12 in. shall only be dumped onto filter fabric protected with a layer of gravel with a thickness equal to one half the D_{50} rock size, and the dump height limited to twice the depth of the gravel protection layer thickness.

- For proper operation of apron: Align apron with receiving stream and keep straight throughout its length. If a curve is needed to fit site conditions, place it in upper section of apron.
- Outlets on slopes steeper than 10 percent should have additional protection.

Costs

Costs are low if material is readily available. If material is imported, costs will be higher. Average installed cost is $150 per device.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- Inspect BMPs subjected to non-stormwater discharges daily while non-stormwater discharges occur. Minimize areas of standing water by removing sediment blockages and filling scour depressions.
- Inspect apron for displacement of the riprap and damage to the underlying fabric. Repair fabric and replace riprap that has washed away. If riprap continues to wash away, consider using larger material.
- Inspect for scour beneath the riprap and around the outlet. Repair damage to slopes or underlying filter fabric immediately.
- Temporary devices should be completely removed as soon as the surrounding drainage area has been stabilized or at the completion of construction.

References

County of Sacramento Improvement Standards, Sacramento County, May 1989.

Erosion and Sediment Control Handbook, S.J. Goldman, K. Jackson, T.A. Bursztynsky, P.E., McGraw Hill Book Company, 1986.

Handbook of Steel Drainage & Highway Construction, American Iron and Steel Institute, 1983.

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

Metzger, M.E. 2004. Managing mosquitoes in stormwater treatment devices. University of California Division of Agriculture and Natural Resources, Publication 8125. On-line: http://anrcatalog.ucdavis.edu/pdf/8125.pdf

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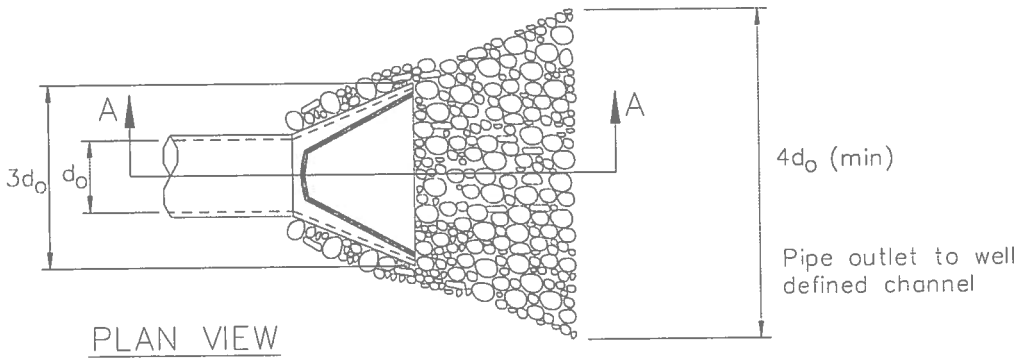
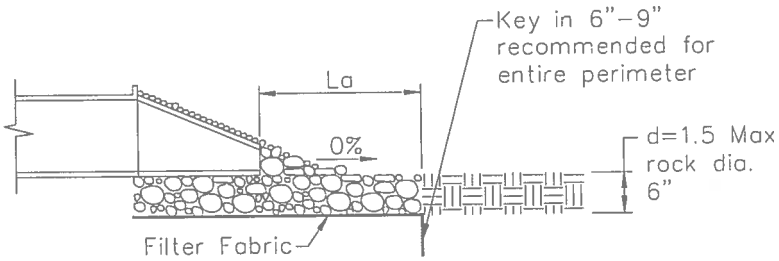
Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.

Velocity Dissipation Devices EC-10



PLAN VIEW

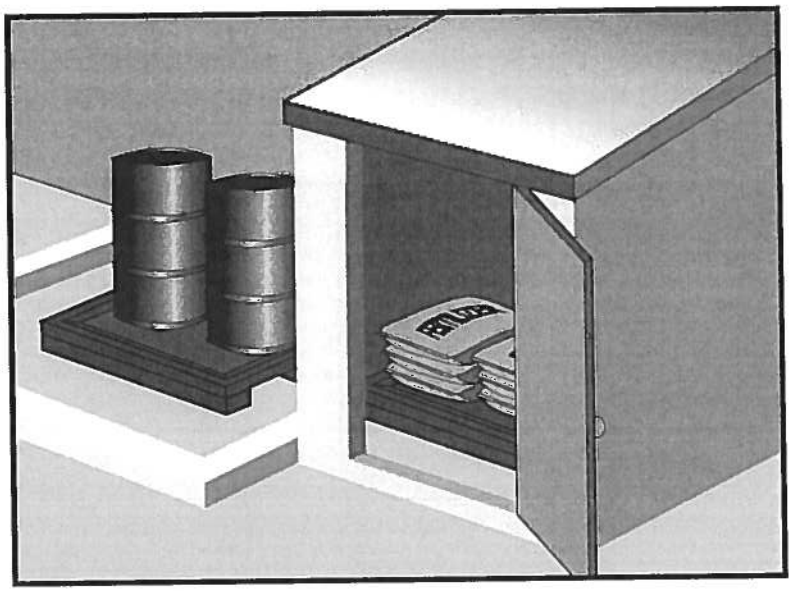


SECTION A–A

Pipe Diameter inches	Discharge ft^3/s	Apron Length, La ft	Rip Rap D_{50} Diameter Min inches
12	5	10	4
	10	13	6
18	10	10	6
	20	16	8
	30	23	12
	40	26	16
24	30	16	8
	40	26	8
	50	26	12
	60	30	16

For larger or higher flows consult a Registered Civil Engineer
Source: USDA - SCS

Material Delivery and Storage WM-1



Categories		
EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents	
Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Prevent, reduce, or eliminate the discharge of pollutants from material delivery and storage to the stormwater system or watercourses by minimizing the storage of hazardous materials onsite, storing materials in watertight containers and/or a completely enclosed designated area, installing secondary containment, conducting regular inspections, and training employees and subcontractors.

This best management practice covers only material delivery and storage. For other information on materials, see WM-2, Material Use, or WM-4, Spill Prevention and Control. For information on wastes, see the waste management BMPs in this section.

Suitable Applications

These procedures are suitable for use at all construction sites with delivery and storage of the following materials:

- Soil stabilizers and binders
- Pesticides and herbicides
- Fertilizers
- Detergents
- Plaster
- Petroleum products such as fuel, oil, and grease

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Material Delivery and Storage WM-1

- Asphalt and concrete components
- Hazardous chemicals such as acids, lime, glues, adhesives, paints, solvents, and curing compounds
- Concrete compounds
- Other materials that may be detrimental if released to the environment

Limitations

- Space limitation may preclude indoor storage.
- Storage sheds often must meet building and fire code requirements.

Implementation

The following steps should be taken to minimize risk:

- Chemicals must be stored in water tight containers with appropriate secondary containment or in a storage shed.
- When a material storage area is located on bare soil, the area should be lined and bermed.
- Use containment pallets or other practical and available solutions, such as storing materials within newly constructed buildings or garages, to meet material storage requirements.
- Stack erodible landscape material on pallets and cover when not in use.
- Contain all fertilizers and other landscape materials when not in use.
- Temporary storage areas should be located away from vehicular traffic.
- Material Safety Data Sheets (MSDS) should be available on-site for all materials stored that have the potential to effect water quality.
- Construction site areas should be designated for material delivery and storage.
- Material delivery and storage areas should be located away from waterways, if possible.
    - Avoid transport near drainage paths or waterways.
    - Surround with earth berms or other appropriate containment BMP. See EC-9, Earth Dikes and Drainage Swales.
    - Place in an area that will be paved.
- Storage of reactive, ignitable, or flammable liquids must comply with the fire codes of your area. Contact the local Fire Marshal to review site materials, quantities, and proposed storage area to determine specific requirements. See the Flammable and Combustible Liquid Code, NFPA30.
- An up to date inventory of materials delivered and stored onsite should be kept.

Material Delivery and Storage WM-1

- Hazardous materials storage onsite should be minimized.
- Hazardous materials should be handled as infrequently as possible.
- Keep ample spill cleanup supplies appropriate for the materials being stored. Ensure that cleanup supplies are in a conspicuous, labeled area.
- Employees and subcontractors should be trained on the proper material delivery and storage practices.
- Employees trained in emergency spill cleanup procedures must be present when dangerous materials or liquid chemicals are unloaded.
- If significant residual materials remain on the ground after construction is complete, properly remove and dispose of materials and any contaminated soil. See WM-7, Contaminated Soil Management. If the area is to be paved, pave as soon as materials are removed to stabilize the soil.

Material Storage Areas and Practices

- Liquids, petroleum products, and substances listed in 40 CFR Parts 110, 117, or 302 should be stored in approved containers and drums and should not be overfilled. Containers and drums should be placed in temporary containment facilities for storage.
- A temporary containment facility should provide for a spill containment volume able to contain precipitation from a 25 year storm event, plus the greater of 10% of the aggregate volume of all containers or 100% of the capacity of the largest container within its boundary, whichever is greater.
- A temporary containment facility should be impervious to the materials stored therein for a minimum contact time of 72 hours.
- A temporary containment facility should be maintained free of accumulated rainwater and spills. In the event of spills or leaks, accumulated rainwater and spills should be collected and placed into drums. These liquids should be handled as a hazardous waste unless testing determines them to be non-hazardous. All collected liquids or non-hazardous liquids should be sent to an approved disposal site.
- Sufficient separation should be provided between stored containers to allow for spill cleanup and emergency response access.
- Incompatible materials, such as chlorine and ammonia, should not be stored in the same temporary containment facility.
- Materials should be covered prior to, and during rain events.
- Materials should be stored in their original containers and the original product labels should be maintained in place in a legible condition. Damaged or otherwise illegible labels should be replaced immediately.

- Bagged and boxed materials should be stored on pallets and should not be allowed to accumulate on the ground. To provide protection from wind and rain throughout the rainy season, bagged and boxed materials should be covered during non-working days and prior to and during rain events.
- Stockpiles should be protected in accordance with WM-3, Stockpile Management.
- Materials should be stored indoors within existing structures or completely enclosed storage sheds when available.
- Proper storage instructions should be posted at all times in an open and conspicuous location.
- An ample supply of appropriate spill clean up material should be kept near storage areas.
- Also see WM-6, Hazardous Waste Management, for storing of hazardous wastes.

Material Delivery Practices

- Keep an accurate, up-to-date inventory of material delivered and stored onsite.
- Arrange for employees trained in emergency spill cleanup procedures to be present when dangerous materials or liquid chemicals are unloaded.

Spill Cleanup

- Contain and clean up any spill immediately.
- Properly remove and dispose of any hazardous materials or contaminated soil if significant residual materials remain on the ground after construction is complete. See WM-7, Contaminated Soil Management.
- See WM-4, Spill Prevention and Control, for spills of chemicals and/or hazardous materials.
- If spills or leaks of materials occur that are not contained and could discharge to surface waters, non-visible sampling of site discharge may be required. Refer to the General Permit or to your project specific Construction Site Monitoring Plan to determine if and where sampling is required.

Cost

- The largest cost of implementation may be in the construction of a materials storage area that is covered and provides secondary containment.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Keep storage areas clean and well organized, including a current list of all materials onsite.
- Inspect labels on containers for legibility and accuracy.

- Repair or replace perimeter controls, containment structures, covers, and liners as needed to maintain proper function.

References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

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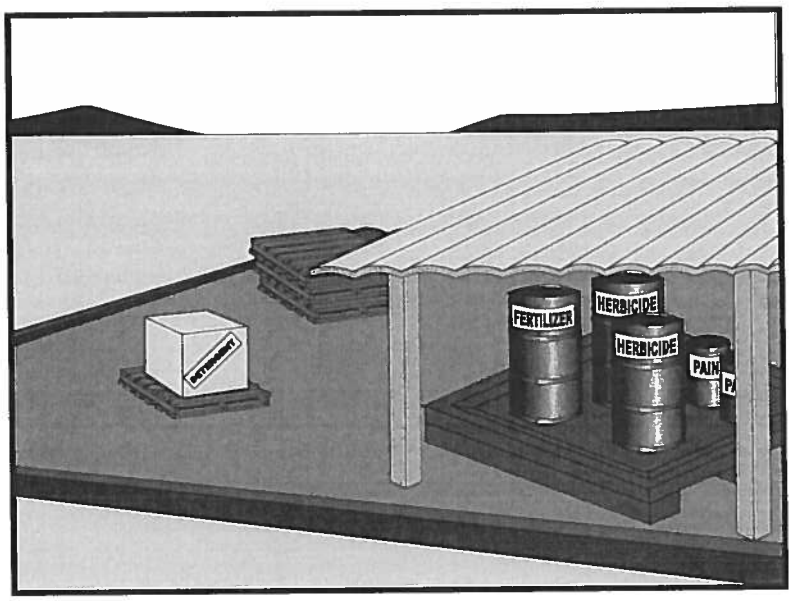
Material Use

WM-2



Categories

EC	Erosion Control	
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TC	Tracking Control	
WE	Wind Erosion Control	
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WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Prevent or reduce the discharge of pollutants to the storm drain system or watercourses from material use by using alternative products, minimizing hazardous material use onsite, and training employees and subcontractors.

Suitable Applications

This BMP is suitable for use at all construction projects. These procedures apply when the following materials are used or prepared onsite:

- Pesticides and herbicides
- Fertilizers
- Detergents
- Petroleum products such as fuel, oil, and grease
- Asphalt and other concrete components
- Other hazardous chemicals such as acids, lime, glues, adhesives, paints, solvents, and curing compounds
- Other materials that may be detrimental if released to the environment

CASQA

Material Use WM-2

Limitations

Safer alternative building and construction products may not be available or suitable in every instance.

Implementation

The following steps should be taken to minimize risk:

- Minimize use of hazardous materials onsite.
- Follow manufacturer instructions regarding uses, protective equipment, ventilation, flammability, and mixing of chemicals.
- Train personnel who use pesticides. The California Department of Pesticide Regulation and county agricultural commissioners license pesticide dealers, certify pesticide applicators, and conduct onsite inspections.
- The preferred method of termiticide application is soil injection near the existing or proposed structure foundation/slab; however, if not feasible, soil drench application of termiticides should follow EPA label guidelines and the following recommendations (most of which are applicable to most pesticide applications):
    - Do not treat soil that is water-saturated or frozen.
    - Application shall not commence within 24-hours of a predicted precipitation event with a 40% or greater probability. Weather tracking must be performed on a daily basis prior to termiticide application and during the period of termiticide application.
    - Do not allow treatment chemicals to runoff from the target area. Apply proper quantity to prevent excess runoff. Provide containment for and divert stormwater from application areas using berms or diversion ditches during application.
    - Dry season: Do not apply within 10 feet of storm drains. Do not apply within 25 feet of aquatic habitats (such as, but not limited to, lakes; reservoirs; rivers; permanent streams; marshes or ponds; estuaries; and commercial fish farm ponds).
    - Wet season: Do not apply within 50 feet of storm drains or aquatic habitats (such as, but not limited to, lakes; reservoirs; rivers; permanent streams; marshes or ponds; estuaries; and commercial fish farm ponds) unless a vegetative buffer is present (if so, refer to dry season requirements).
    - Do not make on-grade applications when sustained wind speeds are above 10 mph (at application site) at nozzle end height.
    - Cover treatment site prior to a rain event in order to prevent run-off of the pesticide into non-target areas. The treated area should be limited to a size that can be backfilled and/or covered by the end of the work shift. Backfilling or covering of the treated area shall be done by the end of the same work shift in which the application is made.
    - The applicator must either cover the soil him/herself or provide written notification of the above requirement to the contractor on site and to the person commissioning the

application (if different than the contractor). If notice is provided to the contractor or the person commissioning the application, then they are responsible under the Federal Insecticide Fungicide, and Rodenticide Act (FIFRA) to ensure that: 1) if the concrete slab cannot be poured over the treated soil within 24 hours of application, the treated soil is covered with a waterproof covering (such as polyethylene sheeting), and 2) the treated soil is covered if precipitation is predicted to occur before the concrete slab is scheduled to be poured.

- Do not over-apply fertilizers, herbicides, and pesticides. Prepare only the amount needed. Follow the recommended usage instructions. Over-application is expensive and environmentally harmful. Unless on steep slopes, till fertilizers into the soil rather than hydraulic application. Apply surface dressings in several smaller applications, as opposed to one large application, to allow time for infiltration and to avoid excess material being carried offsite by runoff. Do not apply these chemicals before predicted rainfall.
- Train employees and subcontractors in proper material use.
- Supply Material Safety Data Sheets (MSDS) for all materials.
- Dispose of latex paint and paint cans, used brushes, rags, absorbent materials, and drop cloths, when thoroughly dry and are no longer hazardous, with other construction debris.
- Do not remove the original product label; it contains important safety and disposal information. Use the entire product before disposing of the container.
- Mix paint indoors or in a containment area. Never clean paintbrushes or rinse paint containers into a street, gutter, storm drain, or watercourse. Dispose of any paint thinners, residue, and sludge(s) that cannot be recycled, as hazardous waste.
- For water-based paint, clean brushes to the extent practicable, and rinse to a drain leading to a sanitary sewer where permitted, or contain for proper disposal off site. For oil-based paints, clean brushes to the extent practicable, and filter and reuse thinners and solvents.
- Use recycled and less hazardous products when practical. Recycle residual paints, solvents, non-treated lumber, and other materials.
- Use materials only where and when needed to complete the construction activity. Use safer alternative materials as much as possible. Reduce or eliminate use of hazardous materials onsite when practical.
- Document the location, time, chemicals applied, and applicator's name and qualifications.
- Keep an ample supply of spill clean up material near use areas. Train employees in spill clean up procedures.
- Avoid exposing applied materials to rainfall and runoff unless sufficient time has been allowed for them to dry.
- Discontinue use of erodible landscape material within 2 days prior to a forecasted rain event and materials should be covered and/or bermed.

- Provide containment for material use areas such as masons' areas or paint mixing/preparation areas to prevent materials/pollutants from entering stormwater.

Costs

All of the above are low cost measures.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities.
- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Ensure employees and subcontractors throughout the job are using appropriate practices.

References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

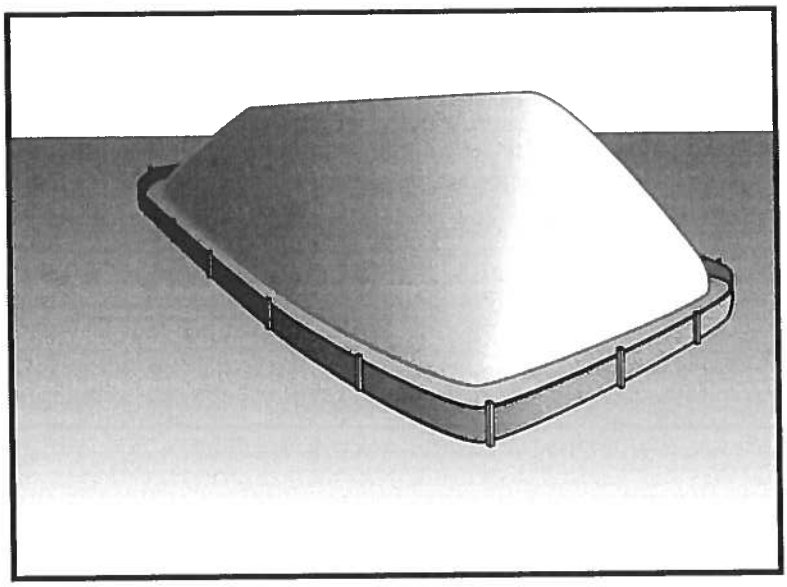
Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance, Working Group Working Paper; USEPA, April 1992.

Comments on Risk Assessments Risk Reduction Options for Cypermethrin: Docket No. OPP–2005–0293; California Stormwater Quality Association (CASQA) letter to USEPA, 2006.Environmental Hazard and General Labeling for Pyrethroid Non-Agricultural Outdoor Products, EPA-HQ-OPP-2008-0331-0021; USEPA, 2008.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Stockpile Management WM-3



Categories		
EC	Erosion Control	
SE	Sediment Control	☒
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☒
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents	
Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Stockpile management procedures and practices are designed to reduce or eliminate air and stormwater pollution from stockpiles of soil, soil amendments, sand, paving materials such as portland cement concrete (PCC) rubble, asphalt concrete (AC), asphalt concrete rubble, aggregate base, aggregate sub base or pre-mixed aggregate, asphalt minder (so called "cold mix" asphalt), and pressure treated wood.

Suitable Applications

Implement in all projects that stockpile soil and other loose materials.

Limitations

- Plastic sheeting as a stockpile protection is temporary and hard to manage in windy conditions. Where plastic is used, consider use of plastic tarps with nylon reinforcement which may be more durable than standard sheeting.
- Plastic sheeting can increase runoff volume due to lack of infiltration and potentially cause perimeter control failure.
- Plastic sheeting breaks down faster in sunlight.
- The use of Plastic materials and photodegradable plastics should be avoided.

Implementation

Protection of stockpiles is a year-round requirement. To properly manage stockpiles:

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- On larger sites, a minimum of 50 ft separation from concentrated flows of stormwater, drainage courses, and inlets is recommended.
- All stockpiles are required to be protected immediately if they are not scheduled to be used within 14 days.
- Protect all stockpiles from stormwater runon using temporary perimeter sediment barriers such as compost berms (SE-13), temporary silt dikes (SE-12), fiber rolls (SE-5), silt fences (SE-1), sandbags (SE-8), gravel bags (SE-6), or biofilter bags (SE-14). Refer to the individual fact sheet for each of these controls for installation information.
- Implement wind erosion control practices as appropriate on all stockpiled material. For specific information, see WE-1, Wind Erosion Control.
- Manage stockpiles of contaminated soil in accordance with WM-7, Contaminated Soil Management.
- Place bagged materials on pallets and under cover.
- Ensure that stockpile coverings are installed securely to protect from wind and rain.
- Some plastic covers withstand weather and sunlight better than others. Select cover materials or methods based on anticipated duration of use.

Protection of Non-Active Stockpiles

Non-active stockpiles of the identified materials should be protected further as follows:

Soil stockpiles

- Soil stockpiles should be covered or protected with soil stabilization measures and a temporary perimeter sediment barrier at all times.
- Temporary vegetation should be considered for topsoil piles that will be stockpiled for extended periods.

Stockpiles of Portland cement concrete rubble, asphalt concrete, asphalt concrete rubble, aggregate base, or aggregate sub base

- Stockpiles should be covered and protected with a temporary perimeter sediment barrier at all times.

Stockpiles of "cold mix"

- Cold mix stockpiles should be placed on and covered with plastic sheeting or comparable material at all times and surrounded by a berm.

Stockpiles of fly ash, stucco, hydrated lime

- Stockpiles of materials that may raise the pH of runoff (i.e., basic materials) should be covered with plastic and surrounded by a berm.

Stockpile Management WM-3

Stockpiles/Storage of wood (Pressure treated with chromated copper arsenate or ammoniacal copper zinc arsenate

- Treated wood should be covered with plastic sheeting or comparable material at all times and surrounded by a berm.

Protection of Active Stockpiles

Active stockpiles of the identified materials should be protected as follows:

- All stockpiles should be covered and protected with a temporary linear sediment barrier prior to the onset of precipitation.
- Stockpiles of "cold mix" and treated wood, and basic materials should be placed on and covered with plastic sheeting or comparable material and surrounded by a berm prior to the onset of precipitation.
- The downstream perimeter of an active stockpile should be protected with a linear sediment barrier or berm and runoff should be diverted around or away from the stockpile on the upstream perimeter.

Costs

For cost information associated with stockpile protection refer to the individual erosion or sediment control BMP fact sheet considered for implementation (For example, refer to SE-1 Silt Fence for installation of silt fence around the perimeter of a stockpile.)

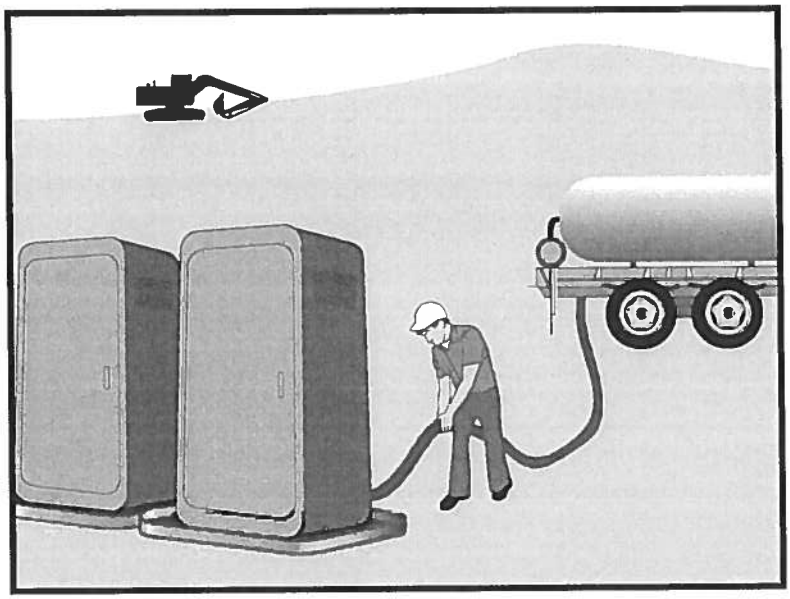
Inspection and Maintenance

- Stockpiles must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- It may be necessary to inspect stockpiles covered with plastic sheeting more frequently during certain conditions (for example, high winds or extreme heat).
- Repair and/or replace perimeter controls and covers as needed to keep them functioning properly.
- Sediment shall be removed when it reaches one-third of the barrier height.

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Sanitary/Septic Waste Management WM-9



Categories		
EC	Erosion Control	
SE	Sediment Control	
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WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Category**

☒ **Secondary Category**

Targeted Constituents	
Sediment	
Nutrients	☑
Trash	☑
Metals	
Bacteria	☑
Oil and Grease	
Organics	☑

Potential Alternatives

None

Description and Purpose

Proper sanitary and septic waste management prevent the discharge of pollutants to stormwater from sanitary and septic waste by providing convenient, well-maintained facilities, and arranging for regular service and disposal.

Suitable Applications

Sanitary septic waste management practices are suitable for use at all construction sites that use temporary or portable sanitary and septic waste systems.

Limitations

None identified.

Implementation

Sanitary or septic wastes should be treated or disposed of in accordance with state and local requirements. In many cases, one contract with a local facility supplier will be all that it takes to make sure sanitary wastes are properly disposed.

Storage and Disposal Procedures

- Temporary sanitary facilities should be located away from drainage facilities, watercourses, and from traffic circulation. If site conditions allow, place portable facilities a minimum of 50 feet from drainage conveyances and traffic areas. When subjected to high winds or risk of high winds, temporary sanitary facilities should be secured to prevent overturning.

CASQA

Sanitary/Septic Waste Management WM-9

- Temporary sanitary facilities must be equipped with containment to prevent discharge of pollutants to the stormwater drainage system of the receiving water.
- Consider safety as well as environmental implications before placing temporary sanitary facilities.
- Wastewater should not be discharged or buried within the project site.
- Sanitary and septic systems that discharge directly into sanitary sewer systems, where permissible, should comply with the local health agency, city, county, and sewer district requirements.
- Only reputable, licensed sanitary and septic waste haulers should be used.
- Sanitary facilities should be located in a convenient location.
- Temporary septic systems should treat wastes to appropriate levels before discharging.
- If using an onsite disposal system (OSDS), such as a septic system, local health agency requirements must be followed.
- Temporary sanitary facilities that discharge to the sanitary sewer system should be properly connected to avoid illicit discharges.
- Sanitary and septic facilities should be maintained in good working order by a licensed service.
- Regular waste collection by a licensed hauler should be arranged before facilities overflow.
- If a spill does occur from a temporary sanitary facility, follow federal, state and local regulations for containment and clean-up.

Education

- Educate employees, subcontractors, and suppliers on sanitary and septic waste storage and disposal procedures.
- Educate employees, subcontractors, and suppliers of potential dangers to humans and the environment from sanitary and septic wastes.
- Instruct employees, subcontractors, and suppliers in identification of sanitary and septic waste.
- Hold regular meetings to discuss and reinforce the use of sanitary facilities (incorporate into regular safety meetings).
- Establish a continuing education program to indoctrinate new employees.

Costs

All of the above are low cost measures.

Sanitary/Septic Waste Management WM-9

Inspection and Maintenance

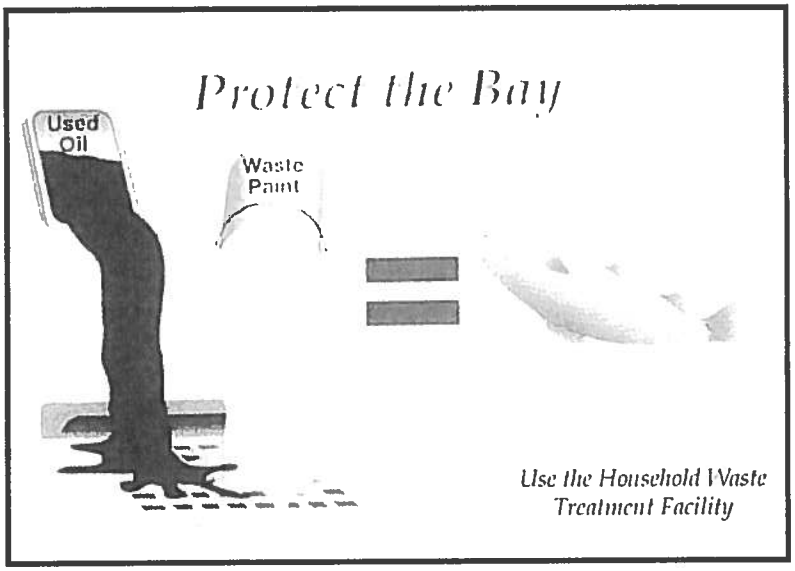
- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Arrange for regular waste collection.
- If high winds are expected, portable sanitary facilities must be secured with spikes or weighed down to prevent over turning.
- If spills or leaks from sanitary or septic facilities occur that are not contained and discharge from the site, non-visible sampling of site discharge may be required. Refer to the General Permit or to your project specific Construction Site Monitoring Plan to determine if and where sampling is required.

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Non-Stormwater Discharges SC-10



Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	
Nutrients	✓
Trash	
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓

Description

Non-stormwater discharges are those flows that do not consist entirely of stormwater. Some non-stormwater discharges do not include pollutants and may be discharged to the storm drain. These include uncontaminated groundwater and natural springs. There are also some non-stormwater discharges that typically do not contain pollutants and may be discharged to the storm drain with conditions. These include car washing, air conditioner condensate, etc. However there are certain non-stormwater discharges that pose environmental concern. These discharges may originate from illegal dumping or from internal floor drains, appliances, industrial processes, sinks, and toilets that are connected to the nearby storm drainage system. These discharges (which may include: process waste waters, cooling waters, wash waters, and sanitary wastewater) can carry substances such as paint, oil, fuel and other automotive fluids, chemicals and other pollutants into storm drains. They can generally be detected through a combination of detection and elimination. The ultimate goal is to effectively eliminate non-stormwater discharges to the stormwater drainage system through implementation of measures to detect, correct, and enforce against illicit connections and illegal discharges of pollutants on streets and into the storm drain system and creeks.

Approach

Initially the industry must make an assessment of non-stormwater discharges to determine which types must be eliminated or addressed through BMPs. The focus of the following approach is in the elimination of non-stormwater discharges.

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SC-10 Non-Stormwater Discharges

Pollution Prevention

- Ensure that used oil, used antifreeze, and hazardous chemical recycling programs are being implemented. Encourage litter control.

Suggested Protocols

Recommended Complaint Investigation Equipment

- Field Screening Analysis
  - pH paper or meter
  - Commercial stormwater pollutant screening kit that can detect for reactive phosphorus, nitrate nitrogen, ammonium nitrogen, specific conductance, and turbidity
  - Sample jars
  - Sample collection pole
  - A tool to remove access hole covers
- Laboratory Analysis
  - Sample cooler
  - Ice
  - Sample jars and labels
  - Chain of custody forms
- Documentation
  - Camera
  - Notebook
  - Pens
  - Notice of Violation forms
  - Educational materials

General

- Develop clear protocols and lines of communication for effectively prohibiting non-stormwater discharges, especially those that are not classified as hazardous. These are often not responded to as effectively as they need to be.
- Stencil or demarcate storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as "Dump No Waste Drains to Stream" stenciled or demarcated next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.

- See SC44 Stormwater Drainage System Maintenance for additional information.

Illicit Connections

- Locate discharges from the industrial storm drainage system to the municipal storm drain system through review of "as-built" piping schematics.
- Isolate problem areas and plug illicit discharge points.
- Locate and evaluate all discharges to the industrial storm drain system.

Visual Inspection and Inventory

- Inventory and inspect each discharge point during dry weather.
- Keep in mind that drainage from a storm event can continue for a day or two following the end of a storm and groundwater may infiltrate the underground stormwater collection system. Also, non-stormwater discharges are often intermittent and may require periodic inspections.

Review Infield Piping

- A review of the "as-built" piping schematic is a way to determine if there are any connections to the stormwater collection system.
- Inspect the path of floor drains in older buildings.

Smoke Testing

- Smoke testing of wastewater and stormwater collection systems is used to detect connections between the two systems.
- During dry weather the stormwater collection system is filled with smoke and then traced to sources. The appearance of smoke at the base of a toilet indicates that there may be a connection between the sanitary and the stormwater system.

Dye Testing

- A dye test can be performed by simply releasing a dye into either your sanitary or process wastewater system and examining the discharge points from the stormwater collection system for discoloration.

TV Inspection of Drainage System

- TV Cameras can be employed to visually identify illicit connections to the industrial storm drainage system.

Illegal Dumping

- Regularly inspect and clean up hot spots and other storm drainage areas where illegal dumping and disposal occurs.
- On paved surfaces, clean up spills with as little water as possible. Use a rag for small spills, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be sent to a certified laundry (rags) or disposed of as hazardous waste.

- Never hose down or bury dry material spills. Sweep up the material and dispose of properly.
- Use adsorbent materials on small spills rather than hosing down the spill. Remove the adsorbent materials promptly and dispose of properly.
- For larger spills, a private spill cleanup company or Hazmat team may be necessary.

Once a site has been cleaned:

- Post "No Dumping" signs with a phone number for reporting dumping and disposal.
- Landscaping and beautification efforts of hot spots may also discourage future dumping, as well as provide open space and increase property values.
- Lighting or barriers may also be needed to discourage future dumping.
- See fact sheet SC11 Spill Prevention, Control, and Cleanup.

Inspection

- Regularly inspect and clean up hot spots and other storm drainage areas where illegal dumping and disposal occurs.
- Conduct field investigations of the industrial storm drain system for potential sources of non-stormwater discharges.
- Pro-actively conduct investigations of high priority areas. Based on historical data, prioritize specific geographic areas and/or incident type for pro-active investigations.

Reporting

- A database is useful for defining and tracking the magnitude and location of the problem.
- Report prohibited non-stormwater discharges observed during the course of normal daily activities so they can be investigated, contained, and cleaned up or eliminated.
- Document that non-stormwater discharges have been eliminated by recording tests performed, methods used, dates of testing, and any on-site drainage points observed.
- Document and report annually the results of the program.
- Maintain documentation of illicit connection and illegal dumping incidents, including significant conditionally exempt discharges that are not properly managed.

Training

- Training of technical staff in identifying and documenting illegal dumping incidents is required.
- Consider posting the quick reference table near storm drains to reinforce training.
- Train employees to identify non-stormwater discharges and report discharges to the appropriate departments.

- Educate employees about spill prevention and cleanup.
- Well-trained employees can reduce human errors that lead to accidental releases or spills. The employee should have the tools and knowledge to immediately begin cleaning up a spill should one occur. Employees should be familiar with the Spill Prevention Control and Countermeasure Plan.
- Determine and implement appropriate outreach efforts to reduce non-permissible non-stormwater discharges.
- Conduct spill response drills annually (if no events occurred to evaluate your plan) in cooperation with other industries.
- When a responsible party is identified, educate the party on the impacts of his or her actions.

Spill Response and Prevention

- See SC11 Spill Prevention Control and Cleanup.

Other Considerations

- Many facilities do not have accurate, up-to-date schematic drawings.

Requirements

Costs (including capital and operation & maintenance)

- The primary cost is for staff time and depends on how aggressively a program is implemented.
- Cost for containment and disposal is borne by the discharger.
- Illicit connections can be difficult to locate especially if there is groundwater infiltration.
- Indoor floor drains may require re-plumbing if cross-connections to storm drains are detected.

Maintenance (including administrative and staffing)

- Illegal dumping and illicit connection violations requires technical staff to detect and investigate them.

Supplemental Information

Further Detail of the BMP

Illegal Dumping

- Substances illegally dumped on streets and into the storm drain systems and creeks include paints, used oil and other automotive fluids, construction debris, chemicals, fresh concrete, leaves, grass clippings, and pet wastes. All of these wastes cause stormwater and receiving water quality problems as well as clog the storm drain system itself.
- Establish a system for tracking incidents. The system should be designed to identify the following:
  - Illegal dumping hot spots

- Types and quantities (in some cases) of wastes
- Patterns in time of occurrence (time of day/night, month, or year)
- Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accidents/spills)
- Responsible parties

One of the keys to success of reducing or eliminating illegal dumping is increasing the number of people at the facility who are aware of the problem and who have the tools to at least identify the incident, if not correct it. Therefore, train field staff to recognize and report the incidents.

What constitutes a "non-stormwater" discharge?

- Non-stormwater discharges to the stormwater collection system may include any water used directly in the manufacturing process (process wastewater), air conditioning condensate and coolant, non-contact cooling water, cooling equipment condensate, outdoor secondary containment water, vehicle and equipment wash water, sink and drinking fountain wastewater, sanitary wastes, or other wastewaters.

Permit Requirements

- Facilities subject to stormwater permit requirements must include a certification that the stormwater collection system has been tested or evaluated for the presence of non-stormwater discharges. The State's General Industrial Stormwater Permit requires that non-stormwater discharges be eliminated prior to implementation of the facility's SWPPP.

Performance Evaluation

- Review annually internal investigation results; assess whether goals were met and what changes or improvements are necessary.
- Obtain feedback from personnel assigned to respond to, or inspect for, illicit connections and illegal dumping incidents.

References and Resources

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

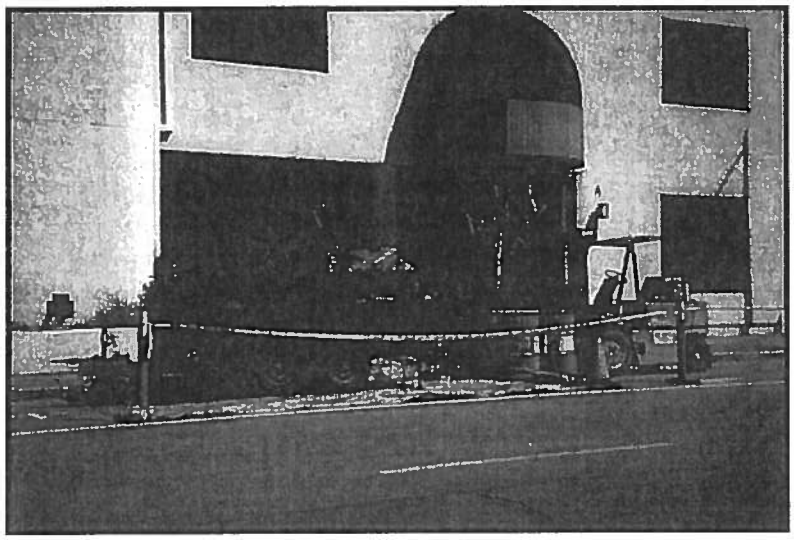
Clark County Storm Water Pollution Control Manual
http://www.co.clark.wa.us/pubworks/bmpman.pdf

King County Storm Water Pollution Control Manual http://dnr.metrokc.gov/wlr/dss/spcm.htm

Santa Clara Valley Urban Runoff Pollution Prevention Program http://www.scvurppp.org

The Storm Water Managers Resource Center http://www.stormwatercenter.net/

Spill Prevention, Control & Cleanup SC-11



Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	
Nutrients	
Trash	
Metals	✓
Bacteria	
Oil and Grease	✓
Organics	✓

Description

Many activities that occur at an industrial or commercial site have the potential to cause accidental or illegal spills. Preparation for accidental or illegal spills, with proper training and reporting systems implemented, can minimize the discharge of pollutants to the environment.

Spills and leaks are one of the largest contributors of stormwater pollutants. Spill prevention and control plans are applicable to any site at which hazardous materials are stored or used. An effective plan should have spill prevention and response procedures that identify potential spill areas, specify material handling procedures, describe spill response procedures, and provide spill clean-up equipment. The plan should take steps to identify and characterize potential spills, eliminate and reduce spill potential, respond to spills when they occur in an effort to prevent pollutants from entering the stormwater drainage system, and train personnel to prevent and control future spills.

Approach

Pollution Prevention

- Develop procedures to prevent/mitigate spills to storm drain systems. Develop and standardize reporting procedures, containment, storage, and disposal activities, documentation, and follow-up procedures.

- Develop a Spill Prevention Control and Countermeasure (SPCC) Plan. The plan should include:

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- Description of the facility, owner and address, activities and chemicals present
- Facility map
- Notification and evacuation procedures
- Cleanup instructions
- Identification of responsible departments
- Identify key spill response personnel

- Recycle, reclaim, or reuse materials whenever possible. This will reduce the amount of process materials that are brought into the facility.

Suggested Protocols (including equipment needs)

Spill Prevention

- Develop procedures to prevent/mitigate spills to storm drain systems. Develop and standardize reporting procedures, containment, storage, and disposal activities, documentation, and follow-up procedures.

- If consistent illegal dumping is observed at the facility:
  - Post "No Dumping" signs with a phone number for reporting illegal dumping and disposal. Signs should also indicate fines and penalties applicable for illegal dumping.
  - Landscaping and beautification efforts may also discourage illegal dumping.
  - Bright lighting and/or entrance barriers may also be needed to discourage illegal dumping.

- Store and contain liquid materials in such a manner that if the tank is ruptured, the contents will not discharge, flow, or be washed into the storm drainage system, surface waters, or groundwater.

- If the liquid is oil, gas, or other material that separates from and floats on water, install a spill control device (such as a tee section) in the catch basins that collects runoff from the storage tank area.

- Routine maintenance:
  - Place drip pans or absorbent materials beneath all mounted taps, and at all potential drip and spill locations during filling and unloading of tanks. Any collected liquids or soiled absorbent materials must be reused/recycled or properly disposed.
  - Store and maintain appropriate spill cleanup materials in a location known to all near the tank storage area; and ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.
  - Sweep and clean the storage area monthly if it is paved, *do not hose down the area to a storm drain.*

- Check tanks (and any containment sumps) daily for leaks and spills. Replace tanks that are leaking, corroded, or otherwise deteriorating with tanks in good condition. Collect all spilled liquids and properly dispose of them.

- Label all containers according to their contents (e.g., solvent, gasoline).
- Label hazardous substances regarding the potential hazard (corrosive, radioactive, flammable, explosive, poisonous).
- Prominently display required labels on transported hazardous and toxic materials (per US DOT regulations).
- Identify key spill response personnel.

Spill Control and Cleanup Activities

- Follow the Spill Prevention Control and Countermeasure Plan.
- Clean up leaks and spills immediately.
- Place a stockpile of spill cleanup materials where it will be readily accessible (e.g., near storage and maintenance areas).
- On paved surfaces, clean up spills with as little water as possible. Use a rag for small spills, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be sent to a certified laundry (rags) or disposed of as hazardous waste. Physical methods for the cleanup of dry chemicals include the use of brooms, shovels, sweepers, or plows.
- Never hose down or bury dry material spills. Sweep up the material and dispose of properly.
- Chemical cleanups of material can be achieved with the use of adsorbents, gels, and foams. Use adsorbent materials on small spills rather than hosing down the spill. Remove the adsorbent materials promptly and dispose of properly.
- For larger spills, a private spill cleanup company or Hazmat team may be necessary.

Reporting

- Report spills that pose an immediate threat to human health or the environment to the Regional Water Quality Control Board.
- Federal regulations require that any oil spill into a water body or onto an adjoining shoreline be reported to the National Response Center (NRC) at 800-424-8802 (24 hour).
- Report spills to local agencies, such as the fire department; they can assist in cleanup.
- Establish a system for tracking incidents. The system should be designed to identify the following:
  - Types and quantities (in some cases) of wastes
  - Patterns in time of occurrence (time of day/night, month, or year)

- Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accidents/spills)
- Responsible parties

Training

- Educate employees about spill prevention and cleanup.
- Well-trained employees can reduce human errors that lead to accidental releases or spills:
  - The employee should have the tools and knowledge to immediately begin cleaning up a spill should one occur.
  - Employees should be familiar with the Spill Prevention Control and Countermeasure Plan.
- Employees should be educated about aboveground storage tank requirements. Employees responsible for aboveground storage tanks and liquid transfers should be thoroughly familiar with the Spill Prevention Control and Countermeasure Plan and the plan should be readily available.
- Train employees to recognize and report illegal dumping incidents.

Other Considerations (Limitations and Regulations)

- State regulations exist for facilities with a storage capacity of 10,000 gallons or more of petroleum to prepare a Spill Prevention Control and Countermeasure (SPCC) Plan (Health & Safety Code Chapter 6.67).
- State regulations also exist for storage of hazardous materials (Health & Safety Code Chapter 6.95), including the preparation of area and business plans for emergency response to the releases or threatened releases.
- Consider requiring smaller secondary containment areas (less than 200 sq. ft.) to be connected to the sanitary sewer, prohibiting any hard connections to the storm drain.

Requirements

Costs (including capital and operation & maintenance)

- Will vary depending on the size of the facility and the necessary controls.
- Prevention of leaks and spills is inexpensive. Treatment and/or disposal of contaminated soil or water can be quite expensive.

Maintenance (including administrative and staffing)

- This BMP has no major administrative or staffing requirements. However, extra time is needed to properly handle and dispose of spills, which results in increased labor costs.

Supplemental Information

Further Detail of the BMP

Reporting

Record keeping and internal reporting represent good operating practices because they can increase the efficiency of the facility and the effectiveness of BMPs. A good record keeping system helps the facility minimize incident recurrence, correctly respond with appropriate cleanup activities, and comply with legal requirements. A record keeping and reporting system should be set up for documenting spills, leaks, and other discharges, including discharges of hazardous substances in reportable quantities. Incident records describe the quality and quantity of non-stormwater discharges to the storm sewer. These records should contain the following information:

- Date and time of the incident
- Weather conditions
- Duration of the spill/leak/discharge
- Cause of the spill/leak/discharge
- Response procedures implemented
- Persons notified
- Environmental problems associated with the spill/leak/discharge

Separate record keeping systems should be established to document housekeeping and preventive maintenance inspections, and training activities. All housekeeping and preventive maintenance inspections should be documented. Inspection documentation should contain the following information:

- The date and time the inspection was performed
- Name of the inspector
- Items inspected
- Problems noted
- Corrective action required
- Date corrective action was taken

Other means to document and record inspection results are field notes, timed and dated photographs, videotapes, and drawings and maps.

Aboveground Tank Leak and Spill Control

Accidental releases of materials from aboveground liquid storage tanks present the potential for contaminating stormwater with many different pollutants. Materials spilled, leaked, or lost from

tanks may accumulate in soils or on impervious surfaces and be carried away by stormwater runoff.

The most common causes of unintentional releases are:

- Installation problems
- Failure of piping systems (pipes, pumps, flanges, couplings, hoses, and valves)
- External corrosion and structural failure
- Spills and overfills due to operator error
- Leaks during pumping of liquids or gases from truck or rail car to a storage tank or vice versa

Storage of reactive, ignitable, or flammable liquids should comply with the Uniform Fire Code and the National Electric Code. Practices listed below should be employed to enhance the code requirements:

- Tanks should be placed in a designated area.
- Tanks located in areas where firearms are discharged should be encapsulated in concrete or the equivalent.
- Designated areas should be impervious and paved with Portland cement concrete, free of cracks and gaps, in order to contain leaks and spills.
- Liquid materials should be stored in UL approved double walled tanks or surrounded by a curb or dike to provide the volume to contain 10 percent of the volume of all of the containers or 110 percent of the volume of the largest container, whichever is greater. The area inside the curb should slope to a drain.
- For used oil or dangerous waste, a dead-end sump should be installed in the drain.
- All other liquids should be drained to the sanitary sewer if available. The drain must have a positive control such as a lock, valve, or plug to prevent release of contaminated liquids.
- Accumulated stormwater in petroleum storage areas should be passed through an oil/water separator.

Maintenance is critical to preventing leaks and spills. Conduct routine inspections and:

- Check for external corrosion and structural failure.
- Check for spills and overfills due to operator error.
- Check for failure of piping system (pipes, pumps, flanger, coupling, hoses, and valves).
- Check for leaks or spills during pumping of liquids or gases from truck or rail car to a storage facility or vice versa.

- Visually inspect new tank or container installation for loose fittings, poor welding, and improper or poorly fitted gaskets.
- Inspect tank foundations, connections, coatings, and tank walls and piping system. Look for corrosion, leaks, cracks, scratches, and other physical damage that may weaken the tank or container system.
- Frequently relocate accumulated stormwater during the wet season.
- Periodically conduct integrity testing by a qualified professional.

Vehicle Leak and Spill Control

Major spills on roadways and other public areas are generally handled by highly trained Hazmat teams from local fire departments or environmental health departments. The measures listed below pertain to leaks and smaller spills at vehicle maintenance shops.

In addition to implementing the spill prevention, control, and clean up practices above, use the following measures related to specific activities:

Vehicle and Equipment Maintenance

- Perform all vehicle fluid removal or changing inside or under cover to prevent the run-on of stormwater and the runoff of spills.
- Regularly inspect vehicles and equipment for leaks, and repair immediately.
- Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allow leaking vehicles or equipment onsite.
- Always use secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.
- Immediately drain all fluids from wrecked vehicles.
- Store wrecked vehicles or damaged equipment under cover.
- Place drip pans or absorbent materials under heavy equipment when not in use.
- Use adsorbent materials on small spills rather than hosing down the spill.
- Remove the adsorbent materials promptly and dispose of properly.
- Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around.
- Oil filters disposed of in trashcans or dumpsters can leak oil and contaminate stormwater. Place the oil filter in a funnel over a waste oil recycling drum to drain excess oil before disposal. Oil filters can also be recycled. Ask your oil supplier or recycler about recycling oil filters.

- Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries, even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

Vehicle and Equipment Fueling

- Design the fueling area to prevent the run-on of stormwater and the runoff of spills:
  - Cover fueling area if possible.
  - Use a perimeter drain or slope pavement inward with drainage to a sump.
  - Pave fueling area with concrete rather than asphalt.
- If dead-end sump is not used to collect spills, install an oil/water separator.
- Install vapor recovery nozzles to help control drips as well as air pollution.
- Discourage "topping-off" of fuel tanks.
- Use secondary containment when transferring fuel from the tank truck to the fuel tank.
- Use adsorbent materials on small spills and general cleaning rather than hosing down the area. Remove the adsorbent materials promptly.
- Carry out all Federal and State requirements regarding underground storage tanks, or install above ground tanks.
- Do not use mobile fueling of mobile industrial equipment around the facility; rather, transport the equipment to designated fueling areas.
- Keep your Spill Prevention Control and Countermeasure (SPCC) Plan up-to-date.
- Train employees in proper fueling and cleanup procedures.

Industrial Spill Prevention Response

For the purposes of developing a spill prevention and response program to meet the stormwater regulations, facility managers should use information provided in this fact sheet and the spill prevention/response portions of the fact sheets in this handbook, for specific activities. The program should:

- Integrate with existing emergency response/hazardous materials programs (e.g., Fire Department)
- Develop procedures to prevent/mitigate spills to storm drain systems
- Identify responsible departments
- Develop and standardize reporting procedures, containment, storage, and disposal activities, documentation, and follow-up procedures
- Address spills at municipal facilities, as well as public areas

- Provide training concerning spill prevention, response and cleanup to all appropriate personnel

References and Resources

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

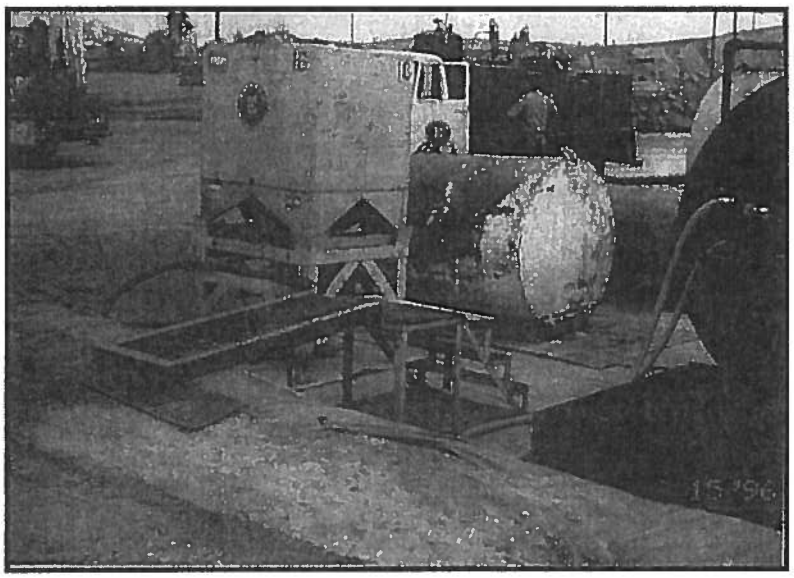
Clark County Storm Water Pollution Control Manual
http://www.co.clark.wa.us/pubworks/bmpman.pdf

King County Storm Water Pollution Control Manual http://dnr.metrokc.gov/wlr/dss/spcm.htm

Santa Clara Valley Urban Runoff Pollution Prevention Program http://www.scvurppp.org

The Stormwater Managers Resource Center http://www.stormwatercenter.net/

Vehicle & Equipment Fueling SC-20



Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize

Targeted Constituents

Sediment	
Nutrients	
Trash	
Metals	✓
Bacteria	
Oil and Grease	✓
Organics	✓

Description

Spills and leaks that occur during vehicle and equipment fueling can contribute hydrocarbons, oil and grease, as well as heavy metals to stormwater runoff. Implementing the following management practices can help prevent fuel spills and leaks.

Approach

Reduce potential for pollutant discharge through source control pollution prevention and BMP implementation. Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

Pollution Prevention

- Use properly maintained off-site fueling stations whenever possible. These businesses are better equipped to handle fuel and spills properly.
- Educate employees about pollution prevention measures and goals.
- Focus pollution prevention activities on containment of spills and leaks, most of which may occur during liquid transfers.

Suggested Protocols

General

- "Spot clean" leaks and drips routinely. Leaks are not cleaned up until the absorbent is picked up and disposed of properly.

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- Manage materials and waste to reduce adverse impacts on stormwater quality.
- Label drains within the facility boundary, by paint/stencil (or equivalent), to indicate whether they flow to an oil/water separator, directly to the sewer, or to a storm drain. Labels are not necessary for plumbing fixtures directly connected to the sanitary sewer.
- Post signs to remind employees and customers not to top off the fuel tank when filling and signs that ban customers and employees from changing engine oil or other fluids at that location.
- Report leaking vehicles to fleet maintenance.
- Install inlet catch basin equipped with a small sedimentation basin or grit chamber to remove large particles from stormwater in highly impervious areas.
- Ensure the following safeguards are in place:
  - Overflow protection devices on tank systems to warn the operator to automatically shutdown transfer pumps when the tank reaches full capacity.
  - Protective guards around tanks and piping to prevent vehicle or forklift damage.
  - Clear tagging or labeling of all valves to reduce human error.

Fuel Dispensing Areas

- Maintain clean fuel-dispensing areas using dry cleanup methods such as sweeping for removal of litter and debris, or use of rags and absorbents for leaks and spills.
- If you periodically clean by washing, place a temporary plug in the downstream drain and pump out the accumulated water. Properly dispose the water. Note: permission from the local sewering agency must be obtained before discharging wash water to the sanitary sewer.
- Fit underground storage tanks with spill containment and overfill prevention systems meeting the requirements of Section 2635(b) of Title 23 of the California Code of Regulations.
- Fit fuel dispensing nozzles with "hold-open latches" (automatic shutoffs) except where prohibited by local fire departments.
- Post signs at the fuel dispenser or fuel island warning vehicle owners/operators against "topping off" of vehicle fuel tanks.
- Design fueling area to prevent stormwater runoff and spills.
- Cover fueling area with an overhanging roof structure or canopy so that precipitation cannot come in contact with the fueling area and use a perimeter drain or slope pavement inward with drainage to sump; pave area with concrete rather than asphalt.
- Where covering is not feasible and the fuel island is surrounded by pavement, apply a suitable sealant that protects the asphalt from spilled fuels.

- Install vapor recovery nozzles to help control drips as well as air pollution.
- Use secondary containment when transferring fuel from the tank truck to the fuel tank.
- Cover storm drains in the vicinity during transfer.

Outdoor Waste Receptacle Area

- Spot clean leaks and drips routinely to prevent runoff of spillage.
- Minimize the possibility of stormwater pollution from outside waste receptacles by doing at least one of the following:
  - Use only watertight waste receptacle(s) and keep the lid(s) closed.
  - Grade and pave the waste receptacle area to prevent run-on of stormwater.
  - Install a roof over the waste receptacle area.
  - Install a low containment berm around the waste receptacle area.
  - Use and maintain drip pans under waste receptacles.
- Post "no littering" signs.

Air/Water Supply Area

- Minimize the possibility of stormwater pollution from air/water supply areas by doing at least one of the following:
  - Spot clean leaks and drips routinely to prevent runoff of spillage.
  - Grade and pave the air/water supply area to prevent run-on of stormwater.
  - Install a roof over the air/water supply area.
  - Install a low containment berm around the air/water supply area.

Inspection

- Aboveground Tank Leak and Spill Control:
  - Check for external corrosion and structural failure.
  - Check for spills and overfills due to operator error.
  - Check for failure of piping system.
  - Check for leaks or spills during pumping of liquids or gases from truck or rail car to a storage facility or vice versa.
  - Visually inspect new tank or container installation for loose fittings, poor welding, and improper or poorly fitted gaskets.

- Inspect tank foundations, connections, coatings, and tank walls and piping system. Look for corrosion, leaks, cracks, scratches, and other physical damage that may weaken the tank or container system.
- Periodically, integrity testing should be conducted by a qualified professional.

- Inspect and clean, if necessary, storm drain inlets and catch basins within the facility boundary before October 1 each year.

Training

- Train all employees upon hiring and annually thereafter on proper methods for handling and disposing of waste. Make sure that all employees understand stormwater discharge prohibitions, wastewater discharge requirements, and these best management practices.
- Train employees on proper fueling and cleanup procedures.
- Use a training log or similar method to document training.
- Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.

Spill Response and Prevention

- Keep your Spill Prevention Control and Countermeasure (SPCC) Plan up-to-date.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- Use adsorbent materials on small spills and general cleaning rather than hosing down the area. Remove the adsorbent materials promptly.
- Store portable absorbent booms (long flexible shafts or barriers made of absorbent material) in unbermed fueling areas.
- Report spills promptly.
- If a dead-end sump is not used to collect spills, install an oil/water separator.

Other Considerations

- Carry out all Federal and State requirements regarding underground storage tanks, or install above ground tanks.

Requirements

Costs

- The retrofitting of existing fueling areas to minimize stormwater exposure or spill runoff can be expensive. Good design must occur during the initial installation.
- Extruded curb along the "upstream" side of the fueling area to prevent stormwater run-on is of modest cost.

Maintenance

- Clean oil/water separators at appropriate intervals.

- Keep ample supplies of spill cleanup materials on-site.
- Inspect fueling areas and storage tanks on a regular schedule.

Supplemental Information

Design Considerations

Designing New Installations

The elements listed below should be included in the design and construction of new or substantially remodeled facilities.

Fuel Dispensing Areas

- Fuel dispensing areas must be paved with Portland cement concrete (or, equivalent smooth impervious surface), with a 2 to 4% slope to prevent ponding, and must be separated from the rest of the site by a grade break that prevents run-on of stormwater to the extent practicable. The fuel dispensing area is defined as extending 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus 1 foot, whichever is less. The paving around the fuel dispensing area may exceed the minimum dimensions of the "fuel dispensing area" stated above.
- The fuel dispensing area must be covered, and the cover's minimum dimensions must be equal to or greater than the area within the grade break or the fuel dispensing area, as defined above. The cover must not drain onto the fuel dispensing area.
- If necessary, install and maintain an oil control device in the appropriate catch basin(s) to treat runoff from the fueling area.

Outdoor Waste Receptacle Area

- Grade and pave the outdoor waste receptacle area to prevent run-on of stormwater to the extent practicable.

Air/Water Supply Area

- Grade and pave the air/water supply area to prevent run-on of stormwater to the extent practicable.

Designated Fueling Area

- If your facility has large numbers of mobile equipment working throughout the site and you currently fuel them with a mobile fuel truck, consider establishing a designated fueling area. With the exception of tracked equipment such as bulldozers and perhaps small forklifts, most vehicles should be able to travel to a designated area with little lost time. Place temporary "caps" over nearby catch basins or manhole covers so that if a spill occurs it is prevented from entering the storm drain.

Examples

The Spill Prevention Control and Countermeasure (SPCC) Plan, which is required by law for some facilities, is an effective program to reduce the number of accidental spills and minimize contamination of stormwater runoff.

The City of Palo Alto has an effective program for commercial vehicle service facilities. Many of the program's elements, including specific BMP guidance and lists of equipment suppliers, are also applicable to industrial facilities.

References and Resources

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

Clark County Storm Water Pollution Control Manual
http://www.co.clark.wa.us/pubworks/bmpman.pdf

King County Storm Water Pollution Control Manual http://dnr.metrokc.gov/wlr/dss/spcm.htm

Santa Clara Valley Urban Runoff Pollution Prevention Program http://www.scvurppp.org

The Storm Water Managers Resource Center http://www.stormwatercenter.net/

Best Management Practice Guide for Retail Gasoline Outlets, California Stormwater Quality Task Force. 1997.

Vehicle and Equipment Cleaning SC-21

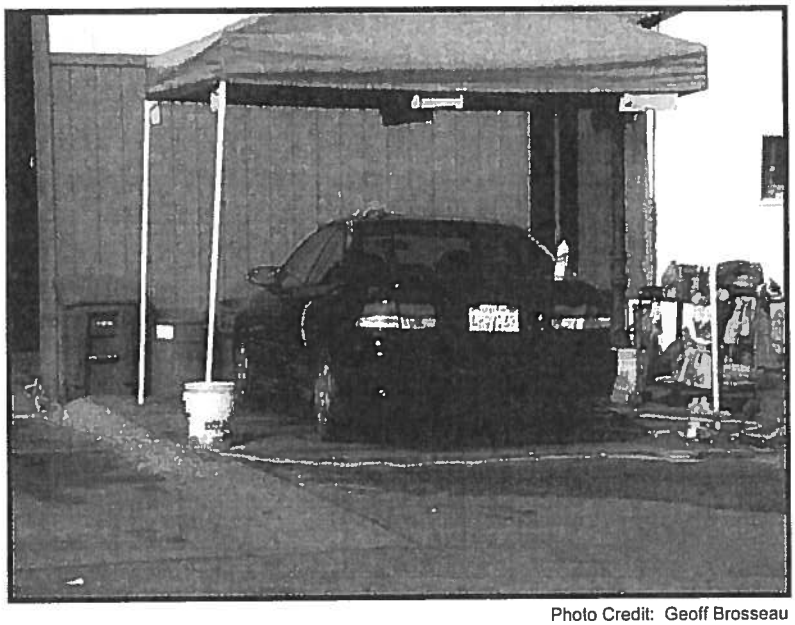

Photo Credit: Geoff Brosseau

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	✓
Nutrients	✓
Trash	
Metals	✓
Bacteria	
Oil and Grease	✓
Organics	✓

Description

Wash water from vehicle and equipment cleaning activities performed outdoors or in areas where wash water flows onto the ground can contribute toxic hydrocarbons and other organic compounds, oils and greases, nutrients, phosphates, heavy metals, and suspended solids to stormwater runoff. Use of the procedures outlined below can prevent or reduce the discharge of pollutants to stormwater during vehicle and equipment cleaning.

Approach

Reduce potential for pollutant discharge through source control pollution prevention and BMP implementation. Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives

Pollution Prevention

- If possible, use properly maintained off-site commercial washing and steam cleaning businesses whenever possible. These businesses are better equipped to handle and properly dispose of the wash waters.

- Good housekeeping practices can minimize the risk of contamination from wash water discharges.

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Suggested Protocols

General

- Use biodegradable, phosphate-free detergents for washing vehicles as appropriate.
- Mark the area clearly as a wash area.
- Post signs stating that only washing is allowed in wash area.
- Provide trash container in wash area.
- Map on-site storm drain locations to avoid discharges to the storm drain system.
- Emphasize the connection between the storm drain system and runoff, help reinforce that car washing activities affect local water quality through storm drain stenciling programs.

Vehicle and Equipment Cleaning

- Have all vehicle washing done in areas designed to collect and hold the wash and rinse water or effluent generated. Recycle, collect or treat wash water effluent prior to discharge to the sanitary sewer system.
- If washing/cleaning must occur on-site, consider washing vehicle equipment inside the building or on an impervious surface to control the targeted constituents by directing them to the sanitary sewer.
- If washing must occur on-site and outdoor:
  - Use designated paved wash areas. Designated wash areas must be well marked with signs indicating where and how washing must be done. This area must be covered or bermed to collect the wash water and graded to direct the wash water to a treatment or disposal facility.
  - Do not conduct oil changes and other engine maintenance in the designated washing area. Perform these activities in a place designated for oil change and maintenance activities.
  - Cover the wash area when not in use to prevent contact with rain water.
- Install sumps or drain lines to collect wash water for treatment.
- Use hoses with nozzles that automatically turn off when left unattended.
- Do not permit steam cleaning wash water to enter the storm drain.
- Pressure and steam clean off-site to avoid generating runoff with high pollutant concentrations. If done on-site, no pressure cleaning and steam cleaning should be done in areas designated as wellhead protection areas for public water supply.

Disposal

- Consider filtering and recycling wash water.
- Discharge equipment wash water to the sanitary sewer, a holding tank, or a process treatment system, regardless of the washing method used.
- Collect all wash water from vehicle cleaning operations and (1) discharge to a sanitary sewer, holding tank, or process treatment system or (2) run through an enclosed recycling system.
- Collect and treat wash water at the facility and either recycle or discharge to the sanitary sewer system or collect and dispose of as an industrial waste.
- Discharge wash water to sanitary sewer after contacting local sewer authority to find out if pretreatment is required.

Training

- Train employees on proper cleaning and wash water disposal procedures and conduct "refresher" courses on a regular basis.
- Train staff on proper maintenance measures for the wash area.
- Train employees and contractors on proper spill containment and cleanup. The employee should have the tools and knowledge to immediately begin cleaning up a spill should one occur.

Spill Response and Prevention

- Keep the Spill Prevention Control and Countermeasure (SPCC) Plan up-to-date.
- Have an emergency plan, equipment, and trained personnel ready at all times to deal immediately with major spills.
- Collect all spilled liquids and properly dispose of them.
- Store and maintain appropriate spill cleanup materials in a location known to all near the designated wash area.

Other Considerations (Limitations and Regulations)

- Some municipalities may require pretreatment and monitoring of wash water discharges to the sanitary sewer.
- Steam cleaning can generate significant pollutant concentrations requiring that careful consideration be given to the environmental impacts and compliance issues related to steam cleaning.
- Most car washing best management practices are inexpensive, and rely more on good housekeeping practices (where vehicles are washed, planning for the collection of wash water) than on expensive technology. However, the construction of a specialized area for vehicle washing can be expensive. Also, for facilities that cannot recycle their wash water, the cost of pre-treating wash water through either structural practices or planning for

collection and hauling of contaminated water to sewage treatment plants can be cost-prohibitive.

Requirements

Costs

- Capital costs vary as follows depending on measures implemented:
  - Low cost ($2000-5,000) for berm construction
  - Medium cost ($10,000-30,000) for plumbing modifications (including re-routing discharge to sanitary sewer and installing simple sump)
  - High cost ($60,000-200,000) for on-site treatment and recycling
- O&M costs increase with increasing capital investment.

Maintenance

- Perform berm repair and patching.
- Sweep washing areas frequently to remove solid debris.
- Inspect and maintain sumps, oil/water separators, and on-site treatment/recycling units.

Supplemental Information

Design Considerations

Designated Cleaning Areas

- Washing operations outside should be conducted in a designated wash area having the following characteristics:
  - Paved with Portland cement concrete
  - Covered and bermed to prevent contact with stormwater and contain wash water
  - Sloped for wash water collections
  - Discharges wash water to the sanitary or recycle treatment process waste sewer, or to a dead-end sump
  - Equipped with an oil/water separator if necessary

Examples

The City of Palo Alto has an effective program for commercial vehicle service facilities. Many of the program's elements, including specific BMP guidance and lists of equipment suppliers, are applicable to industrial vehicle service facilities.

The U.S. Postal Service in West Sacramento has a new vehicle wash system that collects, filters, and recycles wash water.

References and Resources

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

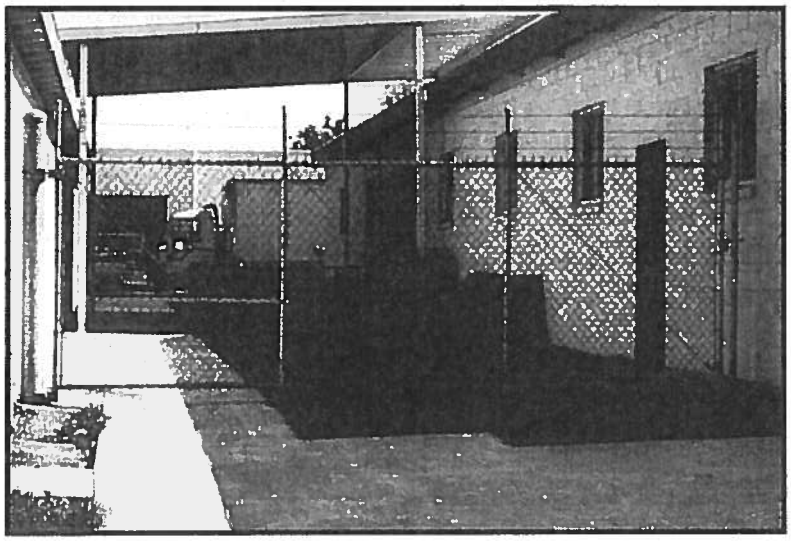
Clark County Storm Water Pollution Control Manual
http://www.co.clark.wa.us/pubworks/bmpman.pdf

King County Storm Water Pollution Control Manual http://dnr.metrokc.gov/wlr/dss/spcm.htm

Santa Clara Valley Urban Runoff Pollution Prevention Program http://www.scvurppp.org

The Storm Water Managers Resource Center http://www.stormwatercenter.net

Outdoor Liquid Container Storage SC-31



Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize

Description

Accidental releases of materials from above ground liquid storage tanks, drums, and dumpsters present the potential for contaminating stormwaters with many different pollutants. Tanks may store many potential stormwater runoff pollutants, such as gasoline, aviation gas, diesel fuel, kerosene, oils, greases, lubricants and other distilled, blended and refined products derived from crude petroleum. Materials spilled, leaked, or lost from storage tanks may accumulate in soils or on other surfaces and be carried away by rainfall runoff. These source controls apply to containers located outside of a building used to temporarily store liquid materials and include installing safeguards against accidental releases, installing secondary containment, conducting regular inspections, and training employees in standard operating procedures and spill cleanup techniques.

Targeted Constituents

Sediment	
Nutrients	✓
Trash	
Metals	✓
Bacteria	
Oil and Grease	✓
Organics	✓

Approach

Pollution Prevention

- Educate employees about pollution prevention measures and goals.
- Keep an accurate, up-to-date inventory of the materials delivered and stored on-site.
- Try to keep chemicals in their original containers, and keep them well labeled.

Suggested Protocols

General

- Develop an operations plan that describes procedures for loading and/or unloading. Refer to SC-30 – Outdoor

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Loading/Unloading of Materials for more detailed BMP information pertaining to loading and unloading of liquids.

- Protect materials from rainfall, run-on, runoff, and wind dispersal:
  - Cover the storage area with a roof.
  - Minimize stormwater run-on by enclosing the area or building a berm around it.
  - Use a "doghouse" structure for storage of liquid containers.
  - Use covered dumpsters for waste product containers.
- Employ safeguards against accidental releases:
  - Provide overflow protection devices to warn operator or automatic shut down transfer pumps.
  - Provide protection guards (bollards) around tanks and piping to prevent damage from a vehicle or forklift.
  - Provide clear tagging or labeling, and restrict access to valves to reduce human error.
- Berm or surround tank or container with secondary containment system, including dikes, liners, vaults, or double walled tanks.
- Be aware and ready to address the fact that some municipalities require secondary containment areas to be connected to the sanitary sewer, prohibiting any hard connections to the storm drain.
- Contact the appropriate regulatory agency regarding environmental compliance for facilities with "spill ponds" designed to intercept, treat, and/or divert spills.
- Have registered and specifically trained professional engineers identify and correct potential problems such as loose fittings, poor welding, and improper or poorly fitted gaskets for newly installed tank systems.

Storage Areas

- Provide storage tank piping located below product level with a shut-off valve at the tank; ideally this valve should be an automatic shear valve with the shut-off located inside the tank.
- Provide barriers such as posts or guardrails, where tanks are exposed, to prevent collision damage with vehicles.
- Provide secure storage to prevent vandalism-caused contamination.
- Place tight-fitting lids on all containers.
- Enclose or cover the containers where they are stored.

- Raise the containers off the ground by use of pallet or similar method, with provisions for spill control.
- Contain the material in such a manner that if the container leaks or spills, the contents will not discharge, flow, or be washed into the storm drainage system, surface waters or groundwater.
- Place drip pans or absorbent materials beneath all mounted container taps, and at all potential drip and spill locations during filling and unloading of containers. Any collected liquids or soiled absorbent materials must be reused/recycled or properly disposed.
- Ensure that any underground or aboveground storage tanks are designed and managed in accordance with applicable regulations, identified as a potential pollution source, and have secondary containment such as a berm or dike with an impervious surface.

Inspection

- Provide regular inspections:
  - Inspect storage areas regularly for leaks or spills.
  - Conduct routine inspections and check for external corrosion of material containers. Also check for structural failure, spills and overfills due to operator error, failure of piping system.
  - Check for leaks or spills during pumping of liquids or gases from truck or rail car to a storage facility or vice versa.
  - Visually inspect new tank or container installations for loose fittings, poor welding, and improper or poorly fitted gaskets.
  - Inspect tank foundations, connections, coatings, and tank walls and piping system. Look for corrosion, leaks, cracks, scratches, and other physical damage that may weaken the tank or container system.
  - Replace containers that are leaking, corroded, or otherwise deteriorating with ones in good condition. If the liquid chemicals are corrosive, containers made of compatible materials must be used instead of metal drums.
  - New or secondary containers must be labeled with the product name and hazards.

Training

- Train employee (e.g., fork lift operators) and contractors in proper spill containment and cleanup. The employee should have the tools and knowledge to immediately begin cleaning up a spill if one should occur.
- Train employees in proper storage measures.
- Use a training log or similar method to document training.

Spill Response and Prevention

- Keep your Spill Prevention Control and Countermeasure (SPCC) Plan up-to-date.
- Have an emergency plan, equipment, and trained personnel ready at all times to deal immediately with major spills.
- Collect all spilled liquids and properly dispose of them.
- Have employees trained in emergency spill cleanup procedures present when dangerous waste, liquid chemicals, or other wastes are delivered.
- Prevent operator errors by using engineering safeguards and thus reducing accidental releases of pollutants.
- Store and maintain appropriate spill cleanup materials in a location near the tank storage area and known to all.

Other Considerations

- Storage sheds often must meet building and fire code requirements.
- The local fire district must be consulted for limitations on clearance of roof covers over containers used to store flammable materials.
- All specific standards set by Federal and State laws concerning the storage of oil and hazardous materials must be met.
- Storage of reactive, ignitable, or flammable liquids should comply with the Uniform Fire Code and the National Electric Code.
- Storage of oil and hazardous materials must meet specific Federal and State standards including:
  - Spill Prevention Control and Countermeasure Plan (SPCC) Plan
  - Secondary containment
  - Integrity and leak detection monitoring
  - Emergency preparedness plans

Requirements

Costs

Costs will vary depending on the size of the facility and the necessary controls, such as berms or safeguards against accidental controls.

Maintenance

- Conduct weekly inspection.
- Sweep and clean the storage area regularly if it is paved, do not hose down the area to a storm drain.

Supplemental Information

The most common causes of unintentional releases are:

- Installation problems
- Failure of piping systems (pipes, pumps, flanges, couplings, hoses, and valves)
- External corrosion and structural failure
- Spills and overfills due to operator error
- Leaks during pumping of liquids or gases from truck or rail car to a storage tank or vice versa

Further Detail of the BMP

Aboveground Tank Leak and Spill Control

Storage of reactive, ignitable, or flammable liquids should comply with the Uniform Fire Code and the National Electric Code. Practices listed below should be employed to enhance the code requirements:

- Tanks should be placed in a designated area.
- Tanks located in areas where firearms are discharged should be encapsulated in concrete or the equivalent.
- Designated areas should be paved with Portland cement concrete, free of cracks and gaps, and impervious in order to contain leaks and spills,
- Liquid materials should be stored in UL approved double walled tanks or surrounded by a curb or dike to provide the volume to contain 10% of the volume of all of the containers or 110% of the volume of the largest container, whichever is greater. The area inside the curb should slope to a drain.
- For used oil or dangerous waste, a dead-end sump should be installed in the drain.
- All other liquids should be drained to the sanitary sewer if available. The drain must have a positive control such as a lock, valve, or plug to prevent release of contaminated liquids.
- Accumulated stormwater in petroleum storage areas should be passed through an oil/water separator

Maintenance is critical to preventing leaks and spills. Conduct routine weekly inspections and:

- Check for external corrosion and structural failure.
- Check for spills and overfills due to operator error.
- Check for failure of piping system (pipes, pumps, flanger, coupling, hoses, and valves).
- Check for leaks or spills during pumping of liquids or gases from truck or rail car to a storage facility or vice versa

- Inspect new tank or container installation visually for loose fittings, poor welding, and improper or poorly fitted gaskets.
- Inspect tank foundations, connections, coatings, and tank walls and piping system. Look for corrosion, leaks, cracks, scratches, and other physical damage that may weaken the tank or container system.
- Frequently release accumulated stormwater during the wet season.
- Have periodic integrity testing conducted by a qualified professional.

Container Management

- To limit the possibility of stormwater pollution, containers used to store dangerous waste or other liquids should be kept inside the building unless this is impractical due to site constraints. If the containers are placed outside, the following procedures should be employed:
  - Dumpsters used to store items awaiting transfer to a landfill should be placed in a lean-to structure or otherwise covered. Dumpsters shall be kept in good condition without corrosion or leaky seams.
  - Garbage dumpsters shall be replaced if they are deteriorating to the point where leakage is occurring. Dumpsters should be kept undercover to prevent the entry of stormwater. Employees should be made aware of the importance of keeping the dumpsters covered and free from leaks.
  - Waste container drums should be kept in an area such as a service bay. If drums are kept outside, they must be stored in a lean-to type structure, shed or walk-in container to keep rainfall from reaching the drums.

Dikes

One of the best protective measures against contamination of stormwater is diking. Containment dikes are berms or retaining walls that are designed to hold spills. Diking is an effective pollution prevention measure for above ground storage tanks and railcar or tank truck loading and unloading areas. The dike surrounds the area of concern and holds the spill, keeping spill materials separated from the stormwater side of the dike area. Diking can be used in any industrial or municipal facility, but it is most commonly used for controlling large spills or releases from liquid storage areas and liquid transfer areas.

- For single-wall tanks, containment dikes should be large enough to hold the contents of the storage tank for the facility plus rain water.
- For trucks, diked areas should be capable of holding an amount equal to the volume of the tank truck compartment. Diked construction material should be strong enough to safely hold spilled materials.
- Dike materials can consist of earth, concrete, synthetic materials, metal, or other impervious materials.
- Strong acids or bases may react with metal containers, concrete, and some plastics.

- Where strong acids or bases or stored, alternative dike materials should be considered. More active organic chemicals may need certain special liners for dikes.
- Dikes may also be designed with impermeable materials to increase containment capabilities.
- Dikes should be inspected during or after significant storms or spills to check for washouts or overflows.
- Regular checks of containment dikes to insure the dikes are capable of holding spills should be conducted.
- Inability of a structure to retain stormwater, dike erosion, soggy areas, or changes in vegetation indicate problems with dike structures. Damaged areas should be patched and stabilized immediately.
- Earthen dikes may require special maintenance of vegetation such as mulching and irrigation.

Curbing

Curbing is a barrier that surrounds an area of concern. Curbing is similar to containment diking in the way that it prevents spills and leaks from being released into the environment. Curbing is usually small scaled and does not contain large spills like diking. Curbing is common at many facilities in small areas where handling and transfer of liquid materials occur. Curbing can redirect contaminated stormwater away from the storage area. It is useful in areas where liquid materials are transferred from one container to another. Asphalt is a common material used for curbing; however, curbing materials can include earth, concrete, synthetic materials, metal, or other impenetrable materials.

- Spilled materials should be removed immediately from curbed areas to allow space for future spills.
- Curbs should have manually-controlled pump systems rather than common drainage systems for collection of spilled materials.
- The curbed area should be inspected regularly to clear clogging debris.
- Maintenance should also be conducted frequently to prevent overflow of any spilled materials as curbed areas are designed only for smaller spills.
- Curbing has the following advantages:
  - Excellent run-on control
  - Inexpensive
  - Ease of installment
  - Provides option to recycle materials spilled in curb areas
  - Common industry practice

Examples

The "doghouse" design has been used to store small liquid containers. The roof and flooring design prevent contact with direct rain or runoff. The doghouse has two solid structural walls and two canvas covered walls. The flooring is wire mesh about secondary containment. The unit has been used successfully at Lockheed Missile and Space Company in Sunnyvale.

References and Resources

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

Clark County Storm Water Pollution Control Manual
http://www.co.clark.wa.us/pubworks/bmpman.pdf

King County Storm Water Pollution Control Manual http://dnr.metrokc.gov/wlr/dss/spcm.htm

Santa Clara Valley Urban Runoff Pollution Prevention Program http://www.scvurppp.org

The Storm Water Managers Resource Center http://www.stormwatercenter.net/

Outdoor Equipment Operations SC-32

Description

Outside process equipment operations and maintenance can contaminate stormwater runoff. Activities, such as grinding, painting, coating, sanding, degreasing or parts cleaning, landfills and waste piles, solid waste treatment and disposal, are examples of process operations that can lead to contamination of stormwater runoff. Source controls for outdoor process equipment operations and maintenance include reducing the amount of waste created, enclosing or covering all or some of the equipment, installing secondary containment, and training employees.

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize

Approach

Pollution Prevention

- Perform the activity during dry periods.
- Use non-toxic chemicals for maintenance and minimize or eliminate the use of solvents.

Suggested Protocols

- Consider enclosing the activity in a building and connecting the floor drains to the sanitary sewer.
- Cover the work area with a permanent roof if possible.
- Minimize contact of stormwater with outside process equipment operations through berming and drainage routing (run-on prevention). If possible, connect process equipment area to public sewer or facility wastewater treatment system. Some municipalities require that secondary containment areas be connected to the sanitary sewer, prohibiting any hard connections to the storm drain.
- Dry clean the work area regularly.

Training

- Train employees to perform the activity during dry periods only or substituting benign materials for more toxic ones.
- Train employee and contractors in proper techniques for spill containment and cleanup. Employees should have the tools and knowledge to immediately begin cleaning up a spill should one occur.

Spill Response and Prevention

- Keep your Spill Prevention Control and Countermeasure (SPCC) Plan up-to-date.

Targeted Constituents

Sediment	✓
Nutrients	
Trash	
Metals	✓
Bacteria	
Oil and Grease	✓
Organics	✓

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- Have employees trained in emergency spill cleanup procedures present when dangerous waste, liquid chemicals, or other wastes are delivered.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- Prevent operator errors by using engineering safe guards and thus reducing accidental releases of pollutant.
- Inspect storage areas regularly for leaks or spills. Also check for structural failure, spills and overfills due to operator error, and/or failure of piping system.

Other Considerations

- Providing cover may be expensive.
- Space limitations may preclude enclosing some equipment.
- Storage sheds often must meet building and fire code requirements.

Requirements

Costs

Costs vary depending on the complexity of the operation and the amount of control necessary for stormwater pollution control.

Maintenance

- Conduct routine preventive maintenance, including checking process equipment for leaks.
- Clean the storm drain system regularly.

Supplemental Information

Further Detail of the BMP

Hydraulic/Treatment Modifications

If stormwater becomes polluted, it should be captured and treated. If you do not have your own process wastewater treatment system, consider discharging to the public sewer system. Use of the public sewer might be allowed under the following conditions:

- If the activity area is very small (less than a few hundred square feet), the local sewer authority may be willing to allow the area to remain uncovered with the drain connected to the public sewer.
- It may be possible under unusual circumstances to connect a much larger area to the public sewer, as long as the rate of stormwater discharges does not exceed the capacity of the wastewater treatment plant. The stormwater could be stored during the storm and then transferred to the public sewer when the normal flow is low, such as at night.

Industries that generate large volumes of process wastewater typically have their own treatment system and corresponding permit. These industries have the discretion to use their wastewater treatment system to treat stormwater within the constraints of their permit requirements for process treatment. It may also be possible for the industry to discharge the stormwater directly to an effluent outfall without treatment as long as the total loading of the discharged process

water and stormwater does not exceed the loading had a stormwater treatment device been used. This could be achieved by reducing the loading from the process wastewater treatment system. Check with your Regional Water Quality Control Board or local sewering agency, as this option would be subject to permit constraints and potentially regular monitoring.

References and Resources

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

Clark County Storm Water Pollution Control Manual
http://www.co.clark.wa.us/pubworks/bmpman.pdf

King County Storm Water Pollution Control Manual http://dnr.metrokc.gov/wlr/dss/spcm.htm

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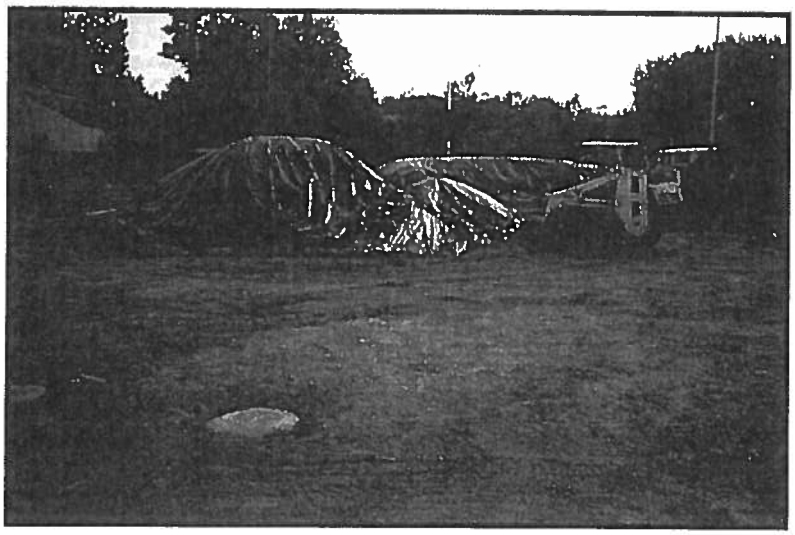
The Stormwater Managers Resource Center http://www.stormwatercenter.net

Outdoor Storage of Raw Materials SC-33



Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize

Description

Raw materials, by-products, finished products, containers, and material storage areas exposed to rain and/or runoff can pollute stormwater. Stormwater can become contaminated when materials wash off or dissolve into water or are added to runoff by spills and leaks. Improper storage of these materials can result in accidental spills and the release of materials. To prevent or reduce the discharge of pollutants to stormwater from material delivery and storage, pollution prevention and source control measures must be implemented, such as minimizing the storage of hazardous materials on-site, enclosing or covering materials, storing materials in a designated area, installing secondary containment, conducting regular inspections, preventing stormwater run-on and runoff, and training employees and subcontractors.

Targeted Constituents

Sediment	✓
Nutrients	✓
Trash	
Metals	✓
Bacteria	
Oil and Grease	✓
Organics	✓

Approach

Reduce potential for pollutant discharge through source control pollution prevention and BMP implementation. Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

Pollution Prevention

- Emphasize employee education for successful BMP implementation.
- Minimize inventory of raw materials.
- Keep an accurate, up-to-date inventory of the materials delivered and stored on-site.

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- Try to keep chemicals in their original containers and keep them well labeled.

Suggested Protocols

General

- Store all materials inside. If this is not feasible, then all outside storage areas should be covered with a roof and bermed or enclosed to prevent stormwater contact. At the very minimum, a temporary waterproof covering made of polyethylene, polypropylene or hypalon should be used over all materials stored outside.
- Cover and contain the stockpiles of raw materials to prevent stormwater from running into the covered piles. The covers must be in place at all times when work with the stockpiles is not occurring. (Applicable to small stockpiles only).
- Implement erosion control practices at the perimeter of your site and at any catch basins to prevent erosion of the stockpiled material off-site, if the stockpiles are so large that they cannot feasibly be covered and contained.
- Keep liquids in a designated area on a paved impervious surface within a secondary containment.
- Keep outdoor storage containers in good condition.
- Minimize stormwater run-on by enclosing the area or building a berm around it.
- Keep storage areas clean and dry.
- Slope paved areas should be sloped in a manner that minimize pooling of water on the site, particularly with materials that may leach pollutants into stormwater and/or groundwater, such as compost, logs, and wood chips. A minimum slope of 1.5% is recommended.
- Secure drums stored in an area where unauthorized persons may gain access to prevent accidental spillage, pilferage, or any unauthorized use.
- Cover wood products treated with chromated copper arsenate, ammonical copper zinc arsenate, creosote, or pentachlorophenol with tarps or store indoors.

Raw Material Containment

- Curbing should be placed along the perimeter of the area to prevent the run-on of uncontaminated stormwater from adjacent areas as well as runoff of stormwater from the stockpile areas.
- Tanks should be bermed or surrounded by a secondary containment system.
- The area inside the curb should slope to a drain. Liquids should be drained to the sanitary sewer if available. The drain must have a positive control such as a lock, valve, or plug to prevent release of contaminated liquids.
- Accumulated stormwater in petroleum storage areas should be passed through an oil/water separator.

Inspection

- Conduct regular inspections of storage areas so that leaks and spills are detected as soon as possible.
- Check berms, curbing, containment for repair and patching.

Training

- Train employees well in proper material storage.
- Train employees and contractors in proper techniques for spill containment and cleanup.

Spill Response and Prevention

- Keep your Spill Prevention Control and Countermeasure (SPCC) Plan up-to-date.
- Place a stockpile of spill cleanup materials, such as brooms, dustpans, and vacuum sweepers (if desired) near the storage area where it will be readily accessible.
- Have employees trained in spill containment and cleanup present during the loading/unloading of dangerous wastes, liquid chemicals, or other materials.

Other Considerations

- Storage sheds often must meet building and fire code requirements. Storage of reactive, ignitable, or flammable liquids must comply with the Uniform Fire Code and the National Electric Code.
- Space limitations may preclude storing some materials indoors.
- Some municipalities require that secondary containment areas (regardless of size) be connected to the sanitary sewer, prohibiting any hard connections to the storm drain. Storage sheds often must meet building and fire code requirements.
- The local fire district must be consulted for limitations on clearance of roof covers over containers used to store flammable materials.

Requirements

Costs

Costs will vary depending on the size of the facility and the necessary controls. They should be low except where large areas may have to be covered.

Maintenance

- Accurate and up-to-date inventories should be kept of all stored materials.
- Berms and curbs may require periodic repair and patching.
- Parking lots or other surfaces near bulk materials storage areas should be swept periodically to remove debris blown or washed from storage areas.
- Sweep paved storage areas regularly for collection and disposal of loose solid materials, do not hose down the area to a storm drain or conveyance ditch.

- Keep outdoor storage areas in good condition (e.g., repair roofs, floors, etc., to limit releases to runoff).

Supplemental Information

Further Detail of the BMP

Raw Material Containment

Paved areas should be sloped in a manner that minimizes pooling of water on the site, particularly with materials that may leach pollutants into stormwater and/or groundwater, such as compost, logs, and wood chips. A minimum slope of 1.5% is recommended.

- Curbing should be placed along the perimeter of the area to prevent the run-on of uncontaminated stormwater from adjacent areas as well as runoff of stormwater from stockpile areas.
- The storm drainage system should be designed to minimize use of catch basins in the interior of the area as they tend to rapidly fill with manufacturing material.
- The area should be sloped to drain stormwater to the perimeter where it can be collected or to internal drainage alleyways where material is not stockpiled.
- If the raw material, by-product, or product is a liquid, more information for outside storage of liquids can be found under SC31, Outdoor Liquid Container Storage.

Supplemental Information

Examples

The "doghouse" design has been used to store small liquid containers. The roof and flooring design prevent contact with direct rain or runoff. The doghouse has two solid structural walls and two canvas covered walls. The flooring is wire mesh about secondary containment. The unit has been used successively at Lockheed Missile and Space Company in Sunnyvale.

References and Resources

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Santa Clara Valley Urban Runoff Pollution Prevention Program http://www.scvurppp.org

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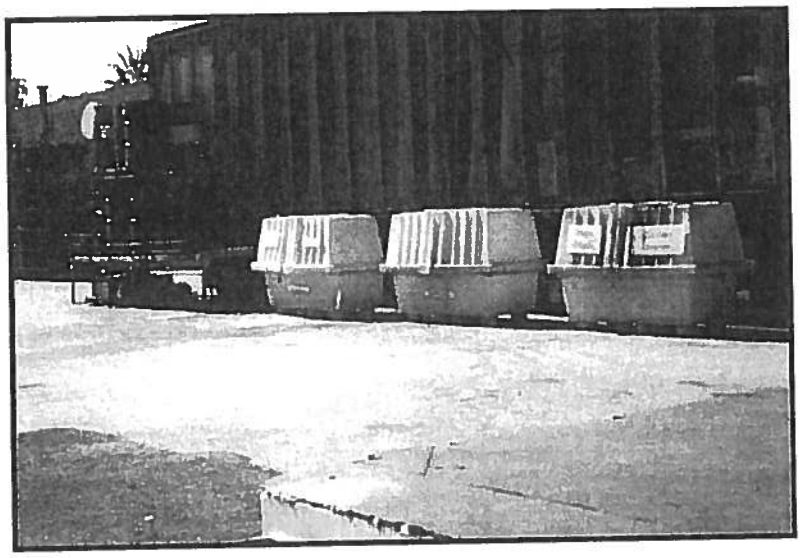
Waste Handling & Disposal SC-34



Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Description

Improper storage and handling of solid wastes can allow toxic compounds, oils and greases, heavy metals, nutrients, suspended solids, and other pollutants to enter stormwater runoff. The discharge of pollutants to stormwater from waste handling and disposal can be prevented and reduced by tracking waste generation, storage, and disposal; reducing waste generation and disposal through source reduction, reuse, and recycling; and preventing run-on and runoff.

Targeted Constituents

Sediment	
Nutrients	
Trash	
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓

Approach

Pollution Prevention

- Accomplish reduction in the amount of waste generated using the following source controls:
  - Production planning and sequencing
  - Process or equipment modification
  - Raw material substitution or elimination
  - Loss prevention and housekeeping
  - Waste segregation and separation
  - Close loop recycling
- Establish a material tracking system to increase awareness about material usage. This may reduce spills and minimize contamination, thus reducing the amount of waste produced.
- Recycle materials whenever possible.

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Suggested Protocols

General

- Cover storage containers with leak proof lids or some other means. If waste is not in containers, cover all waste piles (plastic tarps are acceptable coverage) and prevent stormwater run-on and runoff with a berm. The waste containers or piles must be covered except when in use.
- Use drip pans or absorbent materials whenever grease containers are emptied by vacuum trucks or other means. Grease cannot be left on the ground. Collected grease must be properly disposed of as garbage.
- Check storage containers weekly for leaks and to ensure that lids are on tightly. Replace any that are leaking, corroded, or otherwise deteriorating.
- Sweep and clean the storage area regularly. If it is paved, do not hose down the area to a storm drain.
- Dispose of rinse and wash water from cleaning waste containers into a sanitary sewer if allowed by the local sewer authority. Do not discharge wash water to the street or storm drain.
- Transfer waste from damaged containers into safe containers.
- Take special care when loading or unloading wastes to minimize losses. Loading systems can be used to minimize spills and fugitive emission losses such as dust or mist. Vacuum transfer systems can minimize waste loss.

Controlling Litter

- Post "No Littering" signs and enforce anti-litter laws.
- Provide a sufficient number of litter receptacles for the facility.
- Clean out and cover litter receptacles frequently to prevent spillage.

Waste Collection

- Keep waste collection areas clean.
- Inspect solid waste containers for structural damage regularly. Repair or replace damaged containers as necessary.
- Secure solid waste containers; containers must be closed tightly when not in use.
- Do not fill waste containers with washout water or any other liquid.
- Ensure that only appropriate solid wastes are added to the solid waste container. Certain wastes such as hazardous wastes, appliances, fluorescent lamps, pesticides, etc., may not be disposed of in solid waste containers (see chemical/ hazardous waste collection section below).

- Do not mix wastes; this can cause chemical reactions, make recycling impossible, and complicate disposal.

Good Housekeeping

- Use all of the product before disposing of the container.
- Keep the waste management area clean at all times by sweeping and cleaning up spills immediately.
- Use dry methods when possible (e.g., sweeping, use of absorbents) when cleaning around restaurant/food handling dumpster areas. If water must be used after sweeping/using absorbents, collect water and discharge through grease interceptor to the sewer.

Chemical/Hazardous Wastes

- Select designated hazardous waste collection areas on-site.
- Store hazardous materials and wastes in covered containers and protect them from vandalism.
- Place hazardous waste containers in secondary containment.
- Make sure that hazardous waste is collected, removed, and disposed of only at authorized disposal areas.
- Stencil or demarcate storm drains on the facility's property with prohibitive message regarding waste disposal.

Run-on/Runoff Prevention

- Prevent stormwater run-on from entering the waste management area by enclosing the area or building a berm around the area.
- Prevent waste materials from directly contacting rain.
- Cover waste piles with temporary covering material such as reinforced tarpaulin, polyethylene, polyurethane, polypropyleneor hypalon.
- Cover the area with a permanent roof if feasible.
- Cover dumpsters to prevent rain from washing waste out of holes or cracks in the bottom of the dumpster.
- Move the activity indoor after ensuring all safety concerns such as fire hazard and ventilation are addressed.

Inspection

- Inspect and replace faulty pumps or hoses regularly to minimize the potential of releases and spills.
- Check waste management areas for leaking containers or spills.

- Repair leaking equipment including valves, lines, seals, or pumps promptly.

Training

- Train staff in pollution prevention measures and proper disposal methods.
- Train employees and contractors in proper spill containment and cleanup. The employee should have the tools and knowledge to immediately begin cleaning up a spill should one occur.
- Train employees and subcontractors in proper hazardous waste management.

Spill Response and Prevention

- Keep your Spill Prevention Control and Countermeasure (SPCC) Plan up-to-date.
- Have an emergency plan, equipment and trained personnel ready at all times to deal immediately with major spills
- Collect all spilled liquids and properly dispose of them.
- Store and maintain appropriate spill cleanup materials in a location known to all near the designated wash area.
- Ensure that vehicles transporting waste have spill prevention equipment that can prevent spills during transport. Spill prevention equipment includes:
  - Vehicles equipped with baffles for liquid waste
  - Trucks with sealed gates and spill guards for solid waste

Other Considerations (Limitations and Regulations)

Hazardous waste cannot be reused or recycled; it must be disposed of by a licensed hazardous waste hauler.

Requirements

Costs

Capital and O&M costs for these programs will vary substantially depending on the size of the facility and the types of waste handled. Costs should be low if there is an inventory program in place.

Maintenance

- None except for maintaining equipment for material tracking program.

Supplemental Information

Further Detail of the BMP

Land Treatment System

Minimize runoff of polluted stormwater from land application by:

- Choosing a site where slopes are under 6%, the soil is permeable, there is a low water table, it is located away from wetlands or marshes, and there is a closed drainage system

- Avoiding application of waste to the site when it is raining or when the ground is saturated with water
- Growing vegetation on land disposal areas to stabilize soils and reduce the volume of surface water runoff from the site
- Maintaining adequate barriers between the land application site and the receiving waters (planted strips are particularly good)
- Using erosion control techniques such as mulching and matting, filter fences, straw bales, diversion terracing, and sediment basins
- Performing routine maintenance to ensure the erosion control or site stabilization measures are working

Examples

The port of Long Beach has a state-of-the-art database for identifying potential pollutant sources, documenting facility management practices, and tracking pollutants.

References and Resources

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

Clark County Storm Water Pollution Control Manual
http://www.co.clark.wa.us/pubworks/bmpman.pdf

Solid Waste Container Best Management Practices – Fact Sheet On-Line Resources – Environmental Health and Safety. Harvard University. 2002.

King County Storm Water Pollution Control Manual http://dnr.metrokc.gov/wlr/dss/spcm.htm

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Santa Clara Valley Urban Runoff Pollution Prevention Program http://www.scvurppp.org

The Storm Water Managers Resource Center http://www.stormwatercenter.net/

Contaminated or Erodible Areas SC-40

Description

Areas within an industrial site that are bare of vegetation or are subject to activities that promote the suppression of vegetation are often subject to erosion. In addition, they may or may not be contaminated from past or current activities. If the area is temporarily bare because of construction, see SC-42, Building Repair, Remodeling, and Construction. Sites with excessive erosion or the potential for excessive erosion should consider employing the soil erosion BMPs identified in the Construction BMP Handbook. Note that this fact sheet addresses soils that are not so contaminated as to exceed hazardous waste criteria (see Title 22 California Code of Regulations for Hazardous Waste Criteria).

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Approach

Reduce potential for pollutant discharge through source control pollution prevention and BMP implementation. Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

Targeted Constituents

Sediment	✓
Nutrients	✓
Trash	
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓

Pollution Prevention

Preserve natural vegetation whenever possible. See also EC-2, Preservation of Existing Vegetation, in the Construction BMP Handbook.

Suggested Protocols

- Preserve natural vegetation.
- Analyze soil conditions.
- Re-vegetate when necessary.
- Remove contaminated soil.
- Utilize chemical stabilization when needed. See also EC-5, Soil Binders, and EC-13, Polyacrylamide, in the Construction BMP Handbook.
- Use geosynthetic membranes to control erosion if feasible. See also EC-7, Geotextiles and Mats, in the Construction BMP Handbook.

Training

Training is not a significant element of this best management practice.

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Other Considerations

- Disadvantages of preserving natural vegetation or revegetation include:
  - Requires substantial planning to preserve and maintain the existing vegetation
  - May not be cost-effective with high land costs
  - Lack of rainfall, inadequate irrigation and/or poor soils may limit the success of re-vegetated areas
- Disadvantages of chemical stabilization include:
  - Creation of impervious surfaces
  - May cause harmful effects on water quality
  - Is usually more expensive than vegetative cover

Requirements

Costs

Except for preservation of natural vegetation, each of the above solutions can be quite expensive depending upon the size of the area.

Maintenance

Maintenance should be minimal, except possibly if irrigation of vegetation is necessary.

Supplemental Information

Preserving Vegetation to Minimize Erosion

Preserving stabilized areas minimizes erosion potential, protects water quality, and provides aesthetic benefits. The most effective way to control erosion is to preserve existing vegetation. Preservation of natural vegetation provides a natural buffer zone and an opportunity for infiltration of stormwater and capture of pollutants in the soil matrix. This practice can be used as a permanent source control measure.

Vegetation preservation should be incorporated into the site. Preservation requires good site management to minimize the impact of construction when construction is underway and exposure of soils after construction. Proper maintenance is important to ensure healthy vegetation that can control erosion. Different species, soil types, and climatic conditions will require different maintenance activities such as mulching, fertilizing, liming, irrigation, pruning and weed and pest control. Maintenance should be performed regularly especially during construction phases.

The preferred approach is to leave as much native vegetation on-site as possible, thereby reducing or eliminating any erosion problem. However, assuming the site already has contaminated or erodible surface areas, there are four possible courses of action which can be taken:

- The area can be revegetated if it is not in use and therefore not subject to damage from site activities. In as much as the area is already devoid of vegetation, special measures are likely

necessary. Lack of vegetation may be due to the lack of water and/or poor soils. The latter can perhaps be solved with fertilization, or the ground may simply be too compacted from prior use. Improving soil conditions may be sufficient to support the recovery of vegetation. Use process wastewater for irrigation if possible. Finally, see the Construction BMP Handbook for further procedures on establishing vegetation.

- Chemical stabilization can be used as an alternate method in areas where temporary seeding practices cannot be used because of season or climate. It can provide immediate, effective, and inexpensive erosion control. Application rates and procedures recommended by the manufacturer should be followed as closely as possible to prevent the products from forming ponds and creating large areas where moisture cannot penetrate the soil. See also EC-5, Soil Binders, and EC-13, Polyacrylamide, in the Construction BMP Handbook for more information. Advantages of chemical stabilization include:
  - Applied easily to the surface
  - Stabilizes areas effectively
  - Provides immediate protection to soils that are in danger of erosion
- Contaminated soils can be removed, however this is a last resort and quite expensive. The level and extent of the contamination must be determined. This determination and removal must comply with State and Federal regulations, permits must be acquired and fees paid.
- Geosynthetics may be used. Geosynthetics include those materials that are designed as an impermeable barrier to contain or control large amounts of liquid or solid matter. Geosynthetics have been developed primarily for use in landfills and surface impoundments, and the technology is well established. There are two general types of geosynthetics: geomembranes (impermeable) and geotextiles (permeable). Geomembranes are composed of one of three types of impermeable materials: elastomers (rubbers), thermoplasics (plastics), or a combination of these two types of materials. See also EC-7, Geotextiles and Mats, in the Construction BMP Handbook for more information. The advantages of these materials include:
  - A variety of compounds are available
  - Sheeting is produced in a factory environment
  - Polymeric membranes are flexible
  - Installation is simple

  Disadvantages include:
  - Chemical resistance must be determined for each application
  - Seaming systems may be a weak link in the system
  - Many materials are subject to attack from biotic, mechanical, or environmental sources

Geotextiles are uncoated synthetic textile products that are not watertight. They are composed of a variety of materials, most commonly polypropylene and polyester. Geotextiles serve five basic functions:

- Filtration
- Drainage
- Separation
- Reinforcement
- Armoring

References and Resources

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

Clark County Storm Water Pollution Control Manual
http://www.co.clark.wa.us/pubworks/bmpman.pdf

King County Storm Water Pollution Control Manual http://dnr.metrokc.gov/wlr/dss/spcm.htm

Santa Clara Valley Urban Runoff Pollution Prevention Program http://www.scvurppp.org

The Storm Water Managers Resource Center http://www.stormwatercenter.net/

Drainage System Maintenance SC-44

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize

Description

As a consequence of its function, the stormwater conveyance system collects and transports urban runoff and stormwater that may contain certain pollutants. The protocols in this fact sheet are intended to reduce pollutants reaching receiving waters through proper conveyance system operation and maintenance.

Targeted Constituents

Sediment	✓
Nutrients	
Trash	✓
Metals	
Bacteria	✓
Oil and Grease	
Organics	

Approach

Pollution Prevention

Maintain catch basins, stormwater inlets, and other stormwater conveyance structures on a regular basis to remove pollutants, reduce high pollutant concentrations during the first flush of storms, prevent clogging of the downstream conveyance system, restore catch basins' sediment trapping capacity, and ensure the system functions properly hydraulically to avoid flooding.

Suggested Protocols

Catch Basins/Inlet Structures

- Staff should regularly inspect facilities to ensure compliance with the following:
  - Immediate repair of any deterioration threatening structural integrity.
  - Cleaning before the sump is 40% full. Catch basins should be cleaned as frequently as needed to meet this standard.
  - Stenciling of catch basins and inlets (see SC34 Waste Handling and Disposal).

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- Clean catch basins, storm drain inlets, and other conveyance structures before the wet season to remove sediments and debris accumulated during the summer.
- Conduct inspections more frequently during the wet season for problem areas where sediment or trash accumulates more often. Clean and repair as needed.
- Keep accurate logs of the number of catch basins cleaned.
- Store wastes collected from cleaning activities of the drainage system in appropriate containers or temporary storage sites in a manner that prevents discharge to the storm drain.
- Dewater the wastes if necessary with outflow into the sanitary sewer if permitted. Water should be treated with an appropriate filtering device prior to discharge to the sanitary sewer. If discharge to the sanitary sewer is not allowed, water should be pumped or vacuumed to a tank and properly disposed. Do not dewater near a storm drain or stream.

Storm Drain Conveyance System

- Locate reaches of storm drain with deposit problems and develop a flushing schedule that keeps the pipe clear of excessive buildup.
- Collect and pump flushed effluent to the sanitary sewer for treatment whenever possible.

Pump Stations

- Clean all storm drain pump stations prior to the wet season to remove silt and trash.
- Do not allow discharge to reach the storm drain system when cleaning a storm drain pump station or other facility.
- Conduct routine maintenance at each pump station.
- Inspect, clean, and repair as necessary all outlet structures prior to the wet season.

Open Channel

- Modify storm channel characteristics to improve channel hydraulics, increase pollutant removals, and enhance channel/creek aesthetic and habitat value.
- Conduct channel modification/improvement in accordance with existing laws. Any person, government agency, or public utility proposing an activity that will change the natural (emphasis added) state of any river, stream, or lake in California, must enter into a Steam or Lake Alteration Agreement with the Department of Fish and Game. The developer-applicant should also contact local governments (city, county, special districts), other state agencies (SWRCB, RWQCB, Department of Forestry, Department of Water Resources), and Federal Corps of Engineers and USFWS.

Illicit Connections and Discharges

- Look for evidence of illegal discharges or illicit connections during routine maintenance of conveyance system and drainage structures:
  - Is there evidence of spills such as paints, discoloring, etc?

- Are there any odors associated with the drainage system?
- Record locations of apparent illegal discharges/illicit connections?
- Track flows back to potential dischargers and conduct aboveground inspections. This can be done through visual inspection of upgradient manholes or alternate techniques including zinc chloride smoke testing, fluorometric dye testing, physical inspection testing, or television camera inspection.
- Eliminate the discharge once the origin of flow is established.

- Stencil or demarcate storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as "Dump No Waste Drains to Stream" stenciled next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.
- Refer to fact sheet SC-10 Non-Stormwater Discharges.

Illegal Dumping

- Inspect and clean up hot spots and other storm drainage areas regularly where illegal dumping and disposal occurs.
- Establish a system for tracking incidents. The system should be designed to identify the following:
  - Illegal dumping hot spots
  - Types and quantities (in some cases) of wastes
  - Patterns in time of occurrence (time of day/night, month, or year)
  - Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accidents/spills)
  - Responsible parties
- Post "No Dumping" signs in problem areas with a phone number for reporting dumping and disposal. Signs should also indicate fines and penalties for illegal dumping.
- Refer to fact sheet SC-10 Non-Stormwater Discharges.

Training

- Train crews in proper maintenance activities, including record keeping and disposal.
- Allow only properly trained individuals to handle hazardous materials/wastes.
- Have staff involved in detection and removal of illicit connections trained in the following:
  - OSHA-required Health and Safety Training (29 CFR 1910.120) plus annual refresher training (as needed).

- OSHA Confined Space Entry training (Cal-OSHA Confined Space, Title 8 and Federal OSHA 29 CFR 1910.146).
- Procedural training (field screening, sampling, smoke/dye testing, TV inspection).

Spill Response and Prevention

- Investigate all reports of spills, leaks, and/or illegal dumping promptly.
- Clean up all spills and leaks using "dry" methods (with absorbent materials and/or rags) or dig up, remove, and properly dispose of contaminated soil.
- Refer to fact sheet SC-11 Spill Prevention, Control, and Cleanup.

Other Considerations (Limitations and Regulations)

- Clean-up activities may create a slight disturbance for local aquatic species. Access to items and material on private property may be limited. Trade-offs may exist between channel hydraulics and water quality/riparian habitat. If storm channels or basins are recognized as wetlands, many activities, including maintenance, may be subject to regulation and permitting.
- Storm drain flushing is most effective in small diameter pipes (36-inch diameter pipe or less, depending on water supply and sediment collection capacity). Other considerations associated with storm drain flushing may include the availability of a water source, finding a downstream area to collect sediments, liquid/sediment disposal, and prohibition against disposal of flushed effluent to sanitary sewer in some areas.
- Regulations may include adoption of substantial penalties for illegal dumping and disposal.
- Local municipal codes may include sections prohibiting discharge of soil, debris, refuse, hazardous wastes, and other pollutants into the storm drain system.

Requirements

Costs

- An aggressive catch basin cleaning program could require a significant capital and O&M budget.
- The elimination of illegal dumping is dependent on the availability, convenience, and cost of alternative means of disposal. The primary cost is for staff time. Cost depends on how aggressively a program is implemented. Other cost considerations for an illegal dumping program include:
  - Purchase and installation of signs.
  - Rental of vehicle(s) to haul illegally-disposed items and material to landfills.
  - Rental of heavy equipment to remove larger items (e.g., car bodies) from channels.
  - Purchase of landfill space to dispose of illegally-dumped items and material.

- Methods used for illicit connection detection (smoke testing, dye testing, visual inspection, and flow monitoring) can be costly and time-consuming. Site-specific factors, such as the level of impervious area, the density and ages of buildings, and type of land use will determine the level of investigation necessary.

Maintenance

- Two-person teams may be required to clean catch basins with vactor trucks.
- Teams of at least two people plus administrative personnel are required to identify illicit discharges, depending on the complexity of the storm sewer system.
- Arrangements must be made for proper disposal of collected wastes.
- Technical staff are required to detect and investigate illegal dumping violations.

Supplemental Information

Further Detail of the BMP

Storm Drain Flushing

Flushing is a common maintenance activity used to improve pipe hydraulics and to remove pollutants in storm drainage systems. Flushing may be designed to hydraulically convey accumulated material to strategic locations, such as an open channel, another point where flushing will be initiated, or the sanitary sewer and the treatment facilities, thus preventing resuspension and overflow of a portion of the solids during storm events. Flushing prevents "plug flow" discharges of concentrated pollutant loadings and sediments. Deposits can hinder the designed conveyance capacity of the storm drain system and potentially cause backwater conditions in severe cases of clogging.

Storm drain flushing usually takes place along segments of pipe with grades that are too flat to maintain adequate velocity to keep particles in suspension. An upstream manhole is selected to place an inflatable device that temporarily plugs the pipe. Further upstream, water is pumped into the line to create a flushing wave. When the upstream reach of pipe is sufficiently full to cause a flushing wave, the inflated device is rapidly deflated with the assistance of a vacuum pump, thereby releasing the backed up water and resulting in the cleaning of the storm drain segment.

To further reduce impacts of stormwater pollution, a second inflatable device placed well downstream may be used to recollect the water after the force of the flushing wave has dissipated. A pump may then be used to transfer the water and accumulated material to the sanitary sewer for treatment. In some cases, an interceptor structure may be more practical or required to recollect the flushed waters.

It has been found that cleansing efficiency of periodic flush waves is dependent upon flush volume, flush discharge rate, sewer slope, sewer length, sewer flow rate, sewer diameter, and population density. As a rule of thumb, the length of line to be flushed should not exceed 700 feet. At this maximum recommended length, the percent removal efficiency ranges between 65-75% for organics and 55-65% for dry weather grit/inorganic material. The percent removal efficiency drops rapidly beyond that. Water is commonly supplied by a water truck, but fire hydrants can also supply water. To make the best use of water, it is recommended that reclaimed water be used or that fire hydrant line flushing coincide with storm sewer flushing.

References and Resources

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

Clark County Storm Water Pollution Control Manual
http://www.co.clark.wa.us/pubworks/bmpman.pdf

Ferguson, B.K. 1991. Urban Stream Reclamation, p. 324-322, Journal of Soil and Water Conservation.

King County Storm Water Pollution Control Manual http://dnr.metrokc.gov/wlr/dss/spcm.htm

Oregon Association of Clean Water Agencies. Oregon Municipal Stormwater Toolbox for Maintenance Practices. June 1998.

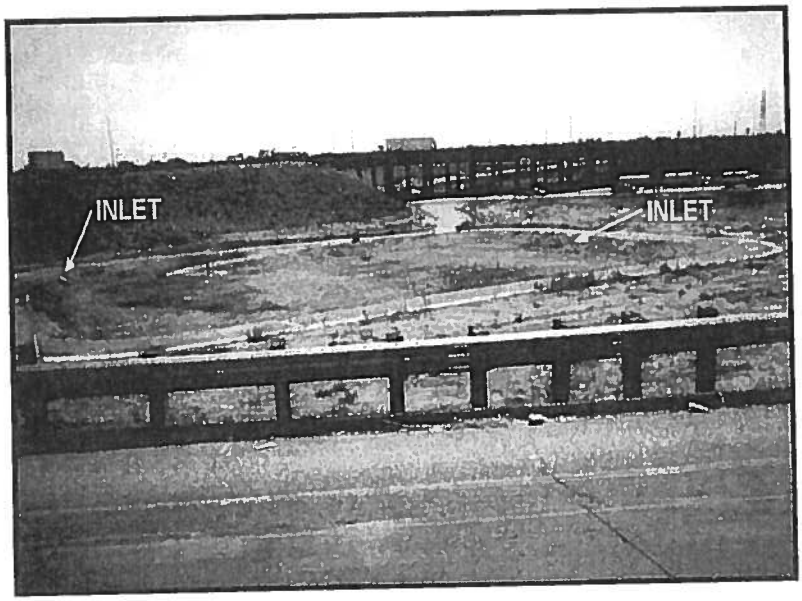
Santa Clara Valley Urban Runoff Pollution Prevention Program http://www.scvurppp.org

The Storm Water Managers Resource Center http://www.stormwatercenter.net

United States Environmental Protection Agency (USEPA). 2002. Pollution Prevention/Good Housekeeping for Municipal Operations Storm Drain System Cleaning. On line:
http://www.epa.gov/npdes/menuofbmps/poll_16.htm

Infiltration Basin

TC-11



Maintenance Concerns, Objectives, and Goals

- Vector Control
- Clogged soil or outlet structures
- Vegetation/Landscape Maintenance
- Groundwater contamination
- Accumulation of metals
- Aesthetics

Targeted Constituents

✓	Sediment	■
✓	Nutrients	■
✓	Trash	■
✓	Metals	■
✓	Bacteria	■
✓	Oil and Grease	■
✓	Organics	■

Legend *(Removal Effectiveness)*

● Low ■ High

▲ Medium

General Description

An infiltration basin is a shallow impoundment that is designed to infiltrate stormwater. Infiltration basins use the natural filtering ability of the soil to remove pollutants in stormwater runoff. Infiltration facilities store runoff until it gradually exfiltrates through the soil and eventually into the water table. This practice has high pollutant removal efficiency and can also help recharge groundwater, thus helping to maintain low flows in stream systems. Infiltration basins can be challenging to apply on many sites, however, because of soils requirements. In addition, some studies have shown relatively high failure rates compared with other management practices.

Inspection/Maintenance Considerations

Infiltration basins perform better in well-drained permeable soils. Infiltration basins in areas of low permeability can clog within a couple years, and require more frequent inspections and maintenance. The use and regular maintenance of pretreatment BMPs will significantly minimize maintenance requirements for the basin. Spill response procedures and controls should be implemented to prevent spills from reaching the infiltration system.

Scarification or other disturbance should only be performed when there are actual signs of clogging or significant loss of infiltrative capacity, rather than on a routine basis. Always remove deposited sediments before scarification, and use a hand-guided rotary tiller, if possible, or a disc harrow pulled by a light tractor. This BMP may require groundwater monitoring. Basins cannot be put into operation until the upstream tributary area is stabilized.

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Clogged infiltration basins with surface standing water can become a breeding area for mosquitoes and midges. Maintenance efforts associated with infiltration basins should include frequent inspections to ensure that water infiltrates into the subsurface completely (recommended infiltration rate of 72 hours or less) and that vegetation is carefully managed to prevent creating mosquito and other vector habitats.

Inspection Activities	Suggested Frequency
■ Observe drain time for a storm after completion or modification of the facility to confirm that the desired drain time has been obtained. ■ Newly established vegetation should be inspected several times to determine if any landscape maintenance (reseeding, irrigation, etc.) is necessary.	Post construction
■ Inspect for the following issues: differential accumulation of sediment, signs of wetness or damage to structures, erosion of the basin floor, dead or dying grass on the bottom, condition of riprap, drain time, signs of petroleum hydrocarbon contamination, standing water, trash and debris, sediment accumulation, slope stability, pretreatment device condition	Semi-annual and after extreme events
Maintenance Activities	**Suggested Frequency**
■ Factors responsible for clogging should be repaired immediately. ■ Weed once monthly during the first two growing seasons.	Post construction
■ Stabilize eroded banks. ■ Repair undercut and eroded areas at inflow and outflow structures. ■ Maintain access to the basin for regular maintenance activities. ■ Mow as appropriate for vegetative cover species. ■ Monitor health of vegetation and replace as necessary. ■ Control mosquitoes as necessary. ■ Remove litter and debris from infiltration basin area as required.	Standard maintenance (as needed)
■ Mow and remove grass clippings, litter, and debris. ■ Trim vegetation at the beginning and end of the wet season to prevent establishment of woody vegetation and for aesthetic and vector reasons. ■ Replant eroded or barren spots to prevent erosion and accumulation of sediment.	Semi-annual
■ Scrape bottom and remove sediment when accumulated sediment reduces original infiltration rate by 25-50%. Restore original cross-section and infiltration rate. Properly dispose of sediment. ■ Seed or sod to restore ground cover. ■ Disc or otherwise aerate bottom. ■ Dethatch basin bottom.	3-5 year maintenance

Additional Information

In most cases, sediment from an infiltration basin does not contain toxins at levels posing a hazardous concern. Studies to date indicate that pond sediments are generally below toxicity limits and can be safely landfilled or disposed onsite. Onsite sediment disposal is always preferable (if local authorities permit) as long as the sediments are deposited away from the shoreline to prevent their reentry into the pond and away from recreation areas, where they could possibly be ingested by young children. Sediments should be tested for toxicants in compliance with current disposal requirements if land uses in the catchment include commercial or industrial zones, or if visual or olfactory indications of pollution are noticed. Sediments containing high levels of pollutants should be disposed of properly.

Light equipment, which will not compact the underlying soil, should be used to remove the top layer of sediment. The remaining soil should be tilled and revegetated as soon as possible.

Sediment removal within the basin should be performed when the sediment is dry enough so that it is cracked and readily separates from the basin floor. This also prevents smearing of the basin floor.

References

King County, Stormwater Pollution Control Manual – Best Management Practices for Businesses. July, 1995 Available at: ftp://dnr metrokc.gov/wlr/dss/spcm/SPCM.HTM

Metropolitan Council, Urban Small Sites Best Management Practices Manual. Available at: http://www.metrocouncil.org/environment/Watershed/BMP/manual.htm

U.S. Environmental Protection Agency, Post-Construction Stormwater Management in New Development & Redevelopment BMP Factsheets. Available at: http://www.cfpub.epa.gov/npdes/stormwater/menuofbmps/bmp_files.cfm

Ventura Countywide Stormwater Quality Management Program, Technical Guidance Manual for Stormwater Quality Control Measures. July, 2002.

Extended Detention Basin TC-22

Maintenance Concerns, Objectives, and Goals

- Vector/Pest Control
- Sediment and Trash Removal
- Vegetation/Landscape Maintenance
- Re-suspension of settled material
- Clogging of the Outlet

General Description

Dry extended detention ponds (a.k.a. dry ponds, extended detention basins, detention ponds, extended detention ponds) are basins whose outlets have been designed to detain the stormwater runoff from a water quality design storm for some minimum time (e.g., 72 hours) to allow particles and associated pollutants to settle. Unlike wet ponds, these facilities do not have a large permanent pool. They can also be used to provide flood control by including additional flood detention storage.

Inspection/Maintenance Considerations

Inspections should be conducted semi-annually and after significant storm events to identify potential problems early. Most maintenance efforts will need to be directed toward vegetation management and vector control, which may focus on basic housekeeping practices such as removal of debris accumulations and vegetation management to ensure that the basin dewaters completely (recommended 72 hour residence time or less) to prevent creating mosquito and other vector habitats.

Targeted Constituents

✓	Sediment	▲
✓	Nutrients	●
✓	Trash	■
✓	Metals	▲
✓	Bacteria	▲
✓	Oil and Grease	▲
✓	Organics	▲

Legend *(Removal Effectiveness)*

● Low ■ High

▲ Medium

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Inspection Activities	Suggested Frequency
■ Inspect after several storm events for bank stability, vegetation growth, and to determine if the desired residence time has been achieved. ■ Inspect outlet structure for evidence of clogging or outflow release velocities that are greater than design flow.	Post construction
■ Inspect for the following issues: differential settlement, cracking; erosion of pond banks or bottom, leakage, or tree growth on the embankment; the condition of the riprap in the inlet, clogging of outlet and pilot channels; standing water, slope stability, presence of burrows; sediment accumulation in the basin, forebay, and outlet structures; trash and debris, and the vigor and density of the grass turf on the basin side slopes and floor.	Semi-annual, after significant storms, or more frequent
■ Inspect for the following issues: subsidence, damage to the emergency spillway; inadequacy of the inlet/outlet channel erosion control measures; changes in the condition of the pilot channel, accumulated sediment volume, and semi-annual inspection items.	Annual
■ During inspections, changes to the extended storage pond or the contributing watershed should be noted, as these may affect basin performance.	Annual inspection
Maintenance Activities	**Suggested Frequency**
■ If necessary, modify the outlet orifice to achieve design values if inspection indicates modifications are necessary. ■ Repair undercut or eroded areas. ■ Mow side slopes. ■ Manage pesticide and nutrients. ■ Remove litter and debris. ■ Control mosquitoes as necessary.	As needed
■ Remove accumulated trash and debris from the basin, around the riser pipe, side slopes, embankment, emergency spillway, and outflow trash racks. The frequency of this activity may be altered to meet specific site conditions. ■ Trim vegetation at the beginning and end of the wet season to prevent establishment of woody vegetation and for aesthetic and vector reasons.	Semi-annual, or more frequent, as needed
■ Seed or sod to restore dead or damaged ground cover. ■ Repair erosion to banks and bottom as required.	Annual maintenance (as needed)
■ Supplement wetland plants if a significant portion have not been established (at least 50% of the surface area). ■ Remove nuisance plant species.	Annual maintenance (if needed)
■ Remove sediment from the forebay to reduce frequency of main basin cleaning.	3- to 5-year maintenance
■ Monitor sediment accumulation and remove accumulated sediment and regrade about every 10 years or when the accumulated sediment volume exceeds 10-20% of the basin volume, or when accumulation reaches 6 inches or if resuspension is observed. Clean in early spring so vegetation damaged during cleaning has time to re-establish.	Every 10-25 years

Additional Information

In most cases, sediment from extended detention basin does not contain toxins at levels posing a hazardous concern. Studies to date indicate that pond sediments are likely to meet toxicity limits and can be safely landfilled or disposed of onsite. Onsite sediment disposal is always preferable (if local authorities permit it) as long as the sediments are deposited away from the shoreline to prevent their re-entry into the pond.

Sediments should be tested for toxin in compliance with current disposal requirements if land uses in the catchment include commercial or industrial zones, or if visual or olfactory indications of pollution are noticed.

References

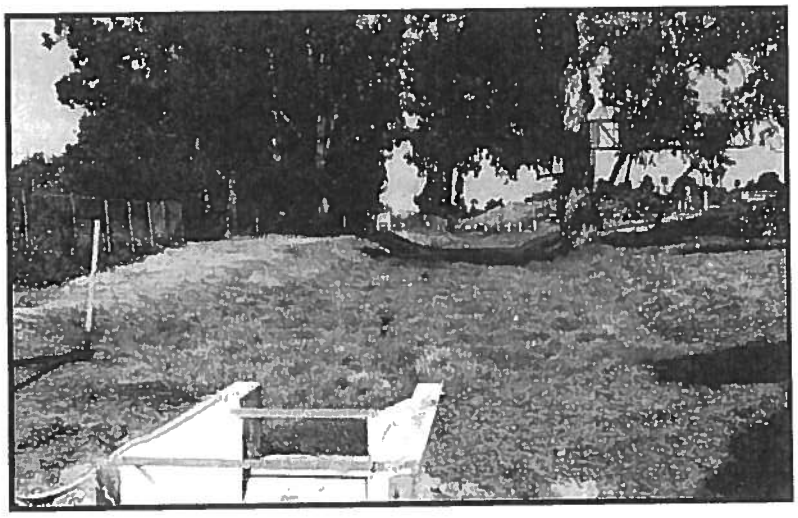
Metropolitan Council, Urban Small Sites Best Management Practices Manual. Available at: http://www.metrocouncil.org/environment/Watershed/BMP/manual.htm

U.S. Environmental Protection Agency, Post-Construction Stormwater Management in New Development & Redevelopment BMP Factsheets. Available at: cfpub.epa.gov/npdes/stormwater/menuofbmps/bmp_files.cfm

Ventura Countywide Stormwater Quality Management Program, Technical Guidance Manual for Stormwater Quality Control Measures. July, 2002.

Vegetated Swale

TC-30



Maintenance Concerns, Objectives, and Goals

- Channelization
- Vegetation/Landscape Maintenance
- Vector Control
- Aesthetics
- Hydraulic and Removal Efficacy

General Description

Vegetated swales are open, shallow channels with vegetation covering the side slopes and bottom that collect and slowly convey runoff flow to downstream discharge points. They are designed to treat runoff through filtering by the vegetation in the channel, filtering through a subsoil matrix, and/or infiltration into the underlying soils. Swales can be natural or manmade. They trap particulate pollutants (suspended solids and trace metals), promote infiltration, and reduce the flow velocity of stormwater runoff. Vegetated swales can serve as part of a stormwater drainage system and can replace curbs, gutters and storm sewer systems. Therefore, swales are best suited for residential, industrial, and commercial areas with low flow and smaller populations.

Targeted Constituents

✓	Sediment	▲
✓	Nutrients	●
✓	Trash	●
✓	Metals	▲
✓	Bacteria	●
✓	Oil and Grease	▲
✓	Organics	▲

Legend *(Removal Effectiveness)*

● Low ■ High

▲ Medium

Inspection/Maintenance Considerations

It is important to consider that a thick vegetative cover is needed for vegetated swales to function properly. Usually, swales require little more than normal landscape maintenance activities such as irrigation and mowing to maintain pollutant removal efficiency. Swales can become a nuisance due to mosquito breeding in standing water if obstructions develop (e.g., debris accumulation, invasive vegetation) and/or if proper drainage slopes are not implemented and maintained. The application of fertilizers and pesticides should be minimized.

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Inspection Activities	Suggested Frequency
■ Inspect after seeding and after first major storms for any damages.	Post construction
■ Inspect for signs of erosion, damage to vegetation, channelization of flow, debris and litter, and areas of sediment accumulation. Perform inspections at the beginning and end of the wet season. Additional inspections after periods of heavy runoff are desirable.	Semi-annual
■ Inspect level spreader for clogging, grass along side slopes for erosion and formation of rills or gullies, and sand/soil bed for erosion problems.	Annual
Maintenance Activities	**Suggested Frequency**
■ Mow grass to maintain a height of 3–4 inches, for safety, aesthetic, or other purposes. Litter should always be removed prior to mowing. Clippings should be composted. ■ Irrigate swale during dry season (April through October) or when necessary to maintain the vegetation. ■ Provide weed control, if necessary to control invasive species.	As needed (frequent, seasonally)
■ Remove litter, branches, rocks blockages, and other debris and dispose of properly. ■ Maintain inlet flow spreader (if applicable). ■ Repair any damaged areas within a channel identified during inspections. Erosion rills or gullies should be corrected as needed. Bare areas should be replanted as necessary.	Semi-annual
■ Declog the pea gravel diaphragm, if necessary. ■ Correct erosion problems in the sand/soil bed of dry swales. ■ Plant an alternative grass species if the original grass cover has not been successfully established. Reseed and apply mulch to damaged areas.	Annual (as needed)
■ Remove all accumulated sediment that may obstruct flow through the swale. Sediment accumulating near culverts and in channels should be removed when it builds up to 3 in. at any spot, or covers vegetation, or once it has accumulated to 10% of the original design volume. Replace the grass areas damaged in the process. ■ Rototill or cultivate the surface of the sand/soil bed of dry swales if the swale does not draw down within 48 hours.	As needed (infrequent)

Additional Information

Recent research (Colwell et al., 2000) indicates that grass height and mowing frequency have little impact on pollutant removal. Consequently, mowing may only be necessary once or twice a year for safety or aesthetics or to suppress weeds and woody vegetation.

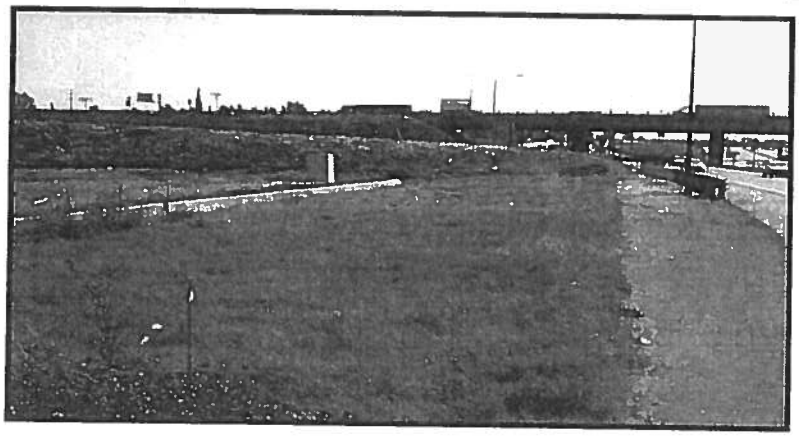
References

Metropolitan Council, Urban Small Sites Best Management Practices Manual. Available at: http://www.metrocouncil.org/environment/Watershed/BMP/manual.htm

U.S. Environmental Protection Agency, Post-Construction Stormwater Management in New Development & Redevelopment BMP Factsheets. Available at: cfpub.epa.gov/npdes/stormwater/menuofbmps/bmp_files.cfm

Ventura Countywide Stormwater Quality Management Program, Technical Guidance Manual for Stormwater Quality Control Measures. July, 2002.

Vegetated Buffer Strip TC-31



Maintenance Concerns, Objectives, and Goals

- Clogged Soil or Outlet Structures
- Invasive Species Management
- Vegetation/Landscape Maintenance
- Erosion
- Channelization of Flow
- Aesthetics

General Description

Grassed buffer strips (vegetated filter strips, filter strips, and grassed filters) are vegetated surfaces that are designed to treat sheet flow from adjacent surfaces. Filter strips function by slowing runoff velocities and allowing sediment and other pollutants to settle and by providing some infiltration into underlying soils. Filter strips were originally used as an agricultural treatment practice and have more recently evolved into an urban practice. With proper design and maintenance, filter strips can provide relatively high pollutant removal. In addition, the public views them as landscaped amenities and not as stormwater infrastructure. Consequently, there is little resistance to their use.

Targeted Constituents

✓	Sediment	■
✓	Nutrients	●
✓	Trash	▲
✓	Metals	■
✓	Bacteria	●
✓	Oil and Grease	■
✓	Organics	▲

Legend *(Removal Effectiveness)*

● Low ■ High

▲ Medium

Inspection/Maintenance Considerations

Vegetated buffer strips require frequent landscape maintenance. In many cases, vegetated buffer strips initially require intense maintenance, but less maintenance is needed over time. In many cases, maintenance tasks can be completed by a landscaping contractor. Maintenance requirements typically include grass or shrub-growing activities such as irrigation, mowing, trimming, removal of invasive species, and replanting when necessary. Buffer strips require more tending as the volume of sediment increases. Vegetated buffer strips can become a nuisance due to mosquito breeding in level spreaders (unless designed to dewater completely in 72 hours or less) and/or if proper drainage slopes are not maintained.

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Inspection Activities	Suggested Frequency
■ Once the vegetated buffer strip is established, inspect at least three times per year. Repair all damage immediately. ■ Inspect buffer strips after seeding and repair as needed.	Post construction
■ Inspect buffer strip and repair all damage immediately. ■ Inspect soil and repair eroded areas.	After major storms
■ Inspect for erosion or damage to vegetation, preferably at the end of the wet season to schedule summer maintenance and before major fall runoff to be sure the strips are ready for winter. However, additional inspection after periods of heavy runoff is desirable. ■ Inspect pea-gravel diaphragm/level spreader for clogging and effectiveness and remove built-up sediment. ■ Inspect for rolls and gullies. Immediately fill with topsoil, install erosion control blanket and seed or sod. ■ Inspect to ensure grass is well established. If not, either prepare soil and reseed or replace with alternative species. Install erosion control blanket. ■ Check for debris and litter, and areas of sediment accumulation.	Semi-annual

Maintenance Activities	Suggested Frequency
■ Water plants daily for 2 weeks after construction.	Post construction
■ Mow regularly to maintain vegetation height between 2 - 4 inches, and to promote thick, dense vegetative growth. Cut only when soil is dry to prevent tracking damage to vegetation, soil compaction and flow concentrations. Clippings are to be removed immediately after mowing. ■ Remove all litter, branches, rocks, or other debris. Damaged areas of the filter strip should be repaired immediately by reseeding and applying mulch. ■ Regularly maintain inlet flow spreader. ■ Irrigate during dry season (April through October) when necessary to maintain the vegetation.	Frequently, as needed
■ Remulch void areas. ■ Treat diseased trees and shrubs, remove dead vegetation.	Semi-annual
■ Remove sediment and replant in areas of buildup. Sediment accumulating near culverts and in channels should be removed when it builds up to 3 in. at any spot, or covers vegetation. ■ Limit fertilizer applications based on plant vigor and soil test results. ■ Rework or replant buffer strip if concentrated flow erodes a channel through the strip.	Annual

Additional Information

Recent research (Colwell et al., 2000) indicates that grass height and mowing frequency have little impact on pollutant removal. Consequently, mowing may only be necessary once or twice a year for safety or aesthetics or to suppress weeds and woody vegetation.

Trash tends to accumulate in swale areas, particularly along highways. The need for litter removal is determined through periodic inspection, but litter should always be removed prior to mowing.

References

Metropolitan Council, Urban Small Sites Best Management Practices Manual. Available at: http://www.metrocouncil.org/environment/Watershed/BMP/manual.htm

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BACKGROUND

In 1972, the Federal Water Pollution Control Act (also referred to as the Clean Water Act [CWA]) was amended to provide that the discharge of pollutants to waters of the United States from any point source is effectively prohibited unless the discharge is in compliance with an NPDES permit. The 1987 amendments to the CWA added Section 402(p) that establishes a framework for regulating municipal and industrial storm water discharges under the NPDES Program. On November 16, 1990, the U.S. Environmental Protection Agency (U.S. EPA) published final regulations that establish application requirements for storm water permits. The regulations require that storm water associated with industrial activity (storm water) that discharges either directly to surface waters or indirectly through municipal separate storm sewers must be regulated by an NPDES permit.

U.S. EPA developed a four-tier permit issuance strategy for storm water discharges associated with industrial activity as follows:

Tier I, Baseline Permitting--One or more general permits will be developed to initially cover the majority of storm water discharges associated with industrial activity.

Tier II, Watershed Permitting--Facilities within watersheds shown to be adversely impacted by storm water discharges associated with industrial activity will be targeted for individual or watershed-specific general permits.

Tier III, Industry-Specific Permitting--Specific industry categories will be targeted for individual or Industry-specific general permits.

Tier IV, Facility-Specific Permitting--A variety of factors will be used to target specific facilities for individual permits.

The regulations allow authorized states to issue general permits or individual permits to regulate storm water discharges.

Consistent with Tier I, Baseline Permitting, of the U.S. EPA permitting strategy, the State Water Board issued a statewide General Permit on November 19, 1991 that applied to all storm water discharges requiring a permit except construction activity. The monitoring requirements of this General Permit were amended September 17, 1992. A separate statewide general permit has been issued for construction activity.

To obtain authorization for continued and future storm water discharge under this General Permit, each facility operator must submit a Notice of Intent (NOI). This approach is consistent with the four-tier permitting strategy described in Federal regulations, i.e., Tier 1, Baseline Permitting. Tier 1, Baseline Permitting, enables the State to begin reducing pollutants in industrial storm water in the most efficient manner possible.

This General Permit generally requires facility operators to:

1. Eliminate unauthorized non-storm water discharges;
2. Develop and implement a storm water pollution prevention plan (SWPPP); and
3. Perform monitoring of storm water discharges and authorized non-storm water discharges.

TYPES OF STORM WATER DISCHARGES COVERED BY THIS GENERAL PERMIT

This General Permit is intended to cover all new or existing storm water discharges and authorized non-storm water discharges from facilities required by Federal regulations to obtain a permit including those (1) facilities previously covered by the San Francisco Bay Regional Water Quality Control Board Order No. 92-011 (as amended by Order No. 92-116), (2) facilities designated by the Regional Water Quality Control Boards (Regional Water Boards), (3) facilities whose operators seek coverage under this General Permit, (4) and facilities required by future U.S. EPA storm water regulations.

The General Permit is intended to cover all facilities described in Attachment 1, whether the facility is primary or is auxiliary to the facility operator's function. For example, although a school district's primary function is education, a facility that it operates for vehicle maintenance of school buses is a transportation facility that is covered by this General Permit.

The definition of "storm water associated with industrial activity" is provided in Attachment 4, Definition 9, of this General Permit. Facilities that discharge storm water associated with industrial activity requiring a General Permit are listed by category in 40 Code of Federal Regulations (CFR) Section 122.26(b)(14) (Federal Register, Volume 55 on

Pages 48065-66) and in Attachment 1 of this General Permit. The facilities can be publicly or privately owned. General descriptions of these categories are:

1. Facilities subject to storm water effluent limitations guidelines, new source performance standards, or toxic pollutant effluent standards (40 CFR Subchapter N);

2. Manufacturing facilities;

3. Mining/oil and gas facilities;

4. Hazardous waste treatment, storage, or disposal facilities;

5. Landfills, land application sites, and open dumps that receive industrial waste;

6. Recycling facilities such as metal scrap yards, battery reclaimers, salvage yards, automobile yards;

7. Steam electric generating facilities;

8. Transportation facilities that conduct any type of vehicle maintenance such as fueling, cleaning, repairing, etc.;

9. Sewage treatment plants;

10. Construction activity (covered by a separate general permit); and

11. Certain facilities (often referred to as "light industry") where industrial materials, equipment, or activities are exposed to storm water.

For the most part, these facilities are identified in the Federal regulations by a Standard Industrial Classification (SIC).

Category 1 Dischargers

The following categories of facilities currently have storm water effluent limitation guidelines for at least one of their subcategories. They are cement manufacturing (40 CFR Part 411); feedlots (40 CFR Part 412); fertilizer manufacturing (40 CFR Part 418); petroleum refining (40 CFR Part 419); phosphate manufacturing (40 CFR Part 422); steam electric power generation (40 CFR Part 423); coal mining (40 CFR Part 434); mineral mining and processing (40 CFR Part 436); ore mining and dressing (40 CFR Part 440); and asphalt emulsion (40 CFR Part 443). A facility operator whose facility falls into one of these general categories should examine the effluent guidelines to determine if the facility is categorized in one of the subcategories that have storm water effluent guidelines. If

a facility is classified as one of those subcategories, that facility is subject to the standards listed in the CFR for that category and is subject to this General Permit. This General Permit contains additional requirements (see Section B.6.) for facilities with storm water effluent limitations guidelines.

Category 5 Dischargers

Inactive or closed landfills, land application sites, and open dumps that have received industrial wastes (Category 5) may be subject to this General Permit unless the storm water discharges from the sites are already regulated by an NPDES permit issued by the appropriate Regional Water Board. Facility operators of closed landfills that are regulated by waste discharge requirements (WDRs) may be required to comply with this General Permit. In some cases, it may be appropriate for closed landfills to be covered by the State Water Board's General Permit during closure activities. The Construction Activities General Permit should cover new landfill construction. Facility operators should contact their Regional Water Board to determine the appropriate permit coverage.

Category 10 Dischargers

Facility operators of Category 10 (light industry) facilities are not subject to this General Permit if they can certify that the following minimum conditions at their facilities are met:

1. All prohibited non-storm water discharges have been eliminated or otherwise permitted.

2. All areas of past exposure have been inspected and cleaned, as appropriate.

3. All materials related to industrial activity (including waste materials) are not exposed to storm water or authorized non-storm water discharges.

4. All industrial activities and industrial equipment are not exposed to storm water or authorized non-storm water discharges.

5. There is no exposure of materials associated with industrial activity through other direct or indirect pathways such as particulates from stacks and exhaust systems.

6. There is periodic re-evaluation of the facility to ensure Conditions 1, 3, 4, and 5 are continuously met.

Currently, facility operators that can certify that the above conditions are met are not required to notify the State Water

Board or Regional Water Board. These facility operators are advised to retain such certification documentation on site.

The Ninth Circuit Court of Appeals invalidated the exemption granted by U.S. EPA for storm water discharges from facilities in Category 11 that do not have exposure and remanded the regulation to U.S. EPA for further action. The State Water Board, at this time, is not requiring storm water discharges from facilities in Category 11 that do not have exposure to be covered by this General Permit. Instead, the State Water Board will await future U.S. EPA or court action clarifying the types of storm water discharges that must be permitted. If necessary, the State Water Board will reopen the General Permit to accommodate such a clarification.

Section 1068 of the Intermodal Surface Transportation Act of 1991 exempts municipal agencies serving populations of less than 100,000 from Phase I permit requirements for most facilities they operate (uncontrolled sanitary landfills, power plants, and airports are still required to be permitted in Phase I). Phase II of the Permit Program scheduled to begin August 7, 2001 will cover the facilities that are exempt from Phase I permit requirements.

TYPES OF DISCHARGES NOT COVERED BY THIS GENERAL PERMIT

1. CONSTRUCTION ACTIVITY: Discharges from construction activity of five acres or more, including clearing, grading, and excavation. A separate general permit was adopted on August 20, 1992 for this industrial category.

2. FACILITIES WHICH HAVE NPDES PERMITS CONTAINING STORM WATER PROVISIONS: Some storm water discharges may be regulated by other individual or general NPDES permits issued by the State Water Board or the Regional Water Boards. This General Permit shall not regulate these discharges. When the individual or general NPDES permits for such discharges expire, the State Water Board or Regional Water Board may authorize coverage under this General Permit or another general NPDES permit, or may issue a new individual NPDES permit consistent with the Federal and State storm water regulations. Interested parties may petition the State Water Board or appropriate Regional Water Board to issue individual or General NPDES Permits. General Permits may be issued for a particular industrial group or watershed area.

3. FACILITIES DETERMINED INELIGIBLE BY REGIONAL WATER BOARDS: Regional Water Boards may determine that discharges from a facility or groups of facilities, otherwise eligible for coverage under this General Permit, have potential water quality impacts that may not be appropriately addressed by

this General Permit. In such cases, a Regional Water Board may require such discharges to be covered by an individual or general NPDES permit. Interested persons may petition the appropriate Regional Water Board to issue individual NPDES permits. The applicability of this General Permit to such discharges will be terminated upon adoption of an individual NPDES permit or a different general NPDES permit.

4. FACILITIES WHICH DO NOT DISCHARGE STORM WATER TO WATERS OF THE UNITED STATES: The discharges from the following facilities are not required to be permitted:

   a. FACILITIES THAT DISCHARGE STORM WATER TO MUNICIPAL SANITARY SEWER SYSTEMS: Facilities that discharge storm water to municipal sanitary sewer systems or combined sewer systems are not required by Federal regulations to be covered by an NPDES storm water permit or to submit an NOI to comply with this General Permit. (It should be noted that many municipalities have sewer use ordinances that prohibit storm drain connections to their sanitary sewers.)

   b. FACILITIES THAT DO NOT DISCHARGE STORM WATER TO SURFACE WATERS OR SEPARATE STORM SEWERS: Storm water that is captured and treated and/or disposed of with the facility's NPDES permitted process wastewater and storm water that is disposed of to evaporation ponds, percolation ponds, or combined sewer systems are not required to obtain a storm water permit. To avoid liability, the facility operator should be certain that no discharge of storm water to surface waters would occur under any circumstances.

5. MOST SILVICULTURAL ACTIVITIES: Storm water discharges from most silvicultural activities such as thinning, harvesting operations, surface drainage, or road construction and maintenance are exempt from this permit. Log sorting or log storage facilities that fall within SIC 2411 are required to be permitted.

6. MINING AND OIL AND GAS FACILITIES: Oil and gas facilities that have not released storm water resulting in a discharge of a reportable quantity (RQ) for which notification is or was required pursuant to 40 CFR Parts 110, 117, and 302 at any time after November 19, 1987 are not required to be permitted unless the industrial storm water discharge contributed to a violation of a water quality standard. Mining facilities that discharge storm water that does not come into contact with any overburden, raw materials, intermediate product, finished product, by-product, or waste product located at the facility are not required to be permitted. These facilities must be permitted if they have a new release of storm water resulting in a discharge of an RQ.

7. FACILITIES ON INDIAN LANDS: the U.S. EPA will regulate Discharges from facilities on Indian lands.

NOTIFICATION REQUIREMENTS

Storm water discharges from facilities described in the section titled "Types of Storm Water Discharges Covered by This General Permit" must be covered by an NPDES permit. An NOI must be submitted by the facility operator for each individual facility to obtain coverage. Certification of the NOI signifies that the facility operator intends to comply with the provisions of the General Permit. Facility operators who have filed NOIs for the State Water Board Order No. 91-013-DWQ (as amended by Order No. 92-12-DWQ) or San Francisco Bay Regional Water Board Order No. 92-011 (as amended by Order No. 92-116) will be sent an abbreviated NOI soon after adopting this General Permit that must be completed and returned within 45 days of receipt. Where operations have discontinued and significant materials remain on site (such as at closed landfills), the landowner may be responsible for filing an NOI and complying with this General Permit. A landowner may also file an NOI for a facility if the landowner, rather than the facility operator(s), is responsible for compliance with this General Permit.

A facility operator that does not submit an NOI for a facility must submit an application for an individual NPDES permit. U.S. EPA's regulations [40 CFR 122.21 (a)] exclude facility operators covered by a general permit from requirements to submit an individual permit application unless required by the Regional Water Board. The NOI requirements of this General Permit are intended to establish a mechanism which can be used to establish a clear accounting of the number of facility operators complying with the General Permit, their identities, the nature of operations at the facilities, and location.

All facility operators filing an NOI after the adoption of this General Permit must comply with this General Permit. Existing facility operators who have filed NOIs prior to the adoption of this General Permit shall continue to complete the requirements of the previous General Permit through June 30, 1997 including submitting annual reports to the Regional Water Boards by July 1, 1997. Group Leaders are required to submit a 1996-97 Group Evaluation Report by August 1, 1997.

DESCRIPTION OF GENERAL PERMIT CONDITIONS

Prohibitions

This General Permit authorizes storm water and authorized non-storm water discharges from facilities that are required to be covered by a storm water permit. This General Permit prohibits discharges of material other than storm water (non-storm water discharges) that are not authorized by the General Permit and discharges containing hazardous substances in storm water in excess of reportable quantities established at 40 CFR 117.3 and 40 CFR 302.4. Authorized non-storm water discharges are addressed in the Special Conditions of the General Permit.

Effluent Limitations

NPDES Permits for storm water discharges must meet all applicable provisions of Sections 301 and 402 of the CWA. These provisions require control of pollutant discharges using best available technology economically achievable (BAT) and best conventional pollutant control technology (BCT) to prevent and reduce pollutants and any more stringent controls necessary to meet water quality standards.

U.S. EPA regulations (40 CFR Subchapter N) establish effluent limitation guidelines for storm water discharges from facilities in ten industrial categories. For these facilities, compliance with the effluent limitation guidelines constitutes compliance with BAT and BCT for the specified pollutants and must be met to comply with this General Permit.

For storm water discharges from facilities not among the ten industrial categories listed in 40 CFR Subchapter N, it is not feasible at this time to establish numeric effluent limitations. The reasons why establishment of numeric effluent limitations is not feasible are discussed in detail in State Water Board Orders No. WQ 91-03 and WQ 91-04. Therefore, this General Permit allows the facility operator to implement best management practices (BMPs) to comply with the requirements of this General Permit. This approach is consistent with the U.S. EPA's August 1, 1996 "Interim Permitting Approach for Water Quality Based Effluent Limitations in Storm Water Permits".

Receiving Water Limitations

Storm water discharges shall not cause or contribute to a violation of an applicable water quality standard. The General Permit requires facility operators to reduce or prevent pollutants in storm water discharges and authorized non-storm water discharges through the development and implementation of BMPs which constitutes compliance with BAT and BCT and, in most cases, compliance with water quality standards. If receiving water quality standards are exceeded, facility operators are required to submit a written report providing additional BMPs that will be implemented to achieve water quality standards.

Storm Water Pollution Prevention Plans (SWPPPs)

All facility operators must prepare, retain on site, and implement an SWPPP. The SWPPP has two major objectives: (1) to help identify the sources of pollution that affect the quality of industrial storm water discharges and authorized non-storm water discharges, and (2) to describe and ensure the implementation of BMPs to reduce or prevent pollutants in industrial storm water discharges and authorized non-storm water discharges.

This General Permit requires development and implementation of an SWPPP emphasizing BMPs. This approach provides the flexibility necessary to establish appropriate BMPs for different types of industrial activities and pollutant sources. As this General Permit covers vastly different types of facilities, the State Water Board recognizes that there is no single best way of developing or organizing an SWPPP. The SWPPP requirements contain the essential elements that all facility operators must consider and address in the SWPPP. This General Permit's SWPPP requirements are more detailed than the previous general permit's SWPPP requirements, and the suggested order of the SWPPP elements have been rearranged (1) to correspond more closely with other storm water permits in effect throughout the country, and (2) to generally follow a more logical path. Facility operators that have already developed and implemented SWPPPs under previous general permits are required to review the SWPPP's requirements contained in this General Permit and then review their existing SWPPP for adequacy. If the existing SWPPP adequately identifies and assesses all potential sources of pollutants and describes the appropriate BMPs necessary to reduce or prevent pollutants, the facility operator is not required to revise the existing SWPPP.

One of the major elements of the SWPPP is the elimination of unauthorized non-storm water discharges to the facility's storm drain system. Unauthorized non-storm water discharges can be generated from a wide variety of potential pollutant sources. They include waters from the rinsing or washing of vehicles, equipment, buildings, or pavement; materials that have been improperly disposed of or dumped, and spilled; or leaked materials. Unauthorized non-storm water discharges can contribute a significant pollutant load to receiving waters. Measures to control spills, leakage, and dumping can often be addressed through BMPs. Unauthorized non-storm water discharges may enter the storm drain system via conveyances such as floor drains. All conveyances should be evaluated to determine whether they convey unauthorized non-storm water discharges to the storm drain system. Unauthorized non-storm water discharges (even when commingled with storm water) shall be eliminated or covered by a separate NPDES Permit.

There are many non-storm water discharges that, under certain conditions, should not contain pollutants associated with

industrial activity (i.e., air conditioning condensate, potable water line testing, landscaping overflow, etc.). Item D, Special Conditions, provides the conditions where certain listed non-storm water discharges are authorized by this General Permit.

Monitoring Program

The General Permit requires development and implementation of a monitoring program. The objectives of the monitoring program are to (1) demonstrate compliance with the General Permit, (2) aid in the implementation of the SWPPP, and (3) measure the effectiveness of the BMPs in reducing or preventing pollutants in storm water discharges and authorized non-storm water discharges.

All facility operators (with the exception of inactive mining operations) are required to:

1. Perform visual observations of storm water discharges and authorized storm water discharges.

2. Collect and analyze samples of storm water discharges. Analysis must include pH, total suspended solids (TSS), total organic carbon (TOC), specific conductance, toxic chemicals, and other pollutants which are likely to be present in storm water discharges in significant quantities, and those parameters listed in Table D of this General Permit. The Table D parameters are those listed in the U.S. EPA Multi-Sector General Permit. Facility operators subject to Federal storm water effluent limitation guidelines in 40 CFR Subchapter N must also sample and analyze for any pollutant specified in the appropriate category of 40 CFR Subchapter N.

Facility operators are not required to collect samples or perform visual observations during adverse climatic conditions. Sample collection and visual observations are required only during scheduled facility operating hours. Visual observations are required only during daylight hours. Facility operators that are unable to collect any of the required samples or visual observations because of the above circumstances must provide documentation to the Regional Water Board in their annual report.

Facility operators may be exempt from performing sampling and analysis if they: (1) do not have areas of industrial activity exposed to storm water, (2) receive an exemption from a local agency which has jurisdiction over the storm sewer system, or (3) receive an exemption from the appropriate Regional Water Board. Facility operators must always perform sampling and analysis for any pollutant specified in storm water effluent limitation guidelines.

This General Permit contains a new procedure where facility operators, if they meet certain minimum conditions, may certify compliance with the General Permit and reduce the number of

sampling events required to be sampled for the remaining term of the General Permit. Each Regional Water Board may develop instructions, guidance, and checklists to assist facility operators to complete sampling reduction requests.

Local agencies that wish to provide sampling and analysis exemptions or reductions to facility operators within their jurisdiction shall develop a certification program that clearly indicates the certification procedures and criteria used by the local agency. At a minimum, these programs should include site inspections, a review of the facility operator's SWPPP, and a review of other records such as monitoring data, receiving water data, etc. The certification program shall be approved by the local Regional Water Board before implementation.

Alternative Monitoring

Facility operators are required to develop a facility-specific monitoring program that satisfies both the minimum monitoring program requirements and the objectives of the monitoring program. Some facility operators have indicated that cost-effective alternative monitoring programs can be developed that provide equivalent or more accurate indicators of pollutants and/or BMP performance than a monitoring program based upon the minimum monitoring program requirements. An example of such an alternative monitoring program would be one that identifies sample locations at or near pollutant sources rather than sampling an entire drainage area where the storm water discharge has been diluted with storm water from areas with little or no industrial activity.

The State Water Board does not want to preclude facility operators from developing better, and perhaps more cost-effective, monitoring programs. This General Permit allows facility operators to submit alternative monitoring programs for approval by the Regional Water Board. For individual facilities, these proposals must be facility specific and demonstrate how the alternative monitoring program will result in an equivalent or more accurate indicator of pollutants and/or BMP effectiveness. Facility operators with similar industrial activities may also propose alternative monitoring programs for approval by the Regional Water Boards. These proposals must demonstrate how the alternative monitoring program will result in an equivalent or more accurate indicator of pollutants and/or BMP effectiveness for all of the participating facilities.

Facility operators shall continue to comply with the existing monitoring program requirements until receiving approval by the Regional Water Board.

Group Monitoring

Each facility operator may either perform sampling and analysis individually or participate in a group monitoring program. A group monitoring program may be developed either by a group leader representing a group of similar facilities or by a local agency which holds a storm water permit for a municipal separate storm sewer system for industrial facilities within its jurisdiction. The group leader or local agency responsible for the group monitoring program must schedule all participating facilities to sample two storm events over the life of this General Permit. Facility operators subject to Federal effluent limitations guidelines in 40 CFR Subchapter N must individually sample and analyze for pollutants listed in the appropriate Federal regulations.

Participants within a group may be located within the jurisdiction of more than one Regional Water Board. Multi-Regional Water Board groups must receive the approval of the State Water Board Executive Director (with the concurrence of the appropriate Regional Water Boards).

Each group leader or local agency responsible for group sampling must: (1) provide guidance or training so that the monitoring is done correctly, (2) recommend appropriate BMPs to reduce or prevent pollutants in storm water discharges and authorized non-storm water discharges from group participants, (3) evaluate and report the monitoring data to the State Water Board and/or the appropriate Regional Water Board(s), and (4) conduct two on-site inspections at each facility over the five year term of this General Permit to evaluate facility compliance and recommend BMPs to achieve compliance with this General Permit. The group leader or local agency may designate, hire, or train inspectors to conduct these inspections that are or are not directly affiliated with the group leader or local agency. It is the group leader's or local agency's responsibility to select inspectors that are capable of evaluating each facility's compliance with the General Permit and can recommend appropriate BMPs. All group monitoring plans are subject to State Water Board and/or Regional Water Board(s) review. Consistent with the four-tier permitting strategy described in the Federal regulations, the Regional Water Board(s) may evaluate the data and results from group monitoring to establish future permitting decisions. As appropriate, the State Water Board and/or the Regional Water Board(s) may terminate or require substantial amendment to the group monitoring plans. The State Water Board and/or the Regional Water Board(s) may terminate a facility's participation in group monitoring or require additional monitoring activities.

Retention of Records

The facility operator is required to retain records of all monitoring information, copies of all reports required by this General Permit, and records of all data used to complete the NOI for a period of five years from the date of measurement, report, or monitoring activity. This period may be extended by the State and/or Regional Water Boards. All records are public documents and must be provided to the Regional Water Boards on request.

Watershed Management

The State and Regional Water Boards are undertaking a focussed effort in watershed management throughout the State. In reissuing this General Permit, the State Water Board recognizes both the evolving nature of watershed management and the long-term desirability of structuring monitoring programs to support the Watershed Management Initiative. Therefore, the amended monitoring and reporting provisions provide flexibility for individual facility operators or groups of facility operators to propose and participate in, subject to Regional Water Board approval, watershed monitoring programs in lieu of some or all of the monitoring requirements contained in this General Permit.

Facility Operator Compliance Responsibilities

This General Permit has been written to encourage individual facility operators to develop their own SWPPP and monitoring programs. Many facility operators, however, choose to obtain compliance assistance either by hiring a consultant on an individual basis or by participating in a group monitoring plan. Regardless of how a facility operator chooses to pursue compliance, it is the facility operator that is responsible for compliance with this General Permit.

The State Water Board recognizes that industrial activities and operating conditions at many facilities change over time. In addition, new and more effective BMPs are being developed by various facility operators and by industrial groups. The SWPPP and monitoring program requirements include various inspections, reviews, and observations all of which recognize, encourage, and mandate an iterative self-evaluation process that is necessary to consistently comply with this General Permit. In general, facility operators that develop and implement SWPPPs that comply with this General Permit should not be penalized when discovering minor violations through this iterative self-evaluation process. The General Permit provides facility operators up to 90 days to revise and implement the SWPPP to correct such violations.

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WASTE DISCHARGE REQUIREMENTS (WDRS)
FOR
DISCHARGES OF STORM WATER ASSOCIATED WITH INDUSTRIAL ACTIVITIES
EXCLUDING CONSTRUCTION ACTIVITIES

The State Water Board finds that:

1. Federal regulations for storm water discharges were issued by the U.S. Environmental Protection Agency (U.S. EPA) on November 16, 1990 (40 Code of Federal Regulations [CFR] Parts 122, 123, and 124). The regulations require operators of specific categories of facilities where discharges of storm water associated with industrial activity (storm water) occur to obtain an NPDES permit and to implement Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT) to reduce or prevent pollutants associated with industrial activity in storm water discharges and authorized non-storm discharges.

2. This General Permit shall regulate storm water discharges and authorized non-storm water discharges from specific categories of industrial facilities identified in Attachment 1, storm water discharges and authorized non-storm water discharges from facilities as designated by the Regional Water Quality Control Boards (Regional Water Boards), and storm water discharges and authorized non-storm water discharges from other facilities seeking General Permit coverage. This General Permit may also regulate storm water discharges and authorized non-storm water discharges from facilities as required by U.S. EPA regulations. This General Permit shall regulate storm water discharges and authorized non-storm water discharges previously regulated by San Francisco Bay Regional Water Board Order, No.92-11 (as amended by Order No. 92-116). This General Permit excludes storm water discharges and non-storm water discharges that are regulated by other individual or general NPDES permits, storm water discharges and non-storm water discharges from construction activities, and storm water discharges and non-storm water discharges excluded by the Regional Water Boards for coverage by this General Permit. Attachment 2 contains the addresses and telephone numbers of each Regional Water Board office.

3. To obtain coverage for storm water discharges and authorized non-storm water discharges pursuant to this General Permit, operators of facilities (facility operators) must submit a Notice of Intent (NOI), in accordance with the Attachment 3

instructions, and appropriate annual fee to the State Water Board. This includes facility operators that have participated in U.S. EPA's group application process.

4. This General Permit does not preempt or supersede the authority of local agencies to prohibit, restrict, or control storm water discharges and authorized non-storm water discharges to storm drain systems or other water-courses within their jurisdictions as allowed by State and Federal law.

5. If an individual NPDES permit is issued to a facility operator otherwise subject to this General Permit or an alternative NPDES general permit is subsequently adopted which covers storm water discharges and/or authorized non-storm water discharges regulated by this General Permit, the applicability of this General Permit to such discharges is automatically terminated on the effective date of the individual NPDES permit or the date of approval for coverage under the subsequent NPDES general permit.

6. Effluent limitations and toxic and effluent standards established in Sections 208(b), 301, 302, 303(d), 304, 306, 307, and 403 of the Federal Clean Water Act (CWA), as amended, are applicable to storm water discharges and authorized non-storm water discharges regulated by this General Permit.

7. This action to adopt an NPDES general permit is exempt from the provisions of the California Environmental Quality Act (Public Resources Code Section 21100, et seq.) in accordance with Section 13389 of the California Water Code.

8. Federal regulations (40 CFR Subchapter N) establish effluent limitations guidelines for storm water discharges from some facilities in ten industrial categories.

9. For facilities which do not have established effluent limitation guidelines for storm water discharges in 40 CFR Subchapter N, it is not feasible at this time to establish numeric effluent limitations. This is due to the large number of discharges and the complex nature of storm water discharges. This is also consistent with the U.S. EPA's August 1, 1996 "Interim Permitting Approach for Water Quality Based Effluent Limitations in Storm Water Permits."

10. Facility operators are required to comply with the terms and conditions of this General Permit. Compliance with the terms and conditions of this General Permit constitutes compliance with BAT/BCT requirements and with requirements to achieve water quality standards. This includes the development and implementation of an effective Storm Water Pollution Prevention Plan (SWPPP) to reduce or prevent pollutants associated with industrial activity in storm water discharges and authorized non-storm water discharges.

11. Best Management Practices (BMPs) to reduce or prevent pollutants associated with industrial activity in storm water discharges and authorized non-storm water discharges are appropriate where numeric effluent limitations are infeasible, and the implementation of BMPs is adequate to achieve compliance with BAT/BCT and with water quality standards.

12. The State Water Board has adopted a Watershed Management Initiative that encourages watershed management throughout the State. This General Permit recognizes the Watershed Management Initiative by supporting the development of watershed monitoring programs authorized by the Regional Water Boards.

13. Following adoption of this General Permit, the Regional Water Boards shall enforce its provisions.

14. Following public notice in accordance with State and Federal laws and regulations, the State Water Board held a public hearing on November 12, 1996 and heard and considered all comments pertaining to this General Permit. A response to all significant comments has been prepared and is available for public review.

15. This Order is an NPDES General Permit in compliance with Section 402 of the CWA and shall take effect upon adoption by the State Water Board.

16. All terms that are defined in the CWA, U.S. EPA storm water regulations and the Porter-Cologne Water Quality Control Act will have the same definition in this General Permit unless otherwise stated.

IT IS HEREBY ORDERED that all facility operators required to be regulated by this General Permit shall comply with the following:

A. DISCHARGE PROHIBITIONS:

1. Except as allowed in Special Conditions (D.1.) of this General Permit, materials other than storm water (non-storm water discharges) that discharge either directly or indirectly to waters of the United States are prohibited. Prohibited non-storm water discharges must be either eliminated or permitted by a separate NPDES permit.

2. Storm water discharges and authorized non-storm water discharges shall not cause or threaten to cause pollution, contamination, or nuisance.

B. EFFLUENT LIMITATIONS:

1. Storm water discharges from facilities subject to storm water effluent limitation guidelines in Federal regulations (40 CFR

Subchapter N) shall not exceed the specified effluent limitations.

2. Storm water discharges and authorized non-storm water discharges regulated by this General Permit shall not contain a hazardous substance equal to or in excess of a reportable quantity listed in 40 CFR Part 117 and/or 40 CFR Part 302.

3. Facility operators covered by this General Permit must reduce or prevent pollutants associated with industrial activity in storm water discharges and authorized non-storm water discharges through implementation of BAT for toxic and non-conventional pollutants and BCT for conventional pollutants. Development and implementation of an SWPPP that complies with the requirements in Section A of the General Permit and that includes BMPs that achieve BAT/BCT constitutes compliance with this requirement.

C. RECEIVING WATER LIMITATIONS:

1. Storm water discharges and authorized non-storm water discharges to any surface or ground water shall not adversely impact human health or the environment.

2. Storm water discharges and authorized non-storm water discharges shall not cause or contribute to an exceedance of any applicable water quality standards contained in a Statewide Water Quality Control Plan or the applicable Regional Water Board's Basin Plan.

3. A facility operator will not be in violation of Receiving Water Limitation C.2. as long as the facility operator has implemented BMPs that achieve BAT/BCT and the following procedure is followed:

   a. The facility operator shall submit a report to the appropriate Regional Water Board that describes the BMPs that are currently being implemented and additional BMPs that will be implemented to prevent or reduce any pollutants that are causing or contributing to the exceedance of water quality standards. The report shall include an implementation schedule. The Regional Water Board may require modifications to the report.

   b. Following approval of the report described above by the Regional Water Board, the facility operator shall revise its SWPPP and monitoring program to incorporate the additional BMPs that have been and will be implemented, the implementation schedule, and any additional monitoring required.

4. A facility operator shall be in violation of this General Permit if he/she fails to do any of the following:

a. Submit the report described above within 60 days after either the facility operator or the Regional Water Board determines that discharges are causing or contributing to an exceedance of an applicable water quality standard;

b. Submit a report that is approved by the Regional Water Board; or

c. Revise its SWPPP and monitoring program as required by the approved report.

D. SPECIAL CONDITIONS

1. Non-Storm Water Discharges

a. The following non-storm water discharges are authorized by this General Permit provided that they satisfy the conditions specified in Paragraph b. below: fire hydrant flushing; potable water sources, including potable water related to the operation, maintenance, or testing of potable water systems; drinking fountain water; atmospheric condensates including refrigeration, air conditioning, and compressor condensate; irrigation drainage; landscape watering; springs; ground water; foundation or footing drainage; and sea water infiltration where the sea waters are discharged back into the sea water source.

b. The non-storm water discharges as provided in Paragraph a. above are authorized by this General Permit if all the following conditions are met:

i. The non-storm water discharges are in compliance with Regional Water Board requirements.

ii. The non-storm water discharges are in compliance with local agency ordinances and/or requirements.

iii. BMPs are specifically included in the SWPPP to (1) prevent or reduce the contact of non-storm water discharges with significant materials or equipment and (2) minimize, to the extent practicable, the flow or volume of non-storm water discharges.

iv. The non-storm water discharges do not contain significant quantities of pollutants.

v. The monitoring program includes quarterly visual observations of each non-storm water discharge and its sources to ensure that BMPs are being implemented and are effective.

vi. The non-storm water discharges are reported and described annually as part of the annual report.

c. The Regional Water Board or its designee may establish additional monitoring programs and reporting requirements for any non-storm water discharge authorized by this General Permit.

d. Discharges from firefighting activities are authorized by this General Permit and are not subject to the conditions of Paragraph b. above.

E. PROVISIONS

1. All facility operators seeking coverage by this General Permit must submit an NOI for each of the facilities they operate. Facility operators filing an NOI after the adoption of this General Permit shall use the NOI form and instructions (Attachment 3) attached to this General Permit. Existing facility operators who have filed an NOI pursuant to State Water Board Order No. 91-013-DWQ (as amended by Order No. 92-12-DWQ) or San Francisco Bay Regional Water Board Order No. 92-11 (as amended by Order No. 92-116) shall submit an abbreviated NOI form provided by the State Water Board. The abbreviated NOI form shall be submitted within 45 days of receipt.

2. Facility operators who have filed an NOI, pursuant to State Water Board Order No. 91-013-DWQ (as amended by Order No. 92-12-DWQ) or San Francisco Bay Regional Water Board Order No. 92-11 (as amended by Order No. 92-116), shall continue to implement their existing SWPPP and shall implement any necessary revisions to their SWPPP in accordance with Section A of this General Permit in a timely manner, but in no case later than August 1, 1997. Facility operators beginning industrial activities after adoption of this General Permit must develop and implement an SWPPP in accordance with Section A of this General Permit when the industrial activities begin.

3. Facility operators who have filed an NOI, pursuant to State Water Board Order No. 91-013-DWQ (as amended by Order No. 92-12-DWQ) or San Francisco Bay Regional Water Board Order No. 92-11 (as amended by Order No. 92-116), shall continue to implement their existing Monitoring Program and shall implement any necessary revisions to their Monitoring Program in accordance with Section B of the General Permit in a timely manner, but in no case later than August 1, 1997. Facility operators beginning industrial activities after adoption of this General Permit must develop and implement a Monitoring Program in

accordance with Section B of this General Permit when industrial activities begin.

4. Facility operators of feedlots as defined in 40 CFR Part 412 that are in full compliance with Section 2560 to Section 2565, Title 23, California Code of Regulations (Chapter 15) will be in compliance with all effluent limitations and prohibitions contained in this General Permit. Facility operators of feedlots that comply with Chapter 15, however, must perform monitoring in compliance with the requirements of Section B.4.d. and B.14. of this General Permit. Facility operators of feedlots must also comply with any Regional Water Board WDRs or NPDES general permit regulating their storm water discharges.

5. All facility operators must comply with lawful requirements of municipalities, counties, drainage districts, and other local agencies regarding storm water discharges and non-storm water discharges entering storm drain systems or other watercourses under their jurisdiction, including applicable requirements in municipal storm water management programs developed to comply with NPDES permits issued by the Regional Water Boards to local agencies.

6. All facility operators must comply with the standard provisions and reporting requirements for each facility covered by this General Permit contained in Section C, Standard Provisions.

7. Facility operators that operate facilities with co-located industrial activities (facilities that have industrial activities that meet more than one of the descriptions in Attachment 1) that are contiguous to one another are authorized to file a single NOI to comply with the General Permit. Storm water discharges and authorized non-storm water discharges from the co-located industrial activities are authorized if the SWPPP and Monitoring Program addresses each co-located industrial activity.

8. Upon reissuance of a successor NPDES general permit by the State Water Board, the facility operators subject to this reissued General Permit may be required to file an NOI.

9. Facility operators may request to terminate their coverage under this General Permit by filing a Notice of Termination (NOT) with the Regional Water Board. The NOT shall provide all documentation requested by the Regional Water Board. The facility operator will be notified when the NOT has been approved. Should the NOT be denied, facility operators are responsible for continued compliance with the requirements of this General Permit.

10. Facility operators who have filed an NOI, pursuant to State Water Board Order No. 91-013-DWQ (as amended by Order No. 92-12) or San Francisco Bay Regional Water Board Order No. 92-11 (as amended by Order No. 92-116) shall:

    a. Complete the 1996-97 activities required by those general permits. These include, but are not limited to, conducting any remaining visual observations, sample collection, annual site inspection, annual report submittal, and (for group monitoring leaders) Group Evaluation Reports; and

    b. Comply with the requirements of this General Permit no later than August 1, 1997.

11. If the Regional Water Board determines that a discharge may be causing or contributing to an exceedance of any applicable water quality standards contained in a Statewide Water Quality Control Plan or the applicable Regional Water Board's Basin Plan, the Regional Water Board may order the facility operator to comply with the requirements described in Receiving Water Limitation C.3. The facility operator shall comply with the requirements within the time schedule established by the Regional Water Board.

12. If the facility operator determines that its storm water discharges or authorized non-storm water discharges are causing or contributing to an exceedance of any applicable water quality standards, the facility operator shall comply with the requirements described in Receiving Water Limitation C.3.

13. State Water Board Order No. 91-013-DWQ (as amended by Order No. 92-12-DWQ) and San Francisco Bay Regional Water Board Order No. 91-011 (as amended by Order No. 92-116) are hereby rescinded.

F. REGIONAL WATER BOARD AUTHORITIES

1. Following adoption of this General Permit, Regional Water Boards shall:

    a. Implement the provisions of this General Permit, including, but not limited to, reviewing SWPPPs, reviewing annual reports, conducting compliance inspections, and taking enforcement actions.

    b. Issue other NPDES general permits or individual NPDES storm water permits as they deem appropriate to individual facility operators, facility operators of specific categories of industrial activities, or facility operators in a watershed or geographic area. Upon issuance of such NPDES permits by a Regional Water Board, the affected facility operator shall no longer

be regulated by this General Permit. Any new NPDES permit issued by the Regional Water Board may contain different requirements than the requirements of this General Permit.

2. Regional Water Boards may provide guidance to facility operators on the SWPPP and the Monitoring Program and reporting implementation.

3. Regional Water Boards may require facility operators to conduct additional SWPPP and Monitoring Program and reporting activities necessary to achieve compliance with this General Permit.

4. Regional Water Boards may approve requests from facility operators whose facilities include co-located industrial activities that are not contiguous within the facilities (e.g., some military bases) to comply with this General Permit under a single NOI. Storm water discharges and authorized non-storm water discharges from the co-located industrial activities and from other sources within the facility that may generate significant quantities of pollutants are authorized provided the SWPPP and Monitoring Program addresses each co-located industrial activity and other sources that may generate significant quantities of pollutants.

CERTIFICATION

The undersigned, Administrative Assistant to the State Water Board, does hereby certify that the foregoing is a full, true, and correct copy of an order duly and regularly adopted at a meeting of the State Water Resources Control Board held on April 17, 1997.

AYE: John P. Caffrey
John W. Brown
James M. Stubchaer
Marc Del Piero
Mary Jane Forster

NO: None

ABSENT: None

ABSTAIN: None

Maureen Marché

Administrative Assistant to the Board

SECTION A: STORM WATER POLLUTION PREVENTION PLAN REQUIREMENTS

1. *Implementation Schedule*

A storm water pollution prevention plan (SWPPP) shall be developed and implemented for each facility covered by this General Permit in accordance with the following schedule.

a. Facility operators beginning industrial activities before October 1, 1992 shall develop and implement the SWPPP no later than October 1, 1992. Facility operators beginning industrial activities after October 1, 1992 shall develop and implement the SWPPP when industrial activities begin.

b. Existing facility operators that submitted a Notice of Intent (NOI), pursuant to State Water Resources Control Board (State Water Board) Order No. 91-013-DWQ (as amended by Order No. 92-12) or San Francisco Bay Regional Water Quality Control Board (Regional Water Board) Order No. 92-11 (as amended by Order No. 92-116), shall continue to implement their existing SWPPP and shall implement any necessary revisions to their SWPPP in a timely manner, but in no case later than August 1, 1997.

2. *Objectives*

The SWPPP has two major objectives: (a) to identify and evaluate sources of pollutants associated with industrial activities that may affect the quality of storm water discharges and authorized non-storm water discharges from the facility; and (b) to identify and implement site-specific best management practices (BMPs) to reduce or prevent pollutants associated with industrial activities in storm water discharges and authorized non-storm water discharges. BMPs may include a variety of pollution prevention measures or other low-cost and pollution control measures. They are generally categorized as non-structural BMPs (activity schedules, prohibitions of practices, maintenance procedures, and other low-cost measures) and as structural BMPs (treatment measures, run-off controls, overhead coverage.) To achieve these objectives, facility operators should consider the five phase process for SWPPP development and implementation as shown in Table A.

The SWPPP requirements are designed to be sufficiently flexible to meet the needs of various facilities. SWPPP requirements that are not applicable to a facility should not be included in the SWPPP.

A facility's SWPPP is a written document that shall contain a compliance activity schedule, a description of industrial activities and pollutant sources, descriptions of BMPs, drawings, maps, and relevant copies or references of parts of other plans. The SWPPP shall be revised whenever appropriate and shall be readily available for review by facility employees or Regional Water Board inspectors.

3. *Planning and Organization*

a. *Pollution Prevention Team*

The SWPPP shall identify a specific individual or individuals and their positions within the facility organization as members of a storm water pollution prevention team responsible for developing the SWPPP, assisting the facility manager in SWPPP implementation and revision, and conducting all monitoring program activities required in Section B of this General Permit. The SWPPP shall clearly identify the General Permit related responsibilities, duties, and activities of each team member. For small facilities, storm water pollution prevention teams may consist of one individual where appropriate.

b. *Review Other Requirements and Existing Facility Plans*

The SWPPP may incorporate or reference the appropriate elements of other regulatory requirements. Facility operators should review all local, State, and Federal requirements that impact, complement, or are consistent with the requirements of this General Permit. Facility operators should identify any existing facility plans that contain storm water pollutant control measures or relate to the requirements of this General Permit. As examples, facility operators whose facilities are subject to Federal Spill Prevention Control and Countermeasures' requirements should already have instituted a plan to control spills of certain hazardous materials. Similarly, facility operators whose facilities are subject to air quality related permits and regulations may already have evaluated industrial activities that generate dust or particulates.

4. *Site Map*

The SWPPP shall include a site map. The site map shall be provided on an 8-½ x 11 inch or larger sheet and include notes, legends, and other data as appropriate to ensure that the site map is clear and understandable. If necessary, facility operators may provide the required information on multiple site maps.

TABLE A

FIVE PHASES FOR DEVELOPING AND IMPLEMENTING INDUSTRIAL STORM WATER POLLUTION PREVENTION PLANS

PLANNING AND ORGANIZATION

*Form Pollution Prevention Team
*Review other plans

↓

ASSESSMENT PHASE

*Develop a site map
*Identify potential pollutant sources
*Inventory of materials and chemicals
*List significant spills and leaks
*Identify non-storm water discharges
*Assess pollutant Risks

↓

BEST MANAGEMENT PRACTICES IDENTIFICATION PHASE

*Non-structural BMPs
*Structural BMPs
*Select activity and site-specific BMPs

↓

IMPLEMENTATION PHASE

*Train employees
*Implement BMPs
*Conduct recordkeeping and reporting

↓

EVALUATION / MONITORING

*Conduct annual site evaluation
*Review monitoring information
*Evaluate BMPs
*Review and revise SWPPP

The following information shall be included on the site map:

a. The facility boundaries; the outline of all storm water drainage areas within the facility boundaries; portions of the drainage area impacted by run-on from surrounding areas; and direction of flow of each drainage area, on-site surface water bodies, and areas of soil erosion. The map shall also identify nearby water bodies (such as rivers, lakes, and ponds) and municipal storm drain inlets

where the facility's storm water discharges and authorized non-storm water discharges may be received.

b. The location of the storm water collection and conveyance system, associated points of discharge, and direction of flow. Include any structural control measures that affect storm water discharges, authorized non-storm water discharges, and run-on. Examples of structural control measures are catch basins, berms, detention ponds, secondary containment, oil/water separators, diversion barriers, etc.

c. An outline of all impervious areas of the facility, including paved areas, buildings, covered storage areas, or other roofed structures.

d. Locations where materials are directly exposed to precipitation and the locations where significant spills or leaks identified in Section A.6.a.iv. below have occurred.

e. Areas of industrial activity. This shall include the locations of all storage areas and storage tanks, shipping and receiving areas, fueling areas, vehicle and equipment storage/maintenance areas, material handling and processing areas, waste treatment and disposal areas, dust or particulate generating areas, cleaning and rinsing areas, and other areas of industrial activity which are potential pollutant sources.

5. *List of Significant Materials*

The SWPPP shall include a list of significant materials handled and stored at the site. For each material on the list, describe the locations where the material is being stored, received, shipped, and handled, as well as the typical quantities and frequency. Materials shall include raw materials, intermediate products, final or finished products, recycled materials, and waste or disposed materials.

6. *Description of Potential Pollutant Sources*

a. The SWPPP shall include a narrative description of the facility's industrial activities, as identified in Section A.4.e above, associated potential pollutant sources, and potential pollutants that could be discharged in storm water discharges or authorized non-storm water discharges. At a minimum, the following items related to a facility's industrial activities shall be considered:

i. Industrial Processes

Describe each industrial process, the type, characteristics, and quantity of significant materials used in or resulting from the process, and a description of the manufacturing, cleaning, rinsing, recycling, disposal, or other activities related to the process. Where applicable, areas protected by containment structures and the corresponding containment capacity shall be described.

ii. Material Handling and Storage Areas

Describe each handling and storage area, type, characteristics, and quantity of significant materials handled or stored, description of the shipping, receiving, and loading procedures, and the spill or leak prevention and response procedures. Where applicable, areas protected by containment structures and the corresponding containment capacity shall be described.

iii. Dust and Particulate Generating Activities

Describe all industrial activities that generate dust or particulates that may be deposited within the facility's boundaries and identify their discharge locations; the characteristics of dust and particulate pollutants; the approximate quantity of dust and particulate pollutants that may be deposited within the facility boundaries; and a description of the primary areas of the facility where dust and particulate pollutants would settle.

iv. Significant Spills and Leaks

Describe materials that have spilled or leaked in significant quantities in storm water discharges or non-storm water discharges since April 17, 1994. Include toxic chemicals (listed in 40 CFR, Part 302) that have been discharged to storm water as reported on U.S. Environmental Protection Agency (U.S. EPA) Form R, and oil and hazardous substances in excess of reportable quantities (see 40 Code of Federal Regulations [CFR], Parts 110, 117, and 302).

The description shall include the type, characteristics, and approximate quantity of the material spilled or leaked, the cleanup or remedial actions that have occurred or are planned, the approximate remaining quantity of materials that may be exposed to storm water or non-storm water

discharges, and the preventative measures taken to ensure spill or leaks do not reoccur. Such list shall be updated as appropriate during the term of this General Permit.

v. Non-Storm Water Discharges

Facility operators shall investigate the facility to identify all non-storm water discharges and their sources. As part of this investigation, all drains (inlets and outlets) shall be evaluated to identify whether they connect to the storm drain system.

All non-storm water discharges shall be described. This shall include the source, quantity, frequency, and characteristics of the non-storm water discharges and associated drainage area.

Non-storm water discharges that contain significant quantities of pollutants or that do not meet the conditions provided in Special Conditions D. are prohibited by this General Permit (Examples of prohibited non-storm water discharges are contact and non-contact cooling water, boiler blowdown, rinse water, wash water, etc.). Non-storm water discharges that meet the conditions provided in Special Condition D. are authorized by this General Permit. The SWPPP must include BMPs to prevent or reduce contact of non-storm water discharges with significant materials or equipment.

vi. Soil Erosion

Describe the facility locations where soil erosion may occur as a result of industrial activity, storm water discharges associated with industrial activity, or authorized non-storm water discharges.

b. The SWPPP shall include a summary of all areas of industrial activities, potential pollutant sources, and potential pollutants. This information should be summarized similar to Table B. The last column of Table B, "Control Practices", should be completed in accordance with Section A.8. below.

7. *Assessment of Potential Pollutant Sources*

a. The SWPPP shall include a narrative assessment of all industrial activities and potential pollutant sources as described in A.6. above to determine:

i. Which areas of the facility are likely sources of

pollutants in storm water discharges and authorized non-storm water discharges, and

ii. Which pollutants are likely to be present in storm water discharges and authorized non-storm water discharges. Facility operators shall consider and evaluate various factors when performing this assessment such as current storm water BMPs; quantities of significant materials handled, produced, stored, or disposed of; likelihood of exposure to storm water or authorized non-storm water discharges; history of spill or leaks; and run-on from outside sources.

b. Facility operators shall summarize the areas of the facility that are likely sources of pollutants and the corresponding pollutants that are likely to be present in storm water discharges and authorized non-storm water discharges.

Facility operators are required to develop and implement additional BMPs as appropriate and necessary to prevent or reduce pollutants associated with each pollutant source. The BMPs will be narratively described in Section 8 below.

8. *Storm Water Best Management Practices*

The SWPPP shall include a narrative description of the storm water BMPs to be implemented at the facility for each potential pollutant and its source identified in the site assessment phase (Sections A.6. and 7. above). The BMPs shall be developed and implemented to reduce or prevent pollutants in storm water discharges and authorized non-storm water discharges. Each pollutant and its source may require one or more BMPs. Some BMPs may be implemented for multiple pollutants and their sources, while other BMPs will be implemented for a very specific pollutant and its source.

TABLE B
EXAMPLE
ASSESSMENT OF POTENTIAL POLLUTION SOURCES AND CORRESPONDING BEST MANAGEMENT PRACTICES SUMMARY

Area	Activity	Pollutant Source	Pollutant	Best Management Practices
Vehicle & Equipment Fueling	Fueling	Spills and leaks during delivery	fuel oil	- Use spill and overflow protection - Minimize run-on of storm water into the fueling area - Cover fueling area - Use dry cleanup methods rather than hosing down area - Implement proper spill prevention control program - Implement adequate preventative maintenance program to preventive tank and line leaks - Inspect fueling areas regularly to detect problems before they occur - Train employees on proper fueling, cleanup, and spill response techniques.
		Spills caused by topping off fuel tanks	fuel oil	
		Hosing or washing down fuel area	fuel oil	
		Leaking storage tanks	fuel oil	
		Rainfall running off fueling area, and rainfall running onto and off fueling area	fuel oil	

The description of the BMPs shall identify the BMPs as (1) existing BMPs, (2) existing BMPs to be revised and implemented, or (3) new BMPs to be implemented. The description shall also include a discussion on the effectiveness of each BMP to reduce or prevent pollutants in storm water discharges and authorized non-storm water discharges. The SWPPP shall provide a summary of all BMPs implemented for each pollutant source. This information should be summarized similar to Table B.

Facility operators shall consider the following BMPs for implementation at the facility:

a. Non-Structural BMPs

Non-structural BMPs generally consist of processes, prohibitions, procedures, schedule of activities, etc., that prevent pollutants associated with industrial activity from contacting with storm water discharges and authorized non-storm water discharges. They are considered low technology, cost-effective measures. Facility operators should consider all possible non-structural BMPs options before considering additional structural BMPs (see Section A.8.b. below). Below is a list of non-structural BMPs that should be considered:

i. Good Housekeeping

Good housekeeping generally consist of practical procedures to maintain a clean and orderly facility.

ii. Preventive Maintenance

Preventive maintenance includes the regular inspection and maintenance of structural storm water controls (catch basins, oil/water separators, etc.) as well as other facility equipment and systems.

iii. Spill Response

This includes spill clean-up procedures and necessary clean-up equipment based upon the quantities and locations of significant materials that may spill or leak.

iv. Material Handling and Storage

This includes all procedures to minimize the potential for spills and leaks and to minimize exposure of significant materials to storm water and authorized non-storm water discharges.

v. Employee Training

This includes training of personnel who are responsible for (1) implementing activities identified in the SWPPP, (2) conducting inspections, sampling, and visual observations, and (3) managing storm water. Training should address topics such as spill response, good housekeeping, and material handling procedures, and actions necessary to implement all BMPs identified in the SWPPP. The SWPPP shall identify periodic dates for such training. Records shall be maintained of all training sessions held.

vi. Waste Handling/Recycling

This includes the procedures or processes to handle, store, or dispose of waste materials or recyclable materials.

vii. Recordkeeping and Internal Reporting

This includes the procedures to ensure that all records of inspections, spills, maintenance activities, corrective actions, visual observations, etc., are developed, retained, and provided, as necessary, to the appropriate facility personnel.

viii. Erosion Control and Site Stabilization

This includes a description of all sediment and erosion control activities. This may include the planting and maintenance of vegetation, diversion of run-on and runoff, placement of sandbags, silt screens, or other sediment control devices, etc.

ix. Inspections

This includes, in addition to the preventative maintenance inspections identified above, an inspection schedule of all potential pollutant sources. Tracking and follow-up procedures shall be described to ensure adequate corrective actions are taken and SWPPPs are made.

x. Quality Assurance

This includes the procedures to ensure that all elements of the SWPPP and Monitoring Program are adequately conducted.

b. Structural BMPs

Where non-structural BMPs as identified in Section A.8.a. above are not effective, structural BMPs shall be considered. Structural BMPs generally consist of structural devices that reduce or prevent pollutants in storm water discharges and authorized non-storm water discharges. Below is a list of structural BMPs that should be considered:

i. Overhead Coverage

This includes structures that provide horizontal coverage of materials, chemicals, and pollutant sources from contact with storm water and authorized non-storm water discharges.

ii. Retention Ponds

This includes basins, ponds, surface impoundments, bermed areas, etc. that do not allow storm water to discharge from the facility.

iii. Control Devices

This includes berms or other devices that channel or route run-on and runoff away from pollutant sources.

iv. Secondary Containment Structures

This generally includes containment structures around storage tanks and other areas for the purpose of collecting any leaks or spills.

v. Treatment

This includes inlet controls, infiltration devices, oil/water separators, detention ponds, vegetative swales, etc. that reduce the pollutants in storm water discharges and authorized non-storm water discharges.

9. <u>Annual Comprehensive Site Compliance Evaluation</u>

The facility operator shall conduct one comprehensive site compliance evaluation (evaluation) in each reporting period (July 1-June 30). Evaluations shall be conducted within 8-16 months of each other. The SWPPP shall be revised, as appropriate, and the revisions implemented within 90 days of the evaluation. Evaluations shall include the following:

a. A review of all visual observation records, inspection records, and sampling and analysis results.

b. A visual inspection of all potential pollutant sources for evidence of, or the potential for, pollutants entering the drainage system.

c. A review and evaluation of all BMPs (both structural and non-structural) to determine whether the BMPs are adequate, properly implemented and maintained, or whether additional BMPs are needed. A visual inspection of equipment needed to implement the SWPPP, such as spill response equipment, shall be included.

d. An evaluation report that includes, (i) identification of personnel performing the evaluation, (ii) the date(s) of the evaluation, (iii) necessary SWPPP revisions, (iv) schedule, as required in Section A.10.e, for implementing SWPPP revisions, (v) any incidents of non-compliance and the corrective actions taken, and (vi) a certification that the facility operator is in compliance with this General Permit. If the above certification cannot be provided, explain in the evaluation report why the facility operator is not in compliance with this General Permit. The evaluation report shall be submitted as part of the annual report, retained for at least five years, and signed and certified in accordance with Standard Provisions 9. and 10. of Section C. of this General Permit.

10. *SWPPP General Requirements*

a. The SWPPP shall be retained on site and made available upon request of a representative of the Regional Water Board and/or local storm water management agency (local agency) which receives the storm water discharges.

b. The Regional Water Board and/or local agency may notify the facility operator when the SWPPP does not meet one or more of the minimum requirements of this Section. As requested by the Regional Water Board and/or local agency, the facility operator shall submit an SWPPP revision and implementation schedule that meets the minimum requirements of this section to the Regional Water Board and/or local agency that requested the SWPPP revisions. Within 14 days after implementing the required SWPPP revisions, the facility operator shall provide written certification to the Regional Water Board and/or local agency that the revisions have been implemented.

c. The SWPPP shall be revised, as appropriate, and implemented prior to changes in industrial activities which (i) may significantly increase the quantities of pollutants in storm water discharge, (ii) cause a new area of industrial activity at the facility to be exposed to storm water, or (iii) begin an industrial activity which would introduce a new pollutant source at the facility.

d. Other than as provided in Provisions B.11, B.12, and E.2 of the General Permit, the SWPPP shall be revised and implemented in a timely manner, but in no case more than 90 days after a facility operator determines that the SWPPP is in violation of any requirement(s) of this General Permit.

e. When any part of the SWPPP is infeasible to implement by the deadlines specified in Provision E.2 or Sections A.1, A.9, A.10.c, and A.10.d of this General Permit due to proposed significant structural changes, the facility operator shall submit a report to the Regional Water Board prior to the applicable deadline that (i) describes the portion of the SWPPP that is infeasible to implement by the deadline, (ii) provides justification for a time extension, (iii) provides a schedule for completing and implementing that portion of the SWPPP, and (iv) describes the BMPs that will be implemented in the interim period to reduce or prevent pollutants in storm water discharges and authorized non-storm water discharges. Such reports are subject to Regional Water Board approval and/or modifications. Facility operators shall provide written notification to the Regional Water Board within 14 days after the SWPPP revisions are implemented.

f. The SWPPP shall be provided, upon request, to the Regional Water Board. The SWPPP is considered a report that shall be available to the public by the Regional Water Board under Section 308(b) of the Clean Water Act.

SECTION B. MONITORING PROGRAM AND REPORTING REQUIREMENTS

1. *Implementation Schedule*

Each facility operator shall develop a written monitoring program for each facility covered by this General Permit in accordance with the following schedule:

a. Facility operators beginning industrial activities before October 1, 1992 shall develop and implement a monitoring program no later than October 1, 1992. Facility operators beginning operations after October 1, 1992 shall develop and implement a monitoring program when the industrial activities begin.

b. Facility operators that submitted a Notice Of Intent (NOI) pursuant to State Water Resources Control Board (State Water Board) Order No. 91-013-DWQ (as amended by Order No. 92-12) or San Francisco Bay Regional Water Quality Control Board (Regional Water Board) Order No. 92-11 (as amended by Order No. 92-116), shall continue to implement their existing monitoring program and implement any necessary revisions to their monitoring program in a timely manner, but in no case later than August 1, 1997. These facility operators may use the monitoring results conducted in accordance with those expired general permits to satisfy the pollutant/parameter reduction requirements in Section B.5.c., Sampling and Analysis Exemptions and Reduction certifications in Section B.12., and Group Monitoring Sampling credits in B.15.k. For facilities beginning industrial activities after the adoption of this General Permit, the monitoring program shall be developed and implemented when the facility begins the industrial activities.

2. *Objectives*

The objectives of the monitoring program are to:

a. Ensure that storm water discharges are in compliance with the Discharge Prohibitions, Effluent Limitations, and Receiving Water Limitations specified in this General Permit.

b. Ensure practices at the facility to reduce or prevent pollutants in storm water discharges and authorized non-storm water discharges are evaluated and revised to meet changing conditions.

c. Aid in the implementation and revision of the SWPPP required by Section A of this General Permit.

d. Measure the effectiveness of best management practices (BMPs) to prevent or reduce pollutants in storm water

discharges and authorized non-storm water discharges. Much of the information necessary to develop the monitoring program, such as discharge locations, drainage areas, pollutant sources, etc., should be found in the Storm Water Pollution Prevention Plan (SWPPP). The facility's monitoring program shall be a written, site-specific document that shall be revised whenever appropriate and be readily available for review by employees or Regional Water Board inspectors.

3. *Non-storm Water Discharge Visual Observations*

a. Facility operators shall visually observe all drainage areas within their facilities for the presence of unauthorized non-storm water discharges;

b. Facility operators shall visually observe the facility's authorized non-storm water discharges and their sources;

c. The visual observations required above shall occur quarterly, during daylight hours, on days with no storm water discharges, and during scheduled facility operating hours[1]. Quarterly visual observations shall be conducted in each of the following periods: January-March, April-June, July-September, and October-December. Facility operators shall conduct quarterly visual observations within 6-18 weeks of each other.

d. Visual observations shall document the presence of any discolorations, stains, odors, floating materials, etc., as well as the source of any discharge. Records shall be maintained of the visual observation dates, locations observed, observations, and response taken to eliminate unauthorized non-storm water discharges and to reduce or prevent pollutants from contacting non-storm water discharges. The SWPPP shall be revised, as necessary, and implemented in accordance with Section A of this General Permit.

4. *Storm Water Discharge Visual Observations*

a. With the exception of those facilities described in Section B.4.d. below, facility operators shall visually

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[1] "Scheduled facility operating hours" are the time periods when the facility is staffed to conduct any function related to industrial activity, but excluding time periods where only routine maintenance, emergency response, security, and/or janitorial services are performed.

observe storm water discharges from one storm event per month during the wet season (October 1-May 30). These visual observations shall occur during the first hour of discharge and at all discharge locations. Visual observations of stored or contained storm water shall occur at the time of release.

b. Visual observations are only required of storm water discharges that occur during daylight hours that are preceded by at least three (3) working days[2] without storm water discharges and that occur during scheduled facility operating hours.

c. Visual observations shall document the presence of any floating and suspended material, oil and grease, discolorations, turbidity, odor, and source of any pollutants. Records shall be maintained of observation dates, locations observed, observations, and response taken to reduce or prevent pollutants in storm water discharges. The SWPPP shall be revised, as necessary, and implemented in accordance with Section A of this General Permit.

d. Feedlots (subject to Federal effluent limitations guidelines in 40 Code of Federal Regulations [CFR] Part 412) that are in compliance with Sections 2560 to 2565, Article 6, Chapter 15, Title 23, California Code of Regulations, and facility operators with storm water containment facilities shall conduct monthly inspections of their containment areas to detect leaks and ensure maintenance of adequate freeboard. Records shall be maintained of the inspection dates, observations, and any response taken to eliminate leaks and to maintain adequate freeboard.

5. *Sampling and Analysis*

a. Facility operators shall collect storm water samples during the first hour of discharge from (1) the first storm event of the wet season, and (2) at least one other storm event in the wet season. All storm water discharge locations shall be sampled. Sampling of stored or contained storm water shall occur at the time the stored or contained storm water is released. Facility operators that do not collect samples from the first storm event of the wet season are still required to collect samples from two other storm events of the wet season and shall explain in the Annual Report why the first storm event was not sampled.

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[2] Three (3) working days may be separated by non-working days such as weekends and holidays provided that no storm water discharges occur during the three (3) working days and the non-working days.

b. Sample collection is only required of storm water discharges that occur during scheduled facility operating hours and that are preceded by at least (3) three working days without storm water discharge.

c. The samples shall be analyzed for:

i. Total suspended solids (TSS) pH, specific conductance, and total organic carbon (TOC). Oil and grease (O&G) may be substituted for TOC; and

ii. Toxic chemicals and other pollutants that are likely to be present in storm water discharges in significant quantities. If these pollutants are not detected in significant quantities after two consecutive sampling events, the facility operator may eliminate the pollutant from future sample analysis until the pollutant is likely to be present again; and

iii. Other analytical parameters as listed in Table D (located at the end of this Section). These parameters are dependent on the facility's standard industrial classification (SIC) code. Facility operators are not required to analyze a parameter listed in Table D when the parameter is not already required to be analyzed pursuant to Section B.5.c.i. and ii. or B.6 of this General Permit, and either of the two following conditions are met: (1) the parameter has not been detected in significant quantities from the last two consecutive sampling events, or (2) the parameter is not likely to be present in storm water discharges and authorized non-storm water discharges in significant quantities based upon the facility operator's evaluation of the facilities industrial activities, potential pollutant sources, and SWPPP. Facility operators that do not analyze for the applicable Table D parameters shall certify in the Annual Report that the above conditions have been satisfied.

iv. Other parameters as required by the Regional Water Board.

6. *Facilities Subject to Federal Storm Water Effluent Limitation Guidelines*

Facility operators with facilities subject to Federal storm water effluent limitation guidelines, in addition to the requirements in Section B.5. above, must complete the following:

a. Collect and analyze two samples for any pollutant specified in the appropriate category of 40 CFR Subchapter N. The sampling and analysis exemptions and reductions described in Section B.12. of this General Permit do not apply to these pollutants.

b. Estimate or calculate the volume of storm water discharges from each drainage area;

c. Estimate or calculate the mass of each regulated pollutant as defined in the appropriate category of 40 CFR Subchapter N; and

d. Identify the individual(s) performing the estimates or calculations in accordance with Subsections b. and c. above.

7. *Sample Storm Water Discharge Locations*

a. Facility operators shall visually observe and collect samples of storm water discharges from all drainage areas that represent the quality and quantity of the facility's storm water discharges from the storm event.

b. If the facility's storm water discharges are commingled with run-on from surrounding areas, the facility operator should identify other visual observation and sample collection locations that have not been commingled by run-on and that represent the quality and quantity of the facility's storm water discharges from the storm event.

c. If visual observation and sample collection locations are difficult to observe or sample (e.g., sheet flow, submerged outfalls), facility operators shall identify and collect samples from other locations that represent the quality and quantity of the facility's storm water discharges from the storm event.

d. Facility operators that determine that the industrial activities and BMPs within two or more drainage areas are substantially identical may either (i) collect samples from a reduced number of substantially identical

drainage areas, or (ii) collect samples from each substantially identical drainage area and analyze a combined sample from each substantially identical drainage area. Facility operators must document such a determination in the annual report.

8. *Visual Observation and Sample Collection Exceptions*

Facility operators are required to be prepared to collect samples and conduct visual observations at the beginning of the wet season (October 1) and throughout the wet season

until the minimum requirements of Sections B.4. and B.5. are completed with the following exceptions:

a. A facility operator is not required to collect a sample and conduct visual observations in accordance with Section B.4 and Section B.5 due to dangerous weather conditions, such as flooding, electrical storm, etc., when storm water discharges begin after scheduled facility operating hours or when storm water discharges are not preceded by three working days without discharge. Visual observations are only required during daylight hours. Facility operators that do not collect the required samples or visual observations during a wet season due to these exceptions shall include an explanation in the Annual Report why the sampling or visual observations could not be conducted.

b. A facility operator may conduct visual observations and sample collection more than one hour after discharge begins if the facility operator determines that the objectives of this Section will be better satisfied. The facility operator shall include an explanation in the Annual Report why the visual observations and sample collection should be conducted after the first hour of discharge.

9. *Alternative Monitoring Procedures*

Facility operators may propose an alternative monitoring program that meets Section B.2 monitoring program objectives for approval by the Regional Water Board. Facility operators shall continue to comply with the monitoring requirements of this Section and may not implement an alternative monitoring plan until the alternative monitoring plan is approved by the Regional Water Board. Alternative monitoring plans are subject to modification by the Regional Water Boards.

10. *Monitoring Methods*

a. Facility operators shall explain how the facility's monitoring program will satisfy the monitoring program objectives of Section B.2. This shall include:

i. Rationale and description of the visual observation methods, location, and frequency.

ii. Rationale and description of the sampling methods, location, and frequency; and

iii. Identification of the analytical methods and corresponding method detection limits used to detect pollutants in storm water discharges. This shall include justification that the method detection limits are adequate to satisfy the objectives of the monitoring program.

b. All sampling and sample preservation shall be in accordance with the current edition of "Standard Methods for the Examination of Water and Wastewater" (American Public Health Association). All monitoring instruments and equipment (including a facility operator's own field instruments for measuring pH and Electro Conductivity) shall be calibrated and maintained in accordance with manufacturers' specifications to ensure accurate measurements. All laboratory analyses must be conducted according to test procedures under 40 CFR Part 136, unless other test procedures have been specified in this General Permit or by the Regional Water Board. All metals shall be reported as total metals. With the exception of analysis conducted by facility operators, all laboratory analyses shall be conducted at a laboratory certified for such analyses by the State Department of Health Services. Facility operators may conduct their own sample analyses if the facility operator has sufficient capability (qualified employees, laboratory equipment, etc.) to adequately perform the test procedures.

11. *Inactive Mining Operations*
Inactive mining operations are defined in Attachment 1 of this General Permit. Where comprehensive site compliance evaluations, non-storm water discharge visual observations, storm water discharge visual observations, and storm water sampling are impracticable, facility operators of inactive mining operations may instead obtain certification once every three years by a Registered Professional Engineer that an SWPPP has been prepared for the facility and is being implemented in accordance with the requirements of this General Permit. By means of these certifications, the Registered Professional Engineer having examined the facility and being familiar with the provisions of this General Permit shall attest that the SWPPP has been prepared in accordance with good engineering practices. Facility operators of mining operations who cannot obtain a certification because of noncompliance must notify the appropriate Regional Water Board and, upon request, the local agency which receives the storm water discharge.

12. *Sampling and Analysis* Exemptions and Reductions

A facility operator who qualifies for sampling and analysis exemptions, as described below in Section B.12.a.i., or who qualifies for reduced sampling and analysis, as described below in Section B.12.b., must submit the appropriate certifications and required documentation to the Regional Water Boards prior to the wet season (October 1) and recertify as part of the Annual Report submittal. A facility operator that qualifies for either the Regional Water Board or local agency certification programs, as described below in Section B.12.a.ii. and iii., shall submit certification and documentation in accordance with the requirements of those programs. Facility operators who provide certifications in accordance with this Section are still required to comply with all other monitoring program and reporting requirements. Facility operators shall prepare and submit their certifications using forms and instructions provided by the State Water Board, Regional Water Board, or local agency or shall submit their information on a form that contains equivalent information. Facility operators whose facility no longer meets the certification conditions must notify the Regional Water Boards (and local agency) within 30 days and immediately comply with the Section B.5. sampling and analysis requirements. Should a Regional Water Board (or local agency) determine that a certification does not meet the conditions set forth below, facility operators must immediately comply with the Section B.5. sampling and analysis requirements.

a. Sampling and Analysis Exemptions

A facility operator is not required to collect and analyze samples in accordance with Section B.5. if the facility operator meets all of the conditions of one of the following certification programs:

i. No Exposure Certification (NEC)

This exemption is designed primarily for those facilities where all industrial activities are conducted inside buildings and where all materials stored and handled are not exposed to storm water. To qualify for this exemption, facility operators must certify that their facilities meet all of the following conditions:

(1) All prohibited non-storm water discharges have been eliminated or otherwise permitted.

(2) All authorized non-storm water discharges have been identified and addressed in the SWPPP.

(3) All areas of past exposure have been inspected and cleaned, as appropriate.

(4) All significant materials related to industrial activity (including waste materials) are not exposed to storm water or authorized non-storm water discharges.

(5) All industrial activities and industrial equipment are not exposed to storm water or authorized non-storm water discharges.

(6) There is no exposure of storm water to significant materials associated with industrial activity through other direct or indirect pathways such as from industrial activities that generate dust and particulates.

(7) There is periodic re-evaluation of the facility to ensure conditions (1), (2), (4), (5), and (6) above are continuously met. At a minimum, re-evaluation shall be conducted once a year.

ii. Regional Water Board Certification Programs

The Regional Water Board may grant an exemption to the Section B.5. Sampling and Analysis Requirements if it determines a facility operator has met the conditions set forth in a Regional Water Board certification program. Regional Water Board certification programs may include conditions to (1) exempt facility operators whose facilities infrequently discharge storm water to waters of the United States, and (2) exempt facility operators

that demonstrate compliance with the terms and conditions of this General Permit.

iii. Local Agency Certifications

A local agency may develop a local agency certification program. Such programs must be approved by the Regional Water Board. An approved local agency program may either grant an exemption

from the Section B.5. Sampling and Analysis Requirements or reduce the frequency of sampling if it determines that a facility operator has demonstrated compliance with the terms and conditions of this General Permit.

b. Sampling and Analysis Reduction

i. A facility operator may reduce the number of sampling events required to be sampled for the remaining term of this General Permit if the facility operator provides certification that the following conditions have been met:

(1) The facility operator has collected and analyzed samples from a minimum of six storm events from all required drainage areas;

(2) All prohibited non-storm water discharges have been eliminated or otherwise permitted;

(3) The facility operator demonstrates compliance with the terms and conditions of the General Permit for the previous two years (i.e., completed Annual Reports, performed visual observations, implemented appropriate BMPs, etc.);

(4) The facility operator demonstrates that the facility's storm water discharges and authorized non-storm water discharges do not contain significant quantities of pollutants; and

(5) Conditions (2), (3), and (4) above are expected to remain in effect for a minimum of one year after filing the certification.

ii. Unless otherwise instructed by the Regional Water Board, facility operators shall collect and analyze samples from two additional storm events (or one additional storm event when certification filed for the wet season beginning October 1, 2001) during the remaining term of this General Permit in accordance with Table C below. Facility operators shall collect samples of the first

storm event of the wet season. Facility operators that do not collect samples from the first storm event of the wet season shall collect samples from another storm event during the same wet season. Facility operators that do not collect a sample in a required wet season shall collect the sample from another storm event in the next wet season. Facility operators shall explain in the Annual Report why the first storm event of a wet season was not sampled or a sample was not taken from any storm event in accordance with the Table C schedule.

Table C
REDUCED MONITORING SAMPLING SCHEDULE

Facility Operator Filing Sampling Reduction Certification By	Samples Shall be Collected and Analyzed in These Wet Seasons	
	Sample 1	Sample 2
Oct. 1, 1997	Oct. 1, 1997-May 31, 1998	Oct. 1, 1999-May 31, 2000
Oct. 1, 1998	Oct. 1, 1998-May 31, 1999	Oct. 1, 2000-May 31, 2001
Oct. 1, 1999	Oct. 1, 1999-May 31, 2000	Oct. 1, 2001-May 31, 2002
Oct. 1, 2000	Oct. 1, 2000-May 31, 2001	Oct. 1, 2001-May 31, 2002
Oct. 1, 2001	Oct. 1, 2001-May 31, 2002	-

13. *Records*

Records of all storm water monitoring information and copies of all reports (including the Annual Reports) required by this General Permit shall be retained for a period of at least five years. These records shall include:

a. The date, place, and time of site inspections, sampling, visual observations, and/or measurements;

b. The individual(s) who performed the site inspections, sampling, visual observations, and or measurements;

c. Flow measurements or estimates (if required by Section B.6);

d. The date and approximate time of analyses;

e. The individual(s) who performed the analyses;

f. Analytical results, method detection limits, and the analytical techniques or methods used;

g. Quality assurance/quality control records and results;

h. Non-storm water discharge inspections and visual observations and storm water discharge visual observation records (see Sections B.3. and 4.);

i. Visual observation and sample collection exception records (see Section B.5.a, 7.d, 8, and 12.b.ii.);

j. All calibration and maintenance records of on-site instruments used;

k. All Sampling and Analysis Exemption and Reduction certifications and supporting documentation (see Section B.12);

l. The records of any corrective actions and follow-up activities that resulted from the visual observations.

14. *Annual Report*

All facility operators shall submit an Annual Report by July 1 of each year to the Executive Officer of the Regional Water Board responsible for the area in which the facility is located and to the local agency (if requested).

The report shall include a summary of visual observations and sampling results, an evaluation of the visual observation and sampling and analysis results, laboratory reports, the Annual Comprehensive Site Compliance Evaluation Report required in Section A.9., an explanation of why a facility did not implement any activities required by the General Permit (if not already included in the Evaluation Report), and records specified in Section B.13.i. The method detection limit of each analytical parameter shall be included. Analytical results that are less than the method detection limit shall be reported as "less than the method detection limit." The Annual Report shall be signed and certified in accordance with Standard Provisions 9. and 10. of Section C of this General Permit. Facility operators shall prepare and submit their Annual Reports using the annual report forms provided by the State Water Board or Regional Water Board or shall submit their information on a form that contains equivalent information.

15. *Group Monitoring*

Facility operators may participate in group monitoring as described below. A facility operator that participates in group monitoring shall develop and implement a written site-specific SWPPP and monitoring program in accordance with the General Permit and must satisfy any group monitoring requirements. Group monitoring shall be subject to the following requirements:

a. A group monitoring plan (GMP) shall be developed and implemented by a group leader representing a group of

similar facility operators regulated by this General Permit or by a local agency which holds an NPDES permit (local agency permittee) for a municipal separate storm sewer system. GMPs with participants that discharge storm water within the boundaries of a single Regional Water Board shall be approved by that Regional Water Board. GMPs with participants that discharge storm water within the boundaries of multiple Regional Water Boards shall be approved by the State Water Board. The State Water Board and/or Regional Water Board(s) may disapprove a facility's participation in a GMP or require a GMP participant to conduct additional monitoring activities.

b. Each GMP participant shall collect and analyze samples from at least two storm events in accordance with Section B.5. over the five-year period of this General Permit. The two storm event minimum applies to new and existing members. The group leader or local agency permittee shall schedule sampling to meet the following conditions: (i) to evenly distribute the sample collection over the five-year term of this General Permit, and (ii) to collect samples from the two storm events at each participant's facility in different and non-consecutive wet seasons. New participants who join in Years 4 and 5 of this General Permit are not subject to Condition (ii) above. Group leaders shall explain in the annual Group Evaluation Report why any scheduled samples were not collected and reschedule the sampling so that all required samples are collected during the term of this General Permit.

c. The group leader or local agency permittee must have the appropriate resources to develop and implement the GMP. The group leader or local agency permittee must also have the authority to terminate any participant who is not complying with this General Permit and the GMP.

d. The group leader or local agency permittee is responsible for:

   i. Developing, implementing, and revising the GMP;

   ii. Developing and submitting an annual Group Evaluation Report to the State Water Board and/or Regional Water Board by August 1 of each year that includes:

      (1) An evaluation and summary of all group monitoring data,

      (2) An evaluation of the overall performance of the GMP participants in complying with this General Permit and the GMP,

(3) Recommended baseline and site-specific BMPs that should be considered by each participant based upon Items (1) and (2) above, and

(4) A copy of each evaluation report and recommended BMPs as required in Section B.15.d.v. below.

iii. Recommending appropriate BMPs to reduce or prevent pollutants associated with industrial activities in storm water discharges and authorized non-storm water discharges;

iv. Assisting each participant in completing their Annual Comprehensive Site Compliance Evaluation and Annual Report;

v. Conducting a minimum of two on-site inspections of each participant's facility (it is recommended that these inspections be scheduled during the Annual Comprehensive Site Compliance Evaluation) during the term of this General Permit to evaluate the participant's compliance with this General Permit and the GMP, and to recommend any additional BMPs necessary to achieve compliance with this General Permit. Participants that join in Years 4 and 5 shall be scheduled for one evaluation. A copy of the evaluation and recommended BMPs shall be provided to the participants;

vi. Submitting a GMP (or revisions, as necessary), to the appropriate Regional Water Board(s) and State Water Board no later than September 1, 1997 (or August 1 in subsequent years). Once approved, a group leader or local agency permittee shall submit a letter of intent by August 1 of each year to continue the approved GMP. The letter of intent must include a roster of participants, participant's Waste Discharge Identification number (WDID#), updated sampling schedules, and any other revisions to the GMP;

vii. Revising the GMP as instructed by the Regional Water Board or the State Water Board; and

viii. Providing the State Water Board and/or Regional Water Board with quarterly updates of any new or deleted participants and corresponding changes in the sampling and inspection schedule.

e. The GMP shall:

i. Identify the participants of the GMP by name, location, and WDID number;

ii. Include a narrative description summarizing the industrial activities of participants of the GMP and explain why the participants, as a whole, have sufficiently similar industrial activities and BMPs to be covered by a group monitoring plan;

iii. Include a list of typical potential pollutant sources associated with the group participant's facilities and recommended baseline BMPs to prevent or reduce pollutants associated with industrial activity in the storm water discharges and authorized non-storm water discharges;

iv. Provide a five-year sampling and inspection schedule in accordance with Subsections b. and d.v. above.

v. Identify the pollutants associated with industrial activity that shall be analyzed at each participant's facility in accordance with Section B.5. The selection of these pollutants shall be based upon an assessment of each facility's potential pollutant sources and likelihood that pollutants associated with industrial activity will be present in storm water discharges and authorized non-storm water discharges in significant quantities.

f. Sampling and analysis shall be conducted in accordance with the applicable requirements of this Section.

g. Unless otherwise instructed by the Regional Water Board or the State Water Board Executive Director, the GMPs shall be implemented at the beginning of the wet season (October 1).

h. All participants in an approved GMP that have not been selected to sample in a particular wet season are required to comply with all other monitoring program and reporting requirements of this Section including the submittal of an Annual Report by July 1 of each year to the appropriate Regional Water Board.

i. GMP participants subject to Federal storm water effluent limitation guidelines must perform the monitoring described in Section B.6. and submit the results of the monitoring to the appropriate Regional Water Board within the facility operator's Annual Report.

j. GMPs and Group Evaluation Reports should be prepared in accordance with State Water Board (or Regional Water Board) guidance.

k. GMP participants may receive Sampling and Analysis Reduction sampling credit in accordance with the following conditions:

i. Current or prior participants (group participants) of approved GMPs, who have not collected and analyzed samples from six storm events as required in Section B.7.b.i.(1), may substitute credit earned through participation in a GMP for up to four of the six required storm events. Credits for GMP participation shall be calculated as follows:

(1) Credit may only be earned in years of participation where the GMP participant was not scheduled to sample and the GMP was approved.

(2) One credit will be earned for each year of valid GMP participation.

(3) One additional credit may be earned for each year the overall GMP sample collection performance is greater than 75 percent.

ii. GMP participants substituting credit as calculated above shall provide proof of GMP participation and certification that all the conditions in Section B.12.b.i. have been met. GMP participants substituting credit in accordance with Section B.15.k.i.(3) shall also provide GMP sample collection performance documentation.

iii. GMP participants that qualify for Sampling and Analysis Reduction and have already sampled a storm event after October 1, 1997 shall only be required to sample one additional storm event during the remainder of this General Permit in accordance with the "Sample 2" schedule (or "Sample 1" schedule when certification filed for the wet season beginning October 1, 2001) in Table C of this Section.

n. Group leaders shall furnish, within 60 days of receiving a request from the State Water Board or Regional Water Board, any GMP information and documentation necessary to verify the Section B.15.k. sampling credits. Group leaders may also provide this information and documentation to the group participants.

16. *Watershed Monitoring Option*

Regional Water Boards may approve proposals to substitute watershed monitoring for some or all of the requirements of this Section if the Regional Water Board finds that the watershed monitoring will provide substantially similar monitoring information in evaluating facility operator compliance with the requirements of this General Permit.

TABLE D
ADDITIONAL ANALYTICAL PARAMETERS

Subsector	SIC	Activity Represented	Parameters
SECTOR A. TIMBER PRODUCTS			
A1	2421	General Sawmills and Planing Mills	**COD;TSS;Zn**
A2	2491	Wood Preserving	**As;Cu**
A3	2411	Log Storage and Handling	**TSS**
A4	2426	Hardwood Dimension and Flooring Mills	**COD;TSS**
A4	2429	Special Product Sawmills, Not Elsewhere Classified	**COD;TSS**
A4	243X	Millwork, Veneer, Plywood, and Structural Wood	**COD;TSS**
A4	(except 2434--Wood Kitchen Cabinet Manufacturers)		
A4	244X	Wood Containers	**COD;TSS**
A4	245X	Wood Buildings and Mobile Homes	**COD;TSS**
A4	2493	Reconstituted Wood Products	**COD;TSS**
A4	2499	Wood Products, Not Elsewhere Classified	
SECTOR B. PAPER AND ALLIED PRODUCTS MANUFACTURING			
B1	261X	Pulp Mills	
B2	262X	Paper Mills	
B3	263X	Paperboard Mills	**COD**
B4	265X	Paperboard Containers and Boxes	
B5	267X	Converted Paper and Paperboard Products, Except Containers and Boxes	
SECTOR C. CHEMICAL AND ALLIED PRODUCTS MANUFACTURING			
C1	281X	Industrial Inorganic Chemicals	**Al;Fe;N+N**
C2	282X	Plastics Materials and Synthetic Resins, Synthetic Rubber, Cellulosic, and Other Manmade Fibers Except Glass	**Zn**
C3	283X	Drugs	
C4	284X	Soaps, Detergents, and Cleaning Preparations; Perfumes, Cosmetics, and Other Toilet Preparations	**N+N;Zn**
C5	285X	Paints, Varnishes, Lacquers, Enamels, and Allied Products	
C6	286X	Industrial Organic Chemicals	
C7	287X	Nitrogenous and Phosphatic Basic Fertilizers, Mixed Fertilizer, Pesticides, and Other Agricultural Chemicals	**Fe;N+N;Pb;Zn;P**
C8	289X	Miscellaneous Chemical Products	
	3952	Inks and Paints, Including China Painting Enamels, India Ink, (limited to list) Drawing Ink, Platinum Paints for Burnt Wood or Leather Work, Paints for China Painting, Artist's Paints, and Artist's Watercolors	
SECTOR D. ASPHALT PAVING/ROOFING MATERIALS MANUFACTURERS AND LUBRICANT MANUFACTURERS			
D1	295X	Asphalt Paving and Roofing Materials	**TSS**
D2	2992	Lubricating Oils and Greases	

Parameter Names

Al - Aluminum	Cd - Cadmium	Cu - Copper	Mg - Magnesium	BOD - Biochemical Oxygen Demand
As - Arsenic	CN - Cyanide	Fe - Iron	Ag - Silver	N + N - Nitrate & Nitrite Nitrogen
NH_3- Ammonia	Hg - Mercury	P - Phosphorus	Se - Selenium	Pb - Lead
Zn - Zinc	TSS -Total Suspended Solids	COD - Chemical Oxygen Demand		

Subsector	SIC	Activity Represented	Parameters

SECTOR E. GLASS, CLAY, CEMENT, CONCRETE, AND GYPSUM PRODUCT MANUFACTURING

E1	3211	Flat Glass	
E1	322X	Glass and Glassware, Pressed or Blown	
E1	323X	Glass Products Made of Purchased Glass	
E2	3241	Hydraulic Cement	
E3	325X	Structural Clay Products	**Al**
E3	326X	Pottery and Related Products	**Al**
E3	3297	Non-Clay Refractories	**Al**
E4	327X	Concrete, Gypsum, and Plaster Products (Except Lime) (except 3274).	**TSS;Fe**
E4	3295	Minerals and Earths, Ground, or Otherwise Treated	**TSS;Fe**

SECTOR F. PRIMARY METALS

F1	331X	Steel Works, Blast Furnaces, Rolling & Finishing Mill	**Al;Zn**
F2	332X	Iron and Steel Foundries	**Al;TSS;Cu;Fe;Zn**
F3	333X	Primary Smelting and Refining of Nonferrous Metals	
F4	334X	Secondary Smelting and Refining of Nonferrous Metals	
F5	335X	Rolling, Drawing, and Extruding of Nonferrous Metals	**Cu;Zn**
F6	336X	Nonferrous Foundries (Castings)	**Cu;Zn**
F7	339X	Miscellaneous Primary Metal Products	

SECTOR G. METAL MINING (ORE MINING AND DRESSING) EXCEPT INACTIVE METAL MINING ACTIVITIES ON FEDERAL LANDS WHERE AN OPERATOR CANNOT BE IDENTIFIED

[illegible]	101X	Iron Ores	
G2	102X	Copper Ores	**TSS;COD;N+N**
G3	103X	Lead and Zinc Ores	
G4	104X	Gold and Silver Ores	
G5	106X	Ferroalloy Ores, Except Vanadium	
G6	108X	Metal Mining Services	
G7	109X	Miscellaneous Metal Ores	

SECTOR H. COAL MINES AND COAL MINING-RELATED FACILITIES

NA	12XX	Coal Mines and Coal Mining-Related Facilities	**TSS;Al;Fe**

SECTOR I. COAL MINES AND COAL MINING-RELATED FACILITIES

I1	131X	Crude Petroleum and Natural Gas	
I2	132X	Natural Gas Liquids	
I3	138X	Oil and Gas Field Services	

SECTOR J. MINERAL MINING AND DRESSING EXCEPT INACTIVE MINERAL MINING ACTIVITIES OCCURRING ON FEDERAL LANDS WHERE AN OPERATOR CANNOT BE IDENTIFIED

J1	141X	Dimension Stone	**TSS**
J1	142X	Crushed and Broken Stone, Including Rip Rap	**TSS**
J1	148X	Nonmetallic Minerals, Except Fuels	**TSS**
J2	144X	Sand and Gravel	**TSS;N+N**
J3	145X	Clay, Ceramic, and Refractory Materials	
J4	147X	Chemical and Fertilizer Mineral Mining	
J4	149X	Miscellaneous Nonmetallic Minerals, Except Fuels	

bsector	SIC	Activity Represented	Parameters
SECTOR K. HAZARDOUS WASTE TREATMENT STORAGE OR DISPOSAL FACILITIES			
NA	4953	Hazardous Waste Treatment Storage or Disposal	**NH_3;Mg;COD;As Cd;CN;Pb Hg;Se;Ag**
SECTOR L. LANDFILLS AND LAND APPLICATION SITES			
NA	4953	Landfills and Land Application Sites That Receive or Have Received Industrial Wastes, Except Inactive Landfills or Land Applications Sites Occurring on Federal Lands Where an Operator Cannot be Identified	**TSS;Fe**
SECTOR M. AUTOMOBILE SALVAGE YARDS			
NA	5015	Facilities Engaged in Dismantling or Wrecking Used Motor Vehicles for Parts Recycling or Resale and for Scrap	**TSS;Fe;Pb;Al**
SECTOR N. SCRAP RECYCLING FACILITIES			
NA	5093	Processing, Reclaiming, and Wholesale Distribution of Scrap and Waste Materials	**TSS;Fe;Pb Al;Cu;Zn;COD**
SECTOR O. STEAM ELECTRIC GENERATING FACILITIES			
NA	4911	Steam Electric Power Generating Facilities	**Fe**
'CTOR P. LAND TRANSPORTATION FACILITIES THAT HAVE VEHICLE AND EQUIPMENT MAINTENANCE SHOPS AND/OR EQUIPMENT CLEANING OPERATIONS			
P1	40XX	Railroad Transportation	
P2	41XX	Local and Highway Passenger Transportation	
P3	42XX	Motor Freight Transportation and Warehousing	
P4	43XX	United States Postal Service	
P5	5171	Petroleum Bulk Stations and Terminals	
SECTOR Q. WATER TRANSPORTATION FACILITIES THAT HAVE VEHICLE (VESSEL) & EQUIPMENT MAINTENANCE SHOPS AND/OR EQUIPMENT CLEANING OPERATIONS			
NA	44XX	Water Transportation	**Al;Fe;Pb;Zn**
SECTOR R. SHIP AND BOAT BUILDING OR REPAIRING YARDS			
NA	373X	Ship and Boat Building or Repairing Yards	
SECTOR S. AIR TRANSPORTATION FACILITIES			
NA	45XX	Air Transportation Facilities That Have Vehicle Maintenance Ships, Material Handing Facilities, Equipment Cleaning Operations, or Airport and/or Aircraft Deicing/Anti-icing Operations	**BOD;COD;NH_3;pH**

Subsector	SIC	Activity Represented	Parameters
SECTOR T. TREATMENT WORKS			
NA	4952	Treatment Works Treating Domestic Sewage or Any Other Sewage Sludge or Wastewater Treatment Device or System Used in the Storage, treatment, recycling, or Reclamation of Municipal or Domestic Sewage with a Design Flow of 1.0 MGD or More or Required to Have an Approved Pretreatment Program	
SECTOR U. FOOD AND KINDRED PRODUCTS			
U1	201X	Meat Products	
U2	202X	Dairy Products	
U3	203X	Canned, Frozen and Preserved Fruits, Vegetables and Food Specialties	
U4	204X	Grain Mill Products	**TSS**
U5	205X	Bakery Products	
U6	206X	Sugar and Confectionery Products	
U7	207X	Fats and Oils	**BOD;COD;TSS;N+N**
U8	208X	Beverages	
U9	209X	Miscellaneous Food Preparations and Kindred Products	
NA	21XX	Tobacco Products	
CTOR V. TEXTILE MILLS, APPAREL, AND OTHER FABRIC PRODUCT MANUFACTURING			
	22XX	Textile Mill Products	
V2	23XX	Apparel and Other Finished Products Made From Fabrics and Similar Materials	
SECTOR W. FURNITURE AND FIXTURES			
NA	25XX	Furniture and Fixtures	
NA	2434	Wood Kitchen Cabinets	
SECTOR X. PRINTING AND PUBLISHING			
NA	2732	Book Printing	
NA	2752	Commercial Printing, Lithographic	
NA	2754	Commercial Printing, Gravure	
NA	2759	Commercial Printing, Nor Elsewhere Classified	
NA	2796	Platemaking and Related Services	
SECTOR Y. RUBBER, MISCELLANEOUS PLASTIC PRODUCTS, AND MISC. MANUFACTURING INDUSTRIES			
Y1	301X	Tires and Inner Tubes	**Zn**
Y1	302X	Rubber and Plastics Footwear	**Zn**
Y1	305X	Gaskets, Packing, and Sealing Devices and Rubber and Plastics Hose and Belting	**Zn**
Y1	306X	Fabricated Rubber Products, Not Elsewhere Classified	**Zn**
Y2	308X	Miscellaneous Plastics Products	

Subsector	SIC	Activity Represented	Parameters
Y2	393X	Musical Instruments	
Y2	394X	Dolls, Toys, Games, and Sporting and Athletic Goods	
Y2	395X	Pens, Pencils, and Other Artists' Materials	
Y2	396X	Costume Jewelry, Costume Novelties, Buttons, and Miscellaneous Notions, Except Precious Metal	
Y2	399X	Miscellaneous Manufacturing Industries	
SECTOR Z. LEATHER TANNING AND FINISHING			
NA	311X	Leather Tanning and Finishing	
NA	NA	Facilities that Make Fertilizer Solely From Leather Scraps and Leather Dust	
SECTOR AA. FABRICATED METAL PRODUCTS			
AA1	3429	Hardware, Not Elsewhere Classified	**Zn;N+N;Fe;Al**
AA1	3441	Fabricated Structural Metal	**Zn;N+N;Fe;Al**
AA1	3442	Metal Doors, Sash, Frames, Molding, and Trim	**Zn;N+N;Fe;Al**
AA1	3443	Fabricated Plate Work (Boiler Shops)	**Zn;N+N;Fe;Al**
AA1	3444	Sheet Metal Work	**Zn;N+N;Fe;Al**
AA1	3451	Screw Machine Products	**Zn;N+N;Fe;Al**
AA1	3452	Bolts, Nuts, Screws, Rivets, and Washers	**Zn;N+N;Fe;Al**
\1	3462	Iron and Steel Forgings	**Zn;N+N;Fe;Al**
..A1	3471	Electroplating, Plating, Polishing, Anodizing, and Coloring	**Zn;N+N;Fe;Al**
AA1	3494	Valves and Pipe Fittings, Not Elsewhere Classified	**Zn;N+N;Fe;Al**
AA1	3496	Miscellaneous Fabricated Wire Products	**Zn;N+N;Fe;Al**
AA1	3499	Fabricated Metal Products, Not Elsewhere Classified	**Zn;N+N;Fe;Al**
AA1	391X	Jewelry, Silverware, and Plated Ware	**Zn;N+N;Fe;Al**
AA2	3479	Coating, Engraving, and Allied Services	**Zn;N+N**
SECTOR AB. TRANSPORTATION EQUIPMENT, INDUSTRIAL OR COMMERCIAL MACHINERY			
NA	35XX	Industrial and Commercial Machinery (except 357X Computer and Office Equipment)	
NA	37XX	Transportation Equipment (except 373X Ship and Boat Building and Repairing	
SECTOR AC. ELECTRONIC, ELECTRICAL. PHOTOGRAPHIC, AND OPTICAL GOODS			
NA	36XX	Electronic and Other Electrical Equipment and Components, Except Computer Equipment	
NA	38XX	Measuring, Analyzing, and Controlling Instruments; Photographic, Medical, and Optical Goods; Watches and Clocks	
NA	357X	Computer and Office Equipment	

Section C: STANDARD PROVISIONS

1. Duty to Comply

The facility operator must comply with all of the conditions of this General Permit. Any General Permit noncompliance constitutes a violation of the Clean Water Act (CWA) and the Porter-Cologne Water Quality Control Act and is grounds for (a) enforcement action for (b) General Permit termination, revocation and reissuance, or modification or (c) denial of a General Permit renewal application.

The facility operator shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if this General Permit has not yet been modified to incorporate the requirement.

2. General Permit Actions

This General Permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the facility operator for a General Permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any General Permit condition.

If any toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under Section 307(a) of the CWA for a toxic pollutant which is present in the discharge and that standard or prohibition is more stringent than any limitation on the pollutant in this General Permit, this General Permit shall be modified or revoked and reissued to conform to the toxic effluent standard or prohibition, and the facility operator so notified.

3. Need to Halt or Reduce Activity not a Defense

It shall not be a defense for a facility operator in an enforcement action that it would have been necessary to halt or reduce the general permitted activity in order to maintain compliance with the conditions of this General Permit.

4. Duty to Mitigate

The facility operator shall take all responsible steps to minimize or prevent any discharge in violation of this General Permit which has a reasonable likelihood of adversely affecting human health or the environment.

5. Proper Operation and Maintenance

The facility operator at all times shall properly operate and maintain any facilities and systems of treatment and control (and related appurtenances) which are installed or used by the facility operator to achieve compliance with the conditions of this General Permit and with the requirements of storm water pollution prevention plans (SWPPPs). Proper operation and maintenance also include adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance may require the operation of backup or auxiliary facilities or similar systems installed by a facility operator when necessary to achieve compliance with the conditions of this General Permit.

6. Property Rights

This General Permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State, or local laws or regulations.

7. Duty to Provide Information

The facility operator shall furnish the Regional Water Quality Control Board (Regional Water Board), State Water Resources Control Board (State Water Board), U.S. Environmental Protection Agency (U.S. EPA), or local storm water management agency, within a reasonable time specified by the agencies, any requested information to determine compliance with this General Permit. The facility operator shall also furnish, upon request, copies of records required to be kept by this General Permit.

8. Inspection and Entry

The facility operator shall allow the Regional Water Board, State Water Board, U.S. EPA, and local storm water management agency, upon the presentation of credentials and other documents as may be required by law, to:

a. Enter upon the facility operator's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this General Permit;

b. Have access to and copy at reasonable times any records that must be kept under the conditions of this General Permit;

c. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment) that are related to or may impact storm water discharge or authorized non-storm water discharge; and

d. Conduct monitoring activities at reasonable times for the purpose of ensuring General Permit compliance.

9. Signatory Requirements

a. All Notices of Intent (NOIs) submitted to the State Water Board shall be signed as follows:

(1) For a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (a) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or (b) the manager of the facility if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

(2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

(3) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official. The principal executive officer of a Federal agency includes the chief executive officer of the agency or the senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of U.S. EPA).

b. All reports, certifications, or other information required by the General Permit or requested by the Regional Water Board, State Water Board, U.S. EPA, or local storm water management agency shall be signed by a person described above or by a duly authorized representative. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described above and retained as part of the SWPPP.

(2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of manager, operator, superintendent, or position of equivalent responsibility or an individual or position having overall responsibility for named position.)

(3) If an authorization is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization must be attached to the SWPPP prior to submittal of any reports, certifications, or information signed by the authorized representative.

10. Certification

Any person signing documents under Provision 9. above shall make the following certification:

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

11. Reporting Requirements

a. Planned changes: The facility operator shall give advance notice to the Regional Water Board and local storm water management agency of any planned physical alteration or additions to the general permitted facility. Notice is required under this provision only when the alteration or addition could significantly change the nature or increase the quantity of pollutants discharged.

b. Anticipated noncompliance: The facility operator will give advance notice to the Regional Water Board and local storm water management agency of any planned changes at the permitted facility which may result in noncompliance with General Permit requirements.

c. Compliance schedules: Reports of compliance or noncompliance with or any progress reports on interim and final requirements contained in any compliance schedule of this General Permit shall be submitted no later than 14 days following each scheduled date.

d. Noncompliance reporting: The facility operator shall report any noncompliance at the time monitoring reports are submitted. The written submission shall contain (1) a description of the noncompliance and its cause; (2) the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and (3) steps taken or planned to reduce and prevent recurrence of the noncompliance.

12. Oil and Hazardous Substance Liability

Nothing in this General Permit shall be construed to preclude the institution of any legal action or relieve the facility operator from any responsibilities, liabilities, or penalties to which the facility operator is or may be subject under Section 311 of the CWA.

13. Severability

The provisions of this General Permit are severable; and if any provision of this General Permit or the application of any provision of this General Permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this General Permit shall not be affected thereby.

14. Reopener Clause

This General Permit may be modified, revoked, and reissued, or terminated for cause due to promulgation of amended regulations, receipt of U.S. EPA guidance concerning regulated activities, judicial decision, or in accordance with 40 CFR 122.62, 122.63, 122.64, and 124.5. This General Permit may be reopened to modify the provisions regarding authorized non-storm water discharges specified in Section D. Special Conditions.

15. Penalties for Violations of General Permit Conditions.

a. Section 309 of the CWA provides significant penalties for any person who violates a General Permit condition

implementing Sections 301, 302, 306, 307 308, 318, or 405 of the CWA, or any General Permit condition or limitation implementing any such section in a General Permit issued under Section 402. Any person who violates any General Permit condition of this General Permit is subject to a civil penalty not to exceed $25,000 per day of such violation, as well as any other appropriate sanction provided by Section 309 of the CWA.

b. The Porter-Cologne Water Quality Control Act also provides for civil and criminal penalties in some cases greater than those under the CWA.

16. Availability

A copy of this General Permit shall be maintained at the facility and be available at all times to the appropriate facility personnel and to Regional Water Board and local agency inspectors.

17. Transfers

This General Permit is not transferable from one facility operator to another facility operator nor may it be transferred from one location to another location. A new facility operator of an existing facility must submit an NOI in accordance with the requirements of this General Permit to be authorized to discharge under this General Permit.

18. Continuation of Expired General Permit

This General Permit continues in force and effect until a new general permit is issued or the State Water Board rescinds the General Permit. Facility operators authorized to discharge under the expiring general permit are required to file an NOI to be covered by the reissued General Permit.

19. Penalties for Falsification of Reports

Section 309(c)(4) of the CWA provides that any person who knowingly makes any false material statement, representation, or certification in any record or other document submitted or required to be maintained under this General Permit, including reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $10,000 or by imprisonment for not more than two years, or by both.

Attachment 1

FACILITIES COVERED BY THIS GENERAL PERMIT

Industrial facilities include Federal, State, municipally owned, and private facilities from the following categories:

1. FACILITIES SUBJECT TO STORM WATER EFFLUENT LIMITATIONS GUIDELINES, NEW SOURCE PERFORMANCE STANDARDS, OR TOXIC POLLUTANT EFFLUENT STANDARDS (40 Code of Federal Regulations (CFR) SUBCHAPTER N). Currently, categories of facilities subject to storm water effluent limitations guidelines are Cement Manufacturing (40 CFR Part 411), Feedlots (40 CFR Part 412), Fertilizer Manufacturing (40 CFR Part 418), Petroleum Refining (40 CFR Part 419), Phosphate Manufacturing (40 CFR Part 422), Steam Electric (40 CFR Part 423), Coal Mining (40 CFR Part 434), Mineral Mining and Processing (40 CFR Part 436), Ore Mining and Dressing (40 CFR Part 440), and Asphalt Emulsion (40 CFR Part 443).

2. MANUFACTURING FACILITIES: Standard Industrial Classifications (SICs) 24 (except 2434), 26 (except 265 and 267), 28 (except 283 and 285) 29, 311, 32 (except 323), 33, 3441, and 373.

3. OIL AND GAS/MINING FACILITIES: SICs 10 through 14 including active or inactive mining operations (except for areas of coal mining operations meeting the definition of a reclamation area under 40 CFR 434.11(l) because of performance bond issued to the facility by the appropriate Surface Mining Control and Reclamation Act (SMCRA) authority has been released, or except for area of non-coal mining operations which have been released from applicable State or Federal reclamation requirements after December 17, 1990); oil and gas exploration, production, processing, or treatment operations; or transmission facilities that discharge storm water contaminated by contact with or that has come into contact with any overburden, raw material, intermediate products, finished products, by-products, or waste products located on the site of such operations. Inactive mining operations are mined sites that are not being actively mined but which have an identifiable facility operator. Inactive mining sites do not include sites where mining claims are being maintained prior to disturbances associated with the extraction, beneficiation, or processing of mined material; or sites where minimal activities are undertaken for the sole purpose of maintaining a mining claim.

4. HAZARDOUS WASTE TREATMENT, STORAGE, OR DISPOSAL FACILITIES: Includes those operating under interim status or a general permit under Subtitle C of the Federal Resource, Conservation, and Recovery Act (RCRA).

5. LANDFILLS, LAND APPLICATION SITES, AND OPEN DUMPS: Sites that receive or have received industrial waste from any of

the facilities covered by this General Permit, sites subject to regulation under Subtitle D of RCRA, and sites that have accepted wastes from construction activities (construction activities include any clearing, grading, or excavation that results in disturbance of five acres or more).

6. RECYCLING FACILITIES: SICs 5015 and 5093. These codes include metal scrapyards, battery reclaimers, salvage yards, motor vehicle dismantlers and wreckers, and recycling facilities that are engaged in assembling, breaking up, sorting, and wholesale distribution of scrap and waste material such as bottles, wastepaper, textile wastes, oil waste, etc.

7. STEAM ELECTRIC POWER GENERATING FACILITIES: Includes any facility that generates steam for electric power through the combustion of coal, oil, wood, etc.

8. TRANSPORTATION FACILITIES: SICs 40, 41, 42 (except 4221-25), 43, 44, 45, and 5171 which have vehicle maintenance shops, equipment cleaning operations, or airport deicing operations. Only those portions of the facility involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication) or other operations identified herein that are associated with industrial activity.

9. SEWAGE OR WASTEWATER TREATMENT WORKS: Facilities used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludge that are located within the confines of the facility with a design flow of one million gallons per day or more or required to have an approved pretreatment program under 40 CFR Part 403. Not included are farm lands, domestic gardens, or lands used for sludge management where sludge is beneficially reused and which are not physically located in the confines of the facility, or areas that are in compliance with Section 405 of the Clean Water Act.

10. MANUFACTURING FACILITIES WHERE INDUSTRIAL MATERIALS, EQUIPMENT, OR ACTIVITIES ARE <u>EXPOSED</u> TO STORM WATER: SICs 20, 21, 22, 23, 2434, 25, 265, 267, 27, 283, 285, 30, 31 (except 311), 323, 34 (except 3441), 35, 36, 37 (except 373), 38, 39, and 4221-4225.

Attachment 2

STORM WATER CONTACTS FOR THE STATE AND REGIONAL WATER BOARDS

See Storm Water Contacts at:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/contact.shtml

NOTICE OF INTENT (NOI) INSTRUCTIONS

TO COMPLY WITH STATE WATER RESOURCES CONTROL BOARD WATER QUALITY ORDER NO. 97-03-DWQ NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) GENERAL PERMIT NO. CAS000001

Who Must Submit

The facility operator must submit an NOI for each industrial facility that is required by U.S. Environmental Protection Agency (U.S.EPA) regulations to obtain a storm water permit. The required industrial facilities are listed in Attachment 1 of the General Permit and are also listed in 40 Code of Federal Regulations Section 122.26(b)(14).

The facility operator is typically the owner of the business or operation where the industrial activities requiring a storm water permit occur. The facility operator is responsible for all permit related activities at the facility.

Where operations have discontinued and significant materials remain on site (such as at closed landfills), the landowner may be responsible for filing an NOI and complying with this General Permit. Landowners may also file an NOI for a facility if the landowner, rather than the facility operator, is responsible for compliance with this General Permit.

How and Where to Apply

The completed NOI form, a site map, and appropriate fee must be mailed to the State Water Resources Control Board (State Water Board) at the following address:

State Water Resources Control Board
Division of Water Quality
P.O. Box 1977
Sacramento, CA 95812-1977
Attn: Storm Water Permitting Unit

Please Note: Do not send the original or copies of the NOI submittal to the Regional Water Quality Control Board (Regional Water Board). The original NOI will be forwarded to the Regional Water Board after processing.

Do not send a copy of your Storm Water Pollution Prevention Plan (SWPPP) with your NOI submittal. Your SWPPP is to be kept on site and made available for review upon request.

When to Apply

Facility operators of existing facilities must file an NOI in accordance with these instructions by March 30, 1992. Facility

operators of new facilities (those beginning operations after March 30, 1992) must file an NOI in accordance with these instructions at least 14 days prior to the beginning of operations.

Once the completed NOI, site map, and appropriate fee have been submitted to the State Water Board, your NOI will be processed and you will be issued a receipt letter with a Waste Discharge Identification (WDID) Number. Please refer to this number when you contact either the State or Regional Water Boards.

Fees

The total annual fee is $1008.00. Checks should be made payable to: SWRCB

Change of Information

If the information provided on the NOI or site map changes, you should report the changes to the State Water Board using an NOI form. Section I of the line-by-line instructions includes information regarding changes to the NOI.

Questions

If you have any questions completing the NOI, please call the appropriate Regional Water Board (Attachment 2) or the State Water Board at (916) 341-5538.

NOI LINE-BY-LINE INSTRUCTIONS

Please type or print your responses on the NOI. Please complete the NOI form in its entirety and sign the certification.

Section I--NOI STATUS

Check box "A" if this is a new NOI registration.

Check box "B" if you are reporting changes to the NOI (e.g., new contact person, phone number, mailing address). Include the facility WDID #. Highlight all the information that has been changed.

Please note that a change of information **does not** apply to a change of facility operator or a change in the location of the facility. These changes require a Notice of Termination (NOT) and submittal of a new NOI and annual fee. Contact the State Water Board or Regional Water Boards for more information on the NOT Form and instructions.

Regardless of whether you are submitting a new or revised NOI, you must complete the NOI in its entirety and the NOI must be signed.

Section II--Facility Operator Information

Part A: The facility operator is the legal entity that is responsible for all permit related compliance activities at the facility. In most cases, the facility operator is the owner of the business or operation where the industrial activity occurs. Give the legal name and the address of the person, firm, public organization, or any other entity that is responsible for complying with the General Permit.

Part B: Check the box that indicates the type of operation.

Section III--Facility Site Information

Part A: Enter the facility's official or legal name and provide the address. Facilities that do not have a street address must provide cross-streets or parcel numbers. Do not include a P.O. Box address in Part A.

Part B: Enter the mailing address of the facility if different than Part A. This address may be a P.O. Box.

The contact person should be the plant or site manager who is familiar with the facility and responsible for overseeing compliance of the General Permit requirements.

Part C: Enter the total size of the facility in either acres or square feet. Also include the percentage of the site that is impervious (areas that water cannot soak into the ground, such as concrete, asphalt, and rooftops).

Part D: Determine the Standard Industrial Classification (SIC) code which best identifies the industrial activity that is taking place at the facility. This information can be obtained by referring to the Standard Industrial Classification Manual prepared by the Federal Office of Management and Budget which is available at public libraries. The code you determine should identify the industrial activity that requires you to submit the NOI. (For example, if the business is high school education and the activity is school bus maintenance, the code you choose would be bus maintenance, not education.) Most facilities have only one code; however, additional spaces are provided for those facilities that have more than one activity.

Part E: Identify the title of the industrial activity that requires you to submit the NOI (e.g., the title of SIC Code 2421 is Sawmills and Planing Mills, General). If you cannot identify the title, provide a description of the regulated activity(s).

Section IV--Address for Correspondence

Correspondence relative to the permit will be mailed occasionally. Check the box which indicates where you would like such correspondence delivered. If you want correspondence sent to another contact person or address different than indicated in Section II or Section III then include the information on an extra sheet of paper.

Section V--Billing Address Information

To continue coverage under the General Permit, the annual fee must be paid. Use this section to indicate where the annual fee invoices should be mailed. Enter the billing address if different than the address given in Sections II or III.

Section VI--Receiving Water Information

Provide the name of the receiving water where storm water discharge flows from your facility. A description of each option is included below.

1. Directly to waters of the United States: Storm water discharges directly from the facility to a river, creek, lake, ocean, etc. Enter the name of the receiving water (e.g., Boulder Creek).

2. Indirectly to waters of the United States: Storm water discharges over adjacent properties or right-of-ways prior to discharging to waters of the United States. Enter the name of the closest receiving water (e.g., Clear Creek).

Section VII--Implementation of Permit Requirements

Parts A and B:	Check the boxes that best describe the status of the Storm Water Pollution Prevention Plan (SWPPP) and the Monitoring Program.
Part C:	Check yes or no to questions 1 through 4. If you answer no to any question, you need to assign a person to these tasks immediately.

As a permit holder you are required to have an SWPPP and Monitoring Program in place prior to the beginning of facility operations. Failure to do so is in direct violation of the General Permit. Do not send a copy of your SWPPP with your NOI submittal.

Please refer to Sections A and B of the General Permit for additional information regarding the SWPPP and Monitoring Program.

Section VIII--Site Map

Provide a "to scale" drawing of the facility and its immediate surroundings. Include as much detail about the site as possible. At a minimum, indicate buildings, material handling and storage areas, roads, names of adjacent streets, storm water discharge points, sample collection points, and a north arrow. Whenever

possible limit the map to a standard size sheet of paper (8.5" x 11" or 11" x 17"). **Do not send blueprints** unless you are sending one page and it meets the size limits as defined above.

A location map may also be included, especially in cases where the facility is difficult to find, but are not to be submitted as a substitute for the site map. The location map can be created from local street maps and U.S. Geological Survey (USGS) quadrangle maps, etc.

A revised site map must be submitted whenever there is a significant change in the facility layout (e.g., new building, change in storage locations, boundary change, etc.).

Section IX--Certification

This section should be read by the facility operator. The certification provides assurances that the NOI and site map were completed by the facility operator in an accurate and complete fashion and with the knowledge that penalties exist for providing false information. It also requires the Responsible Party to certify that the provisions in the General Permit will be complied with.

The NOI must be signed by:

For a Corporation: a responsible corporate officer (or authorized individual).

For a Partnership or Sole Proprietorship: a general partner or the proprietor, respectively.

For a Municipality, State, or other non-Federal Public Agency: either a principal executive officer or ranking elected official.

For a Federal Agency: either the chief or senior executive officer of the agency.

State of California
State Water Resources Control Board

NOTICE OF INTENT

TO COMPLY WITH THE TERMS OF THE
GENERAL PERMIT TO DISCHARGE STORM WATER
ASSOCIATED WITH **INDUSTRIAL ACTIVITY** (WQ ORDER No. 97-03-DWQ)
(*Excluding Construction Activities*)

SECTION I. NOI STATUS (please check only one box)

A. [ ] New Permittee B. [ ] Change of Information WDID # |_|_|_|_|_|_|_|_|_|_|_|_|

SECTION II. FACILITY OPERATOR INFORMATION (See instructions)

A. NAME: ______________________________ Phone: ___--___--____

Mailing Address: ______________________________

City: ______________________ State: __ Zip Code: _____--____

Contact Person: ______________________________

B. OPERATOR TYPE:
(check one) 1.[ ] Private Individual 2.[ ]Business 3.[ ]Municipal 4.[ ]State 5.[ ]Federal 6.[ ]Other

SECTION III. FACILITY SITE INFORMATION

A. FACILITY NAME ______________________________ Phone: ___--___--____

Facility Location: ______________________________ County: ______________

City: ______________________ State: C|A Zip Code: _____--____

B. MAILING ADDRESS: ______________________________

City: ______________________ State: __ Zip Code: _____--____

Contact Person: ______________________________

C. FACILITY INFORMATION (check one)
Total Size of Site: ____________ Acres [ ] Sq. Ft. [ ]

Percent of Site Impervious (*including rooftops*) |______| %

D. SIC CODE(S) OF REGULATED ACTIVITY:

1. |_|_|_|_|
2. |_|_|_|_|
3. |_|_|_|_|

E. REGULATED ACTIVITY (*describe each SIC code*):

____

____

____

FOR STATE USE ONLY:

SECTION IV. ADDRESS FOR CORRESPONDENCE

|__| Facility Operator Mailing Address (Section II) |__| Facility Mailing Address (Section III, B.) |__| Both

SECTION V. BILLING ADDRESS INFORMATION

SEND BILL TO: [ ]Facility Operator Mailing Address (Section II) [ ]Facility Mailing Address (Section III, B.) [ ]Other (*enter information below*)

Name:		Phone: ___ -- ___ -- ____
Mailing Address:		
City:	State:	Zip Code: _____ -- ____
Contact Person:		

SECTION VI. RECEIVING WATER INFORMATION

Your facility's storm water discharges flow: (*check one*) [ ] Directly OR [ ] Indirectly to waters of the United States.

Name of receiving water: ______________________________
(river, lake, stream, ocean, etc.)

SECTION VII. IMPLEMENTATION OF PERMIT REQUIREMENTS

A. STORM WATER POLLUTION PREVENTION PLAN (SWPPP) (*check one*)
[ ] A SWPPP has been prepared for this facility and is available for review.
[ ] A SWPPP will be prepared and ready for review by (enter date): ____/____/____.

B. MONITORING PROGRAM (check one)
[ ] A Monitoring Program has been prepared for this facility and is available for review.
[ ] A Monitoring Program will be prepared and ready for review by (enter date): ____/____/____.

C. PERMIT COMPLIANCE RESPONSIBILITY
Has a person been assigned responsibility for:

1. Inspecting the facility throughout the year to identify any potential pollution problems? .... ____YES ____NO
2. Collecting storm water samples and having them analyzed?............ ____YES ____NO
3. Preparing and submitting an annual report by July 1 of each year? .... ____YES ____NO
4. Eliminating discharges other than storm water (*such as equipment or vehicle wash-water*) into the storm drain?............ ____YES ____NO

SECTION VIII. SITE MAP

I HAVE ENCLOSED A SITE MAP YES[ ] A new NOI submitted without a site map will be rejected.

SECTION IX. CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. In addition, I certify that I have read the entire General Permit, including all attachments, and agree to comply with and be bound by all of the provisions, requirements, and prohibitions of the permit, including the development and implementation of a Storm Water Pollution Pervention Plan and a Monitoring Program Plan will be complied with."

Printed Name: ______________________________

Signature: ________________________ Date ______________

Title: ______________________________

DEFINITIONS

1. "Best Management Practices" ("BMPs") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment measures, operating procedures, and practices to control facility site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may include any type of pollution prevention and pollution control measure necessary to achieve compliance with this General Permit.

2. Clean Water Act (CWA) means the Federal Water Pollution Control Act enacted by Public Law 92-500 as amended by Public Laws 95-217, 95-576, 96-483, and 97-117; 33 USC. 1251 et seq.

3. "Facility" is a collection of industrial processes discharging storm water associated with industrial activity within the property boundary or operational unit.

4. "Non-Storm Water Discharge" means any discharge to storm sewer systems that is not composed entirely of storm water.

5. "Significant Materials" includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under Section 101(14) of Comprehensive Environmental Response, Compensation, and Liability Act (CERLCA); any chemical the facility is required to report pursuant to Section 313 of Title III of Superfund Amendments and Reauthorization Act (SARA); fertilizers; pesticides; and waste products such as ashes, slag, and sludge that have the potential to be released with storm water discharges.

6. "Significant Quantities" is the volume, concentrations, or mass of a pollutant that can cause or threaten to cause pollution, contamination, or nuisance; adversely impact human health or the environment; and/or cause or contribute to a violation of any applicable water quality standards for the receiving water.

7. "Significant Spills" includes, but is not limited to: releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the CWA (see 40 CFR 110.10 and 117.21) or Section 102 of CERCLA (see 40 CFR 302.4).

8. "Storm water" means storm water runoff, snow melt runoff, and storm water surface runoff and drainage. It excludes infiltration and runoff from agricultural land.

9. "Storm Water Associated with Industrial Activity" means the discharge from any conveyance which is used for collecting and conveying storm water and which is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant. The term does not include discharges from facilities or activities excluded from the NPDES program. For the facilities identified in Categories 1 through 9 of Attachment 1 of this General Permit, the term includes, but is not limited to, storm water discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials; manufactured products, waste material, or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process wastewaters (as defined at 40 CFR Part 401); sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and finished products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to storm water.

   For the facilities identified in Category 10 of Attachment 1 of this General Permit, the term only includes storm water discharges from all areas listed in the previous sentence where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery <u>are exposed to storm water</u>.

   Material handling activities include the: storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, finished product, by-product, or waste product. The term excludes areas located on plant lands separate from the plant's industrial activities, such as office buildings and accompanying parking lots as long as the drainage from the excluded areas is not mixed with storm water drained from the above described areas. Industrial facilities (including industrial facilities that are federally, State, or municipally owned or operated that meet the description of the facilities listed in this paragraph) include those facilities designated under 40 CFR 122.26(a)(1)(v).

ACRONYM LIST

BAT	Best Available Technology Economically Achievable
BCT	Best Conventional Pollutant Control Technology
BMPs	Best Management Practices
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (Federal Superfund)
CFR	Code of Federal Regulations
CWA	Clean Water Act
General Permit	General Industrial Activities Storm Water Permit
GMP	Group Monitoring Plan
NEC	No Exposure Certification
NOI	Notice of Intent
NOT	Notice of Termination
NPDES	National Pollutant Discharge Elimination System
O&G	Oil and Grease
RCRA	Resource, Conservation, and Recovery Act
Regional Water Board	Regional Water Quality Control Board
RQ	Reportable Quantity
SARA	Superfund Amendments and Reauthorization Act of 1986
SIC	Standard Industrial Classification
SMCRA	Surface Mining Control and Reclamation Act
SPCC	Spill Prevention Control and Countermeasures
State Water Board	State Water Resources Control Board
SWPPP	Storm Water Pollution Prevention Plan
TOC	Total Organic Carbon
TSS	Total Suspended Solids
U.S. EPA	U.S. Environmental Protection Agency
WDID	Waste Discharger Identification
WDRs	Waste Discharge Requirements

STORM WATER POLLUTION PREVENTION PLAN and MONITORING PROGRAM REVIEW SHEET

GENERAL INDUSTRIAL ACTIVITIES STORM WATER PERMIT WATER QUALITY ORDER NO. 97-03-DWQ

FACILITY NAME _____

WDID# _____ REVIEW DATE _____

FACILITY CONTACT
Name _____
Title _____
Company _____
Street Address _____
City, State _____
Zip _____

CONSULTANT CONTACT
Name _____
Title _____
Company _____
Street Address _____
City, State _____
Zip _____

Indication of WDID#	☐ YES	☐ NO

STORM WATER POLLUTION PREVENTION PLAN		Not Applicable	Included	Not Included	Incomplete	Comments
Signed Certification	**(C.9 and C.10)**					
Pollution Prevention Team	**(A.3.a)**					
Existing Facility Plans	**(A.3.b)**					
Facility Site Map(s)						
Facility boundaries	(A.4.a)					
Drainage areas	(A.4.a)					
Direction of flow	(A.4.a)					
On-site water bodies	(A.4.a)					
Areas of soil erosion	(A.4.a)					
Nearby water bodies	(A.4.a)					
Municipal storm drain inlets	(A.4.a)					
Points of discharge	(A.4.b)					
Structural control measures	(A.4.b)					
Impervious areas (paved areas, buildings, covered areas, roofed areas)	(A.4.c)					
Location of directly exposed materials	(A.4.d)					
Locations of significant spills and leaks	(A.4.d)					
Storage areas / Storage tanks	(A.4.e)					
Shipping and receiving areas	(A.4.e)					
Fueling areas	(A.4.e)					
Vehicle and equipment storage and maintenance	(A.4.e)					
Material handling / Material processing	(A.4.e)					
Waste treatment / Waste disposal	(A.4.e)					
st generation / Particulate generation	(A.4.e)					
Cleaning areas / Rinsing areas	(A.4.e)					
Other areas of industrial activities	(A.4.e)					
STORM WATER		**Not**		**Not**		

Items in parentheses refer to specific sections of the General Permit

Reviewer _____

POLLUTION PREVENTION PLAN		Applicable	Included	Included	Incomplete	Comments
List of Significant Materials	**(A.5)**					
For each material listed:						
rage location						
eceiving and shipping location						
Handling location						
Quantity						
Frequency						
Description of Potential Pollution Sources	**(A.6)**					
Industrial processes	(A.6.a.i)					
Material handling and storage areas	(A.6.a.ii)					
Dust and particulate generating activities	(A.6.a.iii)					
Significant spills and leaks	(A.6.a.iv)					
Non-storm water discharges	(A.6.a.v)					
Soil erosion	(A.6.a.vi)					
Assessment of Potential Pollutant Sources	**(A.7)**					
Areas likely to be sources of pollutants	(A.7.a.i)					
Pollutants likely to be present	(A.7.a.ii)					
Storm Water Best Management Practices	**(A.8)**					
Existing BMPs						
Existing BMPs to be revised and/or implemented						
w BMPs to be implemented						
Non-structural BMPs	**(A.8.a)**					
Good housekeeping	(A.8.a.i)					
Preventative maintenance	(A.8.a.ii)					
Spill response	(A.8.a.iii)					
Material handling and storage	(A.8.a.iv)					
Employee training	(A.8.a.v)					
Waste handling / Waste recycling	(A.8.a.vi)					
Recordkeeping and internal reporting	(A.8.a.vii)					
Erosion control and site stabilization	(A.8.a.viii)					
Inspections	(A.8.a.ix)					
Quality assurance	(A.8.a.x)					
Structural BMPs	**(A.8.b)**					
Overhead coverage	(A.8.b.i)					
Retention ponds	(A.8.b.ii)					
Control devices	(A.8.b.iii)					
Secondary containment structures	(A.8.b.iv)					
Treatment	(A.8.b.v)					
Annual Comprehensive Site Compliance Evaluation						
Review of visual observations, inspections, and sampling analysis	(A.9.a)					
Visual inspection of potential pollution sources	(A.9.b)					
iew and evaluation of BMPs	(A.9.c)					
Evaluation report	(A.9.d)					

Items in parentheses refer to specific sections of the General Permit

Reviewer _____

MONITORING PROGRAM	Not Applicable	Included	Not Included	Incomplete	Comments
Quarterly Non-Storm Water Discharge Visual Observations (B.3)					
servations to be conducted (B.3.c) (Jan-March, April-June, July-September, October-December)					
All drainage areas (B.3.a)					
Look for presence of unauthorized NSWDs (B.3.a)					
Observe authorized NSWDs (B.3.b)					
Maintain observation records (B.3.d)					
Storm Water Discharge Visual Observations (B.4)					
Once per month during wet season (B.4.a) (October 1-May 31)					
Observe during first hour of discharge (B.4.a)					
All drainage areas (B.4.a)					
Observe stored or contained storm water at time of discharge (B.4.a)					
Preceded by three working days dry weather (B.4.c)					
Document discharge characteristics (B.4.c)					
Sampling and Analysis					
Samples to be collected during first hour of discharge (B.5.a)					
Sample from first storm of the wet season (B.5.a)					
ample from one additional storm during wet season (B.5.a)					
mples collected from all discharge locations (B.5.a)					
Sampling of contained storm water at time of discharge (B.5.a)					
Sampling preceded by at least three working days without storm water discharges (B.5.b)					
Sampling for pH, TSS, SC, TOC or O&G (B.5.c.i)					
Sampling for toxic chemicals and other pollutants likely present in storm water discharges in significant quantities (B.5.c.ii)					
Other analytical parameters listed in Table D (B.5.c.iii)					
Storm Water Effluent Limitation Guidelines parameters (B.6)					
Description of sampling locations (B.7)					
Description of sampling methods (B.10)					
Identification of analytical methods and method detection limits (B.10.b)					
Retention of all records for at least five years (B.13)					
Annual Report to be submitted by July 1 each year (B.14)					

General Comments: _____

_____

_____

_____

Items in parentheses refer to specific sections of the General Permit

Reviewer _____

California Regional Water Quality Control Board
Santa Ana Region

Linda S. Adams
Secretary for
Environmental Protection

3737 Main Street, Suite 500, Riverside, California 92501-3348
Phone (951) 782-4130 • FAX (951) 781-6288 • TDD (951) 782-3221
www.waterboards.ca.gov/santaana

Edmund G. Brown Jr.
Governor

July 25, 2010

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Attn: Bart Patel & Mike Renner or Facility Manager
Riverside Mining Limited
3500 Pyrite St., Unit B
Riverside, CA 92509

Notice of Noncompliance: Failure to Comply With the General Permit for Storm Water Discharges Associated With Industrial Activities, Order No. 97-03-DWQ, NPDES NO. CAS000001 (General Permit), Waste Discharge Identification (WDID) Number 8 33I022115

Dear Bart Patel & Mike Renner or Facility Manager:

Your facility located at 3500 Pyrite St., Unit B, in the city of Riverside, is regulated under the General Permit and is identified by WDID number 8 33I022115. Section B.14 of the General Permit requires you to submit an annual report by July 1 of each year. Our records show that your annual report for the July 1, 2010 to June 30, 2011 reporting period has not been received.

You are in violation of the General Permit, the California Water Code and the federal Clean Water Act for failure to submit a complete 2010-2011 annual report. We request that you submit a complete 2010-2011 annual report to this office no later than 30 days from the date of this letter. A blank copy of the report form can be downloaded from the Storm Water section of the State Water Resources Control Board web site at:

http://www.waterboards.ca.gov/water_issues/programs/stormwater/annualreport.shtml

Along with the annual report, you must also provide a statement explaining why the annual report was not submitted by the July 1 deadline and the measures you have taken to ensure timely submittals in the future. Failure to submit the requested information may result in enforcement action, including civil monetary penalties of up to $10,000 for each day of violation. Please note that Section 13399.33 of the California Water Code stipulates a minimum penalty of $1,000 to those permittees that do not submit their annual reports after notification.

If you wish to be notified electronically of future annual report submittals prior to the due date, please update the first page of annual report contact information with the appropriate e-mail address. If you wish to add additional contact person(s) to the notification list, please indicate on a separate page.

Should you need assistance in completing the annual report or have any questions, please contact Nam Nguyen at 951-321-4582 (e-mail: nnguyen@waterboards.ca.gov), or Michael Roth at 951-320-2027 (e-mail: mroth@waterboards.ca.gov)

Sincerely,

Michael J. Adackapara
Division Chief

CC to Owner: Bart Patel or Facility Owner. Riverside Mining Limited. 3500 B Pyrite St., Riverside, CA 92509

Linda S. Adams
Secretary for Environmental Protection

MOST FREQUENTLY ASKED QUESTIONS ABOUT SWRCB STORM WATER FEES

Arnold Schwarzenegger
Governor

1. ***Why did I receive this invoice?***

   Storm Water fee invoices are sent to every person who filed a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB). The invoice is your bill for the twelve month period shown. Under state law, a fee is assessed annually for persons who may discharge industrial and/or construction storm water under a general permit. SWRCB fee information may be found on the internet at: http://www.waterboards.ca.gov/resources/fees/

2. ***What if I dispute this fee?***

   If you disagree with the assessment or the amount of the fee, you must pay the fee to SWRCB and submit a written description of your dispute along with any key facts with your invoice payment. You can also contact the Fee Branch at (916) 341-5247. SWRCB will then refund any monies due you as the law allows.

3. ***If I don't have any pollutants in my storm water discharge, am I still subject to an annual fee?***

   Yes. The permit is issued to allow you to discharge. The permit is effective as long as it is active and you are subject to this fee regardless of whether or not you are actively discharging.

4. ***What is my fee going toward?***

   The annual fee pays for the implementation and administration of the Storm Water Program.

5. ***What is a Facility Identification Number or WDID Number?***

   The facility identification number or WDID number is the number the SWRCB gives each permittee when they apply for an NOI. Consider it your account number with the SWRCB.

6. ***What is the SWRCB's Federal Tax Identification Number?***

   68-0281986

7. ***If my construction project has been completed or my facility is closed, am I still subject to the annual fee?***

   Yes. You are subject to the annual fee until you (1) file a Notice of Termination (NOT) with the Regional Board, and (2) the Regional Board approves your NOT. You can receive the NOT form by contacting the Fee Branch at (916) 341-5247 or on the SWRCB Website at:
   http://www.waterboards.ca.gov/water_issues/programs/stormwater/gen_const.shtml#const_permit or
   http://www.waterboards.ca.gov/water_issues/programs/stormwater/gen_indus.shtml#indus

Retain this portion for your records

Please detach and return this portion with your payment

☐ CHECK HERE FOR ADDRESS CORRECTION ON THE BACK

INVOICE NO: SW-0016743

INDEX NO: 074229

(Please print the above number on check or money order)

RM #: 364099

SWRCB
PO BOX 1888
SACRAMENTO, CA 95812-1888

RIVERSIDE MINING LIMITED
BART PATEL
PO BOX 3529
RIVERSIDE, CA 92519
(951) 686-6004

Received
SWRCB
Santa Ana Region 8

AMOUNT DUE: **$1,008.00**
BILLING PERIOD: **04/01/10 - 03/31/11**
DUE BY: **5/6/10**
FACILITY ID (WDID): 8 33I022115
FACILITY NAME: RIVERSIDE MINING LIMITED
3500 B PYRITE ST
RIVERSIDE, CA 92509

2149

STONE VALLEY MATERIALS
3500-B PYRITE STREET
RIVERSIDE, CA 92509
(951) 681-7830

usbank. All of us serving you

90-3582-1222

8/3/2011

PAY TO THE ORDER OF SWRCB $ **1,008.00

One Thousand Eight and 00/100********** DOLLARS

SWRCB
PO BOX 1888
SACRAMENTO,CA 95812-1888

VOID AFTER 120 DAYS

Security features. Details on back.

MEMO 8 331022115

AUTHORIZED SIGNATURE

⑈002149⑈ ⑆122235821⑆ 153464482550⑈

E.S.BABCOCK&Sons,Inc.
Environmental Laboratories est 1906

Client Name: Stone Valley Materials
Contact: Stephen
Address: 3500-B Pyrite
Riverside, CA 92509

Report Date: 06-Jan-2011

Analytical Report: Page 1 of 4
Project Name: Stormwater
Project Number: Storm Water

Work Order Number: A0L2465

Received on Ice (Y/N): Yes Temp: 10 °C

Attached is the analytical report for the sample(s) received for your project. Below is a list of the individual sample descriptions with the corresponding laboratory number(s). Also, enclosed is a copy of the Chain of Custody document (if received with your sample(s)). Please note any unused portion of the sample(s) may be responsibly discarded after 30 days from the above report date, unless you have requested otherwise.

Thank you for the opportunity to serve your analytical needs. If you have any questions or concerns regarding this report please contact our client service department.

Sample Identification

Lab Sample #	Client Sample ID	Matrix	Date Sampled	By	Date Submitted	By
A0L2465-01	Pond # 1 - Storm Water Stone Valley Materials	Liquid	12/22/10 16:30	Stephen Van Der	12/23/10 10:00	Stephen Van Der Hart
A0L2465-02	Pond # 3 - Storm Water Stone Valley Materials	Liquid	12/22/10 16:35	Stephen Van Der	12/23/10 10:00	Stephen Van Der Hart

E.S.BABCOCK&Sons,Inc.
Environmental Laboratories est 1906

Client Name: Stone Valley Materials
Contact: Stephen
Address: 3500-B Pyrite
Riverside, CA 92509

Report Date: 06-Jan-2011

Project Name: Stormwater
Project Number: Storm Water

Work Order Number: A0L2465
Received on Ice (Y/N): Yes Temp: 10 °C

Laboratory Reference Number
A0L2465-01

Sample Description	Matrix	Sampled Date/Time	Received Date/Time
Pond # 1 - Storm Water Stone Valley Materials	Liquid	12/22/10 16:30	12/23/10 10:00

Analyte(s)	Result	RDL	Units	Method	Analysis Date	Analyst	Flag
Aggregate Properties							
pH	9.9	1.0	pH Units	SM 4500H+ B	12/23/10 23:44	kam	
Specific Conductance	130	1.0	umhos/cm	SM 2510 B	12/23/10 23:44	kam	
Solids							
Total Suspended Solids	1600	40	mg/L	SM 2540D	12/28/10 12:45	ss	
Aggregate Organic Compounds							
Total Organic Carbon	2.9	0.70	mg/L	SM 5310B	12/30/10 00:00	cmd	
Oil & Grease (HEM)	ND	5.0	mg/L	EPA 1664A	01/04/11 14:36	lgt	

E.S.BABCOCK&Sons,Inc.
Environmental Laboratories est 1906

Client Name: Stone Valley Materials
Contact: Stephen
Address: 3500-B Pyrite
Riverside, CA 92509

Report Date: 06-Jan-2011

Analytical Report: Page 3 of 4
Project Name: Stormwater
Project Number: Storm Water

Work Order Number: A0L2465

Received on Ice (Y/N): Yes Temp: 10 °C

Laboratory Reference Number
A0L2465-02

Sample Description	Matrix	Sampled Date/Time	Received Date/Time
Pond # 3 - Storm Water Stone Valley Materials	Liquid	12/22/10 16:35	12/23/10 10:00

Analyte(s)	Result	RDL	Units	Method	Analysis Date	Analyst	Flag
Aggregate Properties							
pH	8.0	1.0	pH Units	SM 4500H+ B	12/23/10 23:44	kam	
Specific Conductance	160	1.0	umhos/cm	SM 2510 B	12/23/10 23:44	kam	
Solids							
Total Suspended Solids	1100	66	mg/L	SM 2540D	12/28/10 12:45	ss	
Aggregate Organic Compounds							
Total Organic Carbon	3.2	0.70	mg/L	SM 5310B	12/30/10 00:00	cmd	
Oil & Grease (HEM)	ND	5.0	mg/L	EPA 1664A	01/04/11 14:36	lgt	

E.S.BABCOCK&Sons,Inc.
Environmental Laboratories est 1906

Client Name:	Stone Valley Materials	Analytical Report:	Page 4 of 4
Contact:	Stephen	Project Name:	Stormwater
Address:	3500-B Pyrite Riverside, CA 92509	Project Number:	Storm Water
		Work Order Number:	**A0L2465**
Report Date:	06-Jan-2011	Received on Ice (Y/N):	Yes Temp: 10 °C

Notes and Definitions

pH:	Regulatory 15 minute holding time exceeded	A0L2465-01
pH:	Regulatory 15 minute holding time exceeded	A0L2465-02

ND: Analyte NOT DETECTED at or above the Method Detection Limit **(if MDL is reported)**, otherwise at or above the Reportable Detection Limit (RDL)

NR: Not Reported

RDL: Reportable Detection Limit

MDL: Method Detection Limit

* / (Non-NELAP): NELAP does not offer accreditation for this analyte/method/matrix combination

Approval

Enclosed are the analytical results for the submitted sample(s). Babcock Laboratories certify the data presented as part of this report meet the minimum quality standards in the referenced analytical methods. Any exceptions have been noted. Babcock Laboratories and its officers and employees assume no responsibility and make no warranty, express or implied, for uses or interpretations made by any recipients, intended or unintended, of this report.

cc:

e-Short.rpt

E.S.BABCOCK&Sons,Inc.
Environmental Laboratories est 1906

Client Name: Stone Valley Materials
Contact: Stephen
Address: 3500-B Pyrite
Riverside, CA 92509

Report Date: 29-Dec-2010

Analytical Report: Page 1 of 3
Project Name: Stormwater
Project Number: Storm Water

Work Order Number: A0L2006

Received on Ice (Y/N): Yes Temp: 11 °C

Attached is the analytical report for the sample(s) received for your project. Below is a list of the individual sample descriptions with the corresponding laboratory number(s). Also, enclosed is a copy of the Chain of Custody document (if received with your sample(s)). Please note any unused portion of the sample(s) may be responsibly discarded after 30 days from the above report date, unless you have requested otherwise.

Thank you for the opportunity to serve your analytical needs. If you have any questions or concerns regarding this report please contact our client service department.

Sample Identification

Lab Sample #	Client Sample ID	Matrix	Date Sampled	By	Date Submitted	By
A0L2006-01	Pond #2 - Storm Water Stone Valley Materials	Liquid	12/20/10 07:00	Stephen Van Der	12/20/10 10:02	Stephen Van Der Hart

E.S.BABCOCK&Sons,Inc.
Environmental Laboratories est 1906

Client Name: Stone Valley Materials
Contact: Stephen
Address: 3500-B Pyrite
Riverside, CA 92509

Report Date: 29-Dec-2010

Project Name: Stormwater
Project Number: Storm Water

Work Order Number: A0L2006
Received on Ice (Y/N): Yes Temp: 11 °C

Laboratory Reference Number
A0L2006-01

Sample Description	Matrix	Sampled Date/Time	Received Date/Time
Pond #2 - Storm Water Stone Valley Materials	Liquid	12/20/10 07:00	12/20/10 10:02

Analyte(s)	Result	RDL	Units	Method	Analysis Date	Analyst	Flag
Aggregate Properties							
pH	7.4	1.0	pH Units	SM 4500H+ B	12/20/10 21:00	sbd	
Specific Conductance	360	1.0	umhos/cm	SM 2510 B	12/20/10 21:00	sbd	
Solids							
Total Suspended Solids	290	20	mg/L	SM 2540D	12/24/10 09:45	jma	
Aggregate Organic Compounds							
Total Organic Carbon	2.3	0.70	mg/L	SM 5310B	12/21/10 23:43	cmd	
Oil & Grease (HEM)	ND	5.0	mg/L	EPA 1664A	12/21/10 14:36	lgt	

E.S.BABCOCK&Sons,Inc.
Environmental Laboratories est 1906

Client Name: Stone Valley Materials
Contact: Stephen
Address: 3500-B Pyrite
Riverside, CA 92509

Report Date: 06-Jan-2011

Analytical Report: Page 1 of 1
Project Name: Stormwater
Project Number: Storm Water

Work Order Number: A0L2465

Received on Ice (Y/N): Yes Temp: 10 °C

E.S.BABCOCK&Sons,Inc.
Environmental Laboratories est 1906
6100 Quail Valley Court Riverside, CA 92507
(951) 653-3351 • FAX (951) 653-1662
www.babcocklabs.com

Chain of Custody & Sample Information Record

Client: Stone Valley Materials Contact: Stephen Vander Hart Fax No. 951-361-3370
Phone No. 909-973-6048 email: stephenvh@stonevalleymaterials.com
Project Name: Storm Water Turn Around Time: Routine *72 Hour Rush *48 Hour Rush *24 Hour Rush
Project Location: *Lab TAT Approval: By: *Additional Charges Apply

Additional Reporting Requests: Include QC Data Package: ☐ Yes ☐ No; FAX Results: ☐ Yes ☐ No; Email Results: ☐ Yes ☐ No; State EDT: ☐ Yes ☐ No (Include Source Number in Notes)

Sampler Information
Name: Stephen Vander Hart
Employer: Stonevalley Materials
Signature: [signature]

Sample ID	Date	Time	Unpreserved	H2SO4	HCl	HNO3	Na2S2O3	NaOH	NaOH/Zn Acetate	NH4Cl	MCAA	Total # of Containers	Sample Type: Routine	Sample Type: Resample	Sample Type: Special	Analysis Requested	Matrix	Notes
Pond #1	12/28	430p	1	3								4						
Pond #3	12/28	435p	1	3								4						

Matrix: DW = Drinking Water; WW = Waste Water; GW = Ground Water; S = Source; SG = Sludge; L = Liquid; M = Miscellaneous

Relinquished By (sign): [signature] Print Name / Company: Date / Time: 12/28/10 1000 Received By (sign): [signature] Print Name / Company: [signature]

(For Lab Use Only) Sample Integrity Upon Receipt/Acceptance Criteria
Sample(s) Submitted on Ice? Yes No
Custody Seal(s) Intact? Yes No NA
Sample(s) Intact? Yes No
Temperature: 10 °C ☐ Cooler Blank
Sample meets laboratory acceptance criteria? Yes No
Permission to continue: Yes No
Deviation/Notes:
Signature/Date:

Lab No. A0L2465
Logged in By/Date: [signature] DEC 23 2010
Page 1 of 1

mailing
P.O. Box 432
Riverside, CA 92502-0432

location
6100 Quail Valley Court
Riverside, CA 92507-0704

P 951 653 3351
F 951 653 1662
www.babcocklabs.com

NELAP no. 02101CA
CA Elap no. 2698
EPA no. CA00102

E.S.BABCOCK&Sons,Inc.
Environmental Laboratories est 1906

Client Name: Stone Valley Materials
Contact: Stephen
Address: 3500-B Pyrite
Riverside, CA 92509

Report Date: 29-Dec-2010

Project Name: Stormwater
Project Number: Storm Water

Work Order Number: A0L2006
Received on Ice (Y/N): Yes Temp: 11 °C

Notes and Definitions

pH: Regulatory 15 minute holding time exceeded A0L2006-01

ND: Analyte NOT DETECTED at or above the Method Detection Limit **(if MDL is reported)**, otherwise at or above the Reportable Detection Limit (RDL)

NR: Not Reported

RDL: Reportable Detection Limit

MDL: Method Detection Limit

* / (Non-NELAP): NELAP does not offer accreditation for this analyte/method/matrix combination

Approval

Enclosed are the analytical results for the submitted sample(s). Babcock Laboratories certify the data presented as part of this report meet the minimum quality standards in the referenced analytical methods. Any exceptions have been noted. Babcock Laboratories and its officers and employees assume no responsibility and make no warranty, express or implied, for uses or interpretations made by any recipients, intended or unintended, of this report.

Robin Glenney, Project Manager

cc:

e-Short.rpt

E.S.BABCOCK&Sons,Inc.
Environmental Laboratories est 1906

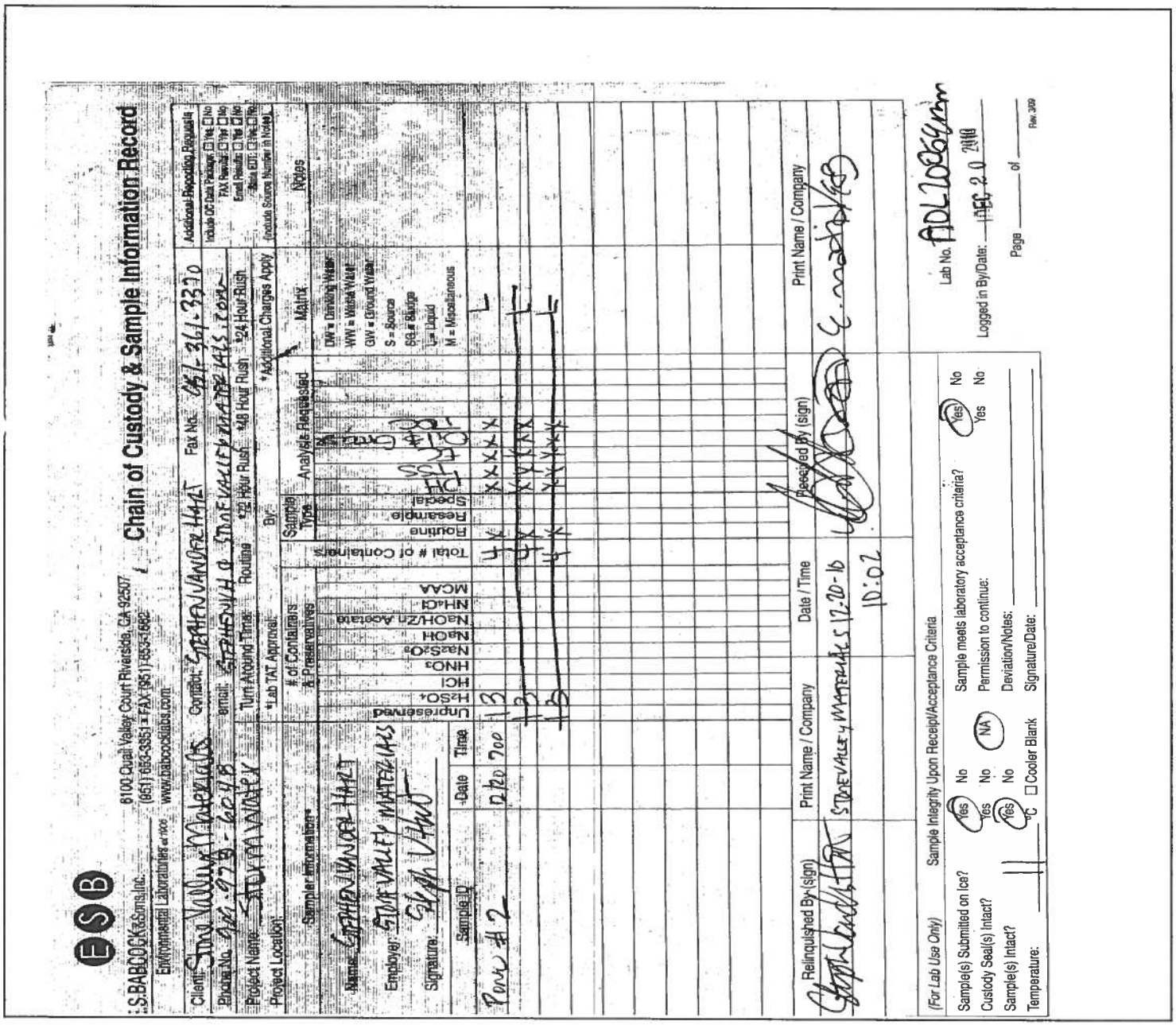
Client Name: Stone Valley Materials
Contact: Stephen
Address: 3500-B Pyrite
Riverside, CA 92509

Report Date: 29-Dec-2010

Analytical Report: Page 1 of 1
Project Name: Stormwater
Project Number: Storm Water

Work Order Number: A0L2006

Received on Ice (Y/N): Yes Temp: 11 °C



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Environmental Laboratories est 1906

Chain of Custody & Sample Information Record

Client: Stone Valley Materials Contact: Stephen Vander Hart Fax No.: 951-361-3370
Phone No.: 951-923-6048 email: Stephen@stonevalleymaterials.com
Project Name: Storm Water Turn Around Time: Routine *72 Hour Rush *48 Hour Rush *24 Hour Rush
Project Location: *Lab TAT Approval: By: *Additional Charges Apply
Additional Reporting Requests: Include QC Data Package ☐ Yes ☐ No; FAX Results ☐ Yes ☐ No; Email Results ☐ Yes ☐ No; State EDT ☐ Yes ☐ No; (Include Source Number in Notes)

Sampler Information: Name: Stephen Vander Hart; Employer: Stone Valley Materials; Signature: Stephen Vander Hart

Sample ID	Date	Time	Unpreserved	H2SO4	HCl	HNO3	Na2S2O3	NaOH	NaOH/Zn Acetate	NH4Cl	MCAA	Total # of Containers	Routine	Resample	Special	PH	TSS	Oil & Grease	Total	Matrix	Notes
Pond #2	12/20	700	13									4	X			X	X	X	X	L	
			13									4	X			X	X	X	X	L	
			13									4	X			X	X	X	X	L	

Sample Type: Analysis Requested
DW = Drinking Water; WW = Waste Water; GW = Ground Water; S = Source; SG = Sludge; L = Liquid; M = Miscellaneous

Relinquished By (sign): Stephen Vander Hart
Print Name / Company: Stone Valley Materials
Date / Time: 12-20-10 10:02
Received By (sign): [signature]
Print Name / Company: C. Madrid/GS

(For Lab Use Only) Sample Integrity Upon Receipt/Acceptance Criteria
Sample(s) Submitted on Ice? Yes No
Custody Seal(s) Intact? Yes No NA
Sample(s) Intact? Yes No
Temperature: 11 °C ☐ Cooler Blank
Sample meets laboratory acceptance criteria? Yes No
Permission to continue: Yes No
Deviation/Notes:
Signature/Date:

Lab No. A0L2006 Mm
Logged in By/Date: DEC 20 2010
Page ___ of ___
Rev. 3/09

Hand Delivered by Ray.
7/1/2010 3pm.

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD
2009-2010 ANNUAL REPORT
FOR STORM WATER DISCHARGES ASSOCIATED
WITH INDUSTRIAL ACTIVITIES

Reporting Period July 1, 2009 through June 30, 2010

An Annual Report is required to be submitted to your local Regional Water Quality Control Board (Regional Board) by July 1 of each year. This document must be certified and signed, under penalty of perjury, by the appropriate official of your company. Many of the Annual Report questions require an explanation. Please provide explanations on a separate sheet as an attachment. **Retain a copy of the completed Annual Report for your records.**

Please circle or highlight any information contained in Items A, B, and C below that is new or revised so we can update our records. Please remember that a Notice of Termination and new Notice of Intent are required whenever a facility operation is relocated or changes ownership.

If you have any questions, please contact your Regional Board Industrial Storm Water Permit Contact. The names, telephone numbers, and e-mail addresses of the Regional Board contacts, as well as the Regional Board Offices addresses are indicated below.

REGIONAL BOARD INFORMATION:

Santa Ana Region
3737 Main Street, Ste.500
Riverside, CA 92501

Contact: Michael Roth
Tel: (951) 320-2027
Email: mroth@waterboards.ca.gov

GENERAL INFORMATION

A. Facility Information:

Riverside Mining Limited
3500 B Pyrite St
Riverside, CA 92509
WDID No: 8 331022115

Facility Contact: Bart Patel & Mike Renner
Email:
Phone: 951-686-6004

SIC Code(s):
1423 Crushed and Broken Granite

B. Facility Operator Information:

Riverside Mining Limited
3500 B Pyrite St
Riverside, CA 92509

Operator Contact: Bart Patel
Email:
Phone: 951-686-6004

C. Facility Billing Information:

Riverside Mining Limited
PO Box 3529
Riverside, CA 92519

Billing Contact: Bart Patel
Email:
Phone: 951-686-6004

2009-2010

ANNUAL REPORT

SPECIFIC INFORMATION

MONITORING AND REPORTING PROGRAM

D. SAMPLING AND ANALYSIS EXEMPTIONS AND REDUCTIONS

1. For the reporting period, was your facility exempt from collecting and analyzing samples from two storm events in accordance with sections B.12 or 15 of the General Permit?

   ☐ YES Go to Item D.2 ☑ NO Go to Section E

2. Indicate the reason your facility is exempt from collecting and analyzing samples from two storm events. Attach a copy of the first page of the appropriate certification if you check boxes II iii, iv, or v.

   i. ☐ Participating In an Approved Group Monitoring Plan Group Name: _____

   ii ☐ Submitted No Exposure Certification (NEC) Date Submitted: _____

   Re-evaluation Date _____

   Does facility continue to satisfy NEC conditions? ☐ YES ☐ NO

   iii. ☐ Submitted Sampling Reduction Certification (SRC) Date Submitted: _____

   Re-evaluation Date _____

   Does facility continue to satisfy SRC conditions? ☐ YES ☐ NO

   iv. ☐ Received Regional Board Certification Certification Date: _____

   v. ☐ Received Local Agency Certification Certification Date: _____

3. If you checked boxes i or iii above, were you scheduled to sample one storm event during the reporting year?

   ☐ YES Go to Section E ☐ NO Go to Section F

4. If you checked boxes ii, iv, or v, go to Section F.

E. SAMPLING AND ANALYSIS RESULTS

1. How many storm events did you sample? 0 If less than 2, **attach explanation** (if you checked item D.2 i or III above, only attach explanation if you answer "0").

2. Did you collect storm water samples from the first storm of the wet season that produced a discharge during scheduled facility operating hours? (Section B.5 of the General Permit)

   ☐ YES ☑ NO, **attach explanation** (Please note that if you do not sample the first storm event, you are still required to sample 2 storm events)

3. How many storm water discharge locations are at your facility? 3

4. For each storm event sampled, did you collect and analyze a sample from each of the facilitys' storm water discharge locations? ☐ YES, go to Item E.6 ☑ NO

5. Was sample collection or analysis reduced in accordance with Section B.7.d of the General Permit? ☐ YES ☑ NO **attach explanation**

   If "YES", **attach documentation** supporting your determination that two or more drainage areas are substantially identical.

   Date facility's drainage areas were last evaluated 6/1/10

6. Were all samples collected during the first hour of discharge? ☐ YES ☑ NO, **attach explanation**

7. Was all storm water sampling preceded by three (3) working days without a storm water discharge? ☑ YES ☐ NO, attach explanation

8. Were there any discharges of stormwater that had been temporarily stored or contained? (such as from a pond) ☐ YES ☑ NO, go to Item E.10

9. Did you collect and analyze samples of temporarily stored or contained storm water discharges from two storm events? (or one storm event if you checked item D 2.i or iii. above) ☐ YES ☐ NO, attach explanation

10. Section B.5. of the General Permit requires you to analyze storm water samples for pH, Total Suspended Solids (TSS), Specific Conductance (SC), Total Organic Carbon (TOC) or Oil and Grease (O&G), other pollutants likely to be present in storm water discharges in significant quantities, and analytical parameters listed in Table D of the General Permit.

    a. Does Table D contain any additional parameters related to your facility's SIC code(s)? ☐ YES ☑ NO, Go to Item E.11

    b. Did you analyze all storm water samples for the applicable parameters listed in Table D? ☐ YES ☑ NO

    c. If you did not analyze all storm water samples for the applicable Table D parameters, check one of the following reasons:

    ____ In prior sampling years, the parameter(s) have not been detected in significant quantities from two consecutive sampling events. **Attach explanation**

    ____ The parameter(s) is not likely to be present in storm water discharges and authorized non-storm water discharges in significant quantities based upon the facility operator's evaluation. **Attach explanation**

    ✓ Other. **Attach explanation**

11. For each storm event sampled, attach a copy of the laboratory analytical reports and report the sampling and analysis results using **Form 1** or its equivalent. The following must be provided for each sample collected:

- Date and time of sample collection
- Name and title of sampler.
- Parameters tested.
- Name of analytical testing laboratory.
- Discharge location identification.
- Testing results.
- Test methods used.
- Test detection limits.
- Date of testing.
- Copies of the laboratory analytical results.

F QUARTERLY VISUAL OBSERVATIONS

1. **Authorized Non-Storm Water Discharges**
Section B.3.b of the General Permit requires quarterly visual observations of all authorized non-storm water discharges and their sources.

a. Do authorized non-storm water discharges occur at your facility?

☐ YES ☑ NO Go to Item F.2

b. Indicate whether you visually observed all authorized non-storm water discharges and their sources during the quarters when they were discharged. **Attach an explanation for any "NO" answers.** Indicate "N/A" for quarters without any authorized non-storm water discharges.

July -September	☐ YES	☐ NO	☐ N/A	October-December	☐ YES	☐ NO	☐ N/A
January-March	☐ YES	☐ NO	☐ N/A	April-June	☐ YES	☐ NO	☐ N/A

c. Use Form 2 to report quarterly visual observations of authorized non-storm water discharges or provide the following information.

i. name of each authorized non-storm water discharge
ii. date and time of observation
iii. source and location of each authorized non-storm water discharge
iv. characteristics of the discharge at its source and impacted drainage area/discharge location
v. name, title, and signature of observer
vi. any new or revised BMPs necessary to reduce or prevent pollutants in authorized non-storm water discharges. Provide new or revised BMP implementation date

2. **Unauthorized Non-Storm Water Discharges**
Section B.3.a of the General Permit requires quarterly visual observations of all drainage areas to detect the presence of unauthorized non-storm water discharges and their sources.

a. Indicate whether you visually observed all drainage areas to detect the presence of unauthorized non-storm water discharges and their sources. **Attach an explanation for any "NO" answers.**

July -September	☑ YES	☐ NO	October-December	☑ YES	☐ NO
January-March	☑ YES	☐ NO	April-June	☑ YES	☐ NO

b. Based upon the quarterly visual observations, were any unauthorized non-storm water discharges detected?

☐ YES ☑ NO Go to item F.2.d

c. Have each of the unauthorized non-storm water discharges been eliminated or permitted?

☐ YES ☐ NO **Attach explanation**

d. Use Form 3 to report quarterly unauthorized non-storm water discharge visual observations or provide the following information.

i. name of each unauthorized non-storm water discharge.
ii. date and time of observation.
iii. source and location of each unauthorized non-storm water discharge.
iv. characteristics of the discharge at its source and impacted drainage area/discharge location.
v. name, title, and signature of observer.
vi. any corrective actions necessary to eliminate the source of each unauthorized non-storm water discharge and to clean impacted drainage areas. Provide date unauthorized non-storm water discharge(s) was eliminated or scheduled to be eliminated.

G. MONTHLY WET SEASON VISUAL OBSERVATIONS

Section B.4.a of the General Permit requires you to conduct monthly visual observations of storm water discharges at all storm water discharge locations during the wet season. These observations shall occur during the first hour of discharge or, in the case of temporarily stored or contained storm water, at the time of discharge.

1. Indicate below whether monthly visual observations of storm water discharges occurred at all discharge locations. **Attach an explanation for any "NO" answers.** Include in this explanation whether any eligible storm events occurred during scheduled facility operating hours that did not result in a storm water discharge, and provide the date, time, name and title of the person who observed that there was no storm water discharge.

	YES	NO		YES	NO
October	☐	☑	February	☐	☑
November	☐	☑	March	☐	☑
December	☐	☑	April	☐	☑
January	☐	☑	May	☐	☑

2. Report monthly wet season visual observations using **Form 4** or provide the following information.

   a. date, time, and location of observation
   b. name and title of observer
   c. characteristics of the discharge (i.e., odor, color, etc.) and source of any pollutants observed.
   d. any new or revised BMPs necessary to reduce or prevent pollutants in storm water discharges. Provide new or revised BMP implementation date.

ANNUAL COMPREHENSIVE SITE COMPLIANCE EVALUATION (ACSCE)

H. ACSCE CHECKLIST

Section A.9 of the General Permit requires the facility operator to conduct one ACSCE in each reporting period (July 1-June 30). Evaluations must be conducted within 8-16 months of each other. The SWPPP and monitoring program shall be revised and implemented, as necessary, within 90 days of the evaluation. The checklist below includes the minimum steps necessary to complete a ACSCE. Indicate whether you have performed each step below. **Attach an explanation for any "NO" answers.**

1. Have you inspected all potential pollutant sources and industrial activities areas? ☑ YES ☐ NO
   The following areas should be inspected:

   - areas where spills and leaks have occured during the last year.
   - outdoor wash and rinse areas.
   - process/manufacturing areas.
   - loading, unloading, and transfer areas.
   - waste storage/disposal areas.
   - dust/particulate generating areas.
   - erosion areas.
   - building repair, remodeling, and construction
   - material storage areas
   - vehicle/equipment storage areas
   - truck parking and access areas
   - rooftop equipment areas
   - vehicle fueling/maintenance areas
   - non-storm water discharge generating areas

2. Have you reviewed your SWPPP to assure that its BMPs address existing potential pollutant sources and industrial activities areas? ☑ YES ☐ NO

3. Have you inspected the entire facility to verify that the SWPPP's site map, is up-to-date? The following site map items should be verified: ☑ YES ☐ NO

   - facility boundaries
   - outline of all storm water drainage areas
   - areas impacted by run-on
   - storm water discharges locations
   - storm water collection and conveyance system
   - structural control measures such as catch basins, berms, containment areas, oil/water separators, etc.

4 Have you reviewed all General Permit compliance records generated since the last annual evaluation? ☑ YES ☐ NO

The following records should be reviewed:

- quarterly authorized non-storm water discharge visual observations
- monthly storm water discharge visual observation
- records of spills/leaks and associated clean-up/response activities
- quarterly unauthorized non-storm water discharge visual observations
- Sampling and Analysis records
- preventative maintenance inspection and maintenance records

5. Have you reviewed the major elements of the SWPPP to assure compliance with the General Permit? ☑ YES ☐ NO

The following SWPPP Items should be reviewed:

- pollution prevention team
- list of significant materials
- description of potential pollutant sources
- assessment of potential pollutant sources
- identification and description of the BMPs to be implemented for each potential pollutant source

6 Have you reviewed your SWPPP to assure that a) the BMPs are adequate in reducing or preventing pollutants in storm water discharges and authorized non-storm water discharges, and b) the BMPs are being implemented? ☑ YES ☐ NO

The following BMP categories should be reviewed:

- good housekeeping practices
- spill response
- employee training
- erosion control
- quality assurance
- preventative maintenance
- material handling and storage practices
- waste handling/storage
- structural BMPs

7. Has all material handling equipment and equipment needed to implement the SWPPP been inspected? ☑ YES ☐ NO

I. ACSCE EVALUATION REPORT

The facility operator is required to provide an evaluation report that includes:

- identification of personnel performing the evaluation
- the date(s) of the evaluation
- necessary SWPPP revisions
- schedule for implementing SWPPP revisions
- any incidents of non-compliance and the corrective actions taken.

Use **Form 5** to report the results of your evaluation or develop an equivalent form.

J ACSCE CERTIFICATION

The facility operator is required to certify compliance with the Industrial Activities Storm Water General Permit. To certify compliance, both the SWPPP and Monitoring Program must be up to date and be fully implemented.

Based upon your ACSCE, do you certify compliance with the Industrial Activities Storm Water General Permit? ☑ YES ☐ NO

If you answered "NO" **attach an explanation** to the ACSCE Evaluation Report why you are not in compliance with the Industrial Activities Storm Water General Permit.

ATTACHMENT SUMMARY

Answer the questions below to help you determine what should be attached to this annual report. Answer NA (Not Applicable) to questions 2-4 if you are not required to provide those attachments.

1. Have you attached Forms 1,2,3,4, and 5 or their equivalent?	☑ YES (Mandatory)		
2. If you conducted sampling and analysis, have you attached the laboratory analytical reports?	☐ YES	☐ NO	☑ NA
3. If you checked box II, III, IV, or V in item D.2 of this Annual Report, have you attached the first page of the appropriate certifications?	☐ YES	☐ NO	☑ NA
4. Have you attached an explanation for each "NO" answer in items E.1, E.2, E.5-E.7, E.9, E.10.c, F.1.b, F.2.a, F.2.c, G.1, H.1-H.7, or J?	☑ YES	☐ NO	☐ NA

ANNUAL REPORT CERTIFICATION

I am duly authorized to sign reports required by the INDUSTRIAL ACTIVITIES STORM WATER GENERAL PERMIT (see Standard Provision C.9) and I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those person directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Printed Name: BART PATEL.

Signature: _____ Date: 6.30.2010.

Title: G. Manager

2009-2010
ANNUAL REPORT

DESCRIPTION OF BASIC ANALYTICAL PARAMETERS

The Industrial Activities Storm Water General Permit (General Permit) requires you to analyze storm water samples for at least four parameters. These are pH, Total Suspended Solids (TSS), Specific Conductance (SC),and Total Organic Carbon (TOC). Oil and Grease (O&G) may be substituted for TOC. In addition, you must monitor for any other pollutants which you believe to be present in your storm water discharge as a result of Industrial activity and analytical parameters listed in Table D of the General Permit. There are no numeric limitations for the parameters you test for.

The four parameters which the General Permit requires to be tested are considered *indicator* parameters. In other words, regardless of what type of facility you operate, these parameters are nonspecific and general enough to usually provide some indication whether pollutants are present in your storm water discharge. The following briefly explains what each of these parameters mean:

pH is a numeric measure of the hydrogen-ion concentration. The neutral, or acceptable, range is within 6.5 to 8.5. At values less than 6.5, the water is considered acidic; above 8.5 it is considered alkaline or basic. An example of an acidic substance is vinegar, and a alkaline or basic substance is liquid antacid. Pure rainfall tends to have a pH of a little less than 7. There may be sources of materials or industrial activities which could increase or decrease the pH of your storm water discharge. If the pH levels of your storm water discharge are high or low, you should conduct a thorough evaluation of all potential pollutant sources at your site.

Total Suspended Solids (TSS) is a measure of the undissolved solids that are present in your storm water discharge. Sources of TSS include sediment from erosion of exposed land, and dirt from impervious (i.e. paved) areas. Sediment by itself can be very toxic to aquatic life because it covers feeding and breeding grounds, and can smother organisms living on the bottom of a water body. Toxic chemicals and other pollutants also adhere to sediment particles. This provides a medium by which toxic or other pollutants end up in our water ways and ultimately in human and aquatic life. TSS levels vary in runoff from undisturbed land. It has been shown that TSS levels increase significantly due to land development.

Specific Conductance (SC) is a numerical expression of the ability of the water to carry an electric current. SC can be used to assess the degree of mineralization, salinity, or estimate the total dissolved solids concentration of a water sample. Because of air pollution, most rain water has a SC a little above zero. A high SC could affect the usability of waters for drinking, irrigation, and other commercial or industrial use.

Total Organic Carbon (TOC) is a measure of the total organic matter present in water. (All organic matter contains carbon) This test is sensitive and able to detect small concentrations of organic matter. Organic matter is naturally occurring in animals, plants, and man. Organic matter may also be man made (so called synthetic organics). Synthetic organics include pesticides, fuels, solvents, and paints. Natural organic matter utilizes the oxygen in a receiving water to biodegrade. Too much organic matter could place a significant oxygen demand on the water, and possibly impact its quality. Synthetic organics either do not biodegrade or biodegrade very slowly. Synthetic organics are a source of toxic chemicals that can have adverse affects at very low concentrations. Some of these chemicals bioaccumulate in aquatic life. If your levels of TOC are high, you should evaluate all sources of natural or synthetic organics you may use at your site.

Oil and Grease (O&G) is a measure of the amount of oil and grease present in your storm water discharge. At very low concentrations, O&G can cause a sheen (that floating "rainbow") on the surface of water (1 qt. of oil can pollute 250,000 gallons of water). O&G can adversely affect aquatic life and create unsightly floating material and film on water, thus making it undrinkable. Sources of O&G include maintenance shops, vehicles, machines and roadways.

If you have any questions regarding whether or not your constituent concentrations are too high, please contact your local Regional Board office. The United States Environmental Protection Agency (USEPA) has published stormwater discharge benchmarks for a number of parameters. These benchmarks may be helpful when evaluating whether additional BMPs are appropriate. These benchmarks can be accessed at our website at http://www.swrcb.ca.gov. It is contained in the Sampling and Analysis Reduction Certification.

See Storm Water Contacts at

http://www.waterboards.ca.gov/water_issues/programs/stormwater/contact.shtml

2009-2010
ANNUAL REPORT

SIDE A

FORM 2-QUARTERLY VISUAL OBSERVATIONS OF AUTHORIZED NON-STORM WATER DISCHARGES (NSWDs)

- Quarterly dry weather visual observations are required of each authorized NSWD.
- Observe each authorized NSWD source, impacted drainage area, and discharge location.
- Authorized NSWDs must meet the conditions provided in Section D (pages 5-6) of the General Permit.
- Make additional copies of this form as necessary.

QUARTER: JULY-SEPT. DATE: 7/2	Observers Name: Bart Patel. Title: G.M. Signature: [signature]	WERE ANY AUTHORIZED NSWDs DISCHARGED DURING THIS QUARTER? ☐ YES ☑ NO If YES, complete reverse side of this form.
QUARTER: OCT.-DEC. DATE: 10/1	Observers Name: Bart Patel Title: G.M. Signature: [signature]	WERE ANY AUTHORIZED NSWDs DISCHARGED DURING THIS QUARTER? ☐ YES ☑ NO If YES, complete reverse side of this form.
QUARTER: JAN.-MARCH DATE: 1/7	Observers Name: Bart Patel Title: G.M. Signature: [signature]	WERE ANY AUTHORIZED NSWDs DISCHARGED DURING THIS QUARTER? ☐ YES ☑ NO If YES, complete reverse side of this form.
QUARTER: APRIL-JUNE DATE: 5/1	Observers Name: Bart Patel Title: G.M. Signature: [signature]	WERE ANY AUTHORIZED NSWDs DISCHARGED DURING THIS QUARTER? ☐ YES ☑ NO If YES, complete reverse side of this form.

2009-2010
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SIDE A

FORM 3-QUARTERLY VISUAL OBSERVATIONS OF UNAUTHORIZED NON-STORM WATER DISCHARGES (NSWDs)

- Unauthorized NSWDs are discharges (such as wash or rinse waters) that do not meet the conditions provided in Section D (pages 5-6) of the General Permit.
- Quarterly visual observations are required to observe current and detect prior unauthorized NSWDs.
- Quarterly visual observations are required during dry weather and at all facility drainage areas.
- Each unauthorized NSWD source, impacted drainage area, and discharge location must be identified and observed.
- Unauthorized NSWDs that can not be eliminated within 90 days of observation must be reported to the Regional Board in accordance with Section A.10.e of the General Permit.
- Make additional copies of this form as necessary.

QUARTER: JULY-SEPT. DATE/TIME OF OBSERVATIONS 7/2 2009 9:00 ☑ AM ☐ PM	Observers Name: Sam Patel Title: G.m Signature:	WERE UNAUTHORIZED NSWDs OBSERVED? ☐ YES ☑ NO WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NSWDs? ☐ YES ☑ NO	If YES to either question, complete reverse side.
QUARTER: OCT.-DEC. DATE/TIME OF OBSERVATIONS 10/1 9:00 ☑ AM ☐ PM	Observers Name: Sam Patel Title: G.m Signature:	WERE UNAUTHORIZED NSWDs OBSERVED? ☐ YES ☑ NO WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NSWDs? ☐ YES ☑ NO	If YES to either question, complete reverse side.
QUARTER: JAN.-MARCH DATE/TIME OF OBSERVATIONS 1/7 2:00 ☐ AM ☑ PM	Observers Name: Sam Patel Title: G.m Signature:	WERE UNAUTHORIZED NSWDs OBSERVED? ☐ YES ☑ NO WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NSWDs? ☐ YES ☑ NO	If YES to either question, complete reverse side.
QUARTER: APRIL-JUNE DATE/TIME OF OBSERVATIONS 5/3 2:00 ☐ AM ☑ PM	Observers Name: Sam Patel Title: G.m Signature:	WERE UNAUTHORIZED NSWDs OBSERVED? ☐ YES ☑ NO WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NSWDs? ☐ YES ☑ NO	If YES to either question, complete reverse side

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FORM 4-MONTHLY VISUAL OBSERVATIONS OF

SIDE A

STORM WATER DISCHARGES

- Storm water discharge visual observations are required for at least one storm event per month between October 1 and May 31.
- Visual observations must be conducted during the first hour of discharge at all discharge locations.
- Discharges of temporarily stored or contained storm water must be observed at the time of discharge.
- Indicate "None" in the first column of this form if you did not conduct a monthly visual observation.
- Make additional copies of this form as necessary.
- Until a monthly visual observation is made, record any eligible storm events that do not result in a storm water discharge and note the date, time, name, and title of who observed there was no storm water discharge.

Observation Date: October 1-30 2009 Observers Name: Bart Patel Title: G.M. Signature: [signature]	Drainage Location Description	#1 NONE -	#2 NO STORM EVENTS	#3	#4
	Observation Time	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
	Time Discharge Began	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: November 2-30 2009 Observers Name: Bart Patel Title: G.M. Signature: [signature]	Drainage Location Description	#1 NONE - NO	#2 Discharges	#3 11/28 - Rain on Saturday Not on site.	#4
	Observation Time	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
	Time Discharge Began	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: December 7 2009 Observers Name: Bart Patel Title: G.M. Signature: [signature]	Drainage Location Description	#1 NONE	#2	#3 12/7 - NO	#4 Discharge
	Observation Time	12:00 ☑ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
	Time Discharge Began	N/A ☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☑	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: January 1-30 2010 Observers Name: Bart Patel Title: G.M. Signature: [signature]	Drainage Location Description	#1 NONE 1/13 - NO Discharge	#2 1/18 - NO Discharge N/A	#3 1/19 N/A	#4 1/20 - N/A
	Observation Time	3:00 ☑ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
	Time Discharge Began	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☑	YES ☐ NO ☑	YES ☐ NO ☑	YES ☐ NO ☐

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FORM 4 (Continued)-MONTHLY VISUAL OBSERVATIONS OF

SIDE A

STORM WATER DISCHARGES

- Storm water discharge visual observations are required for at least one storm event per month between October 1 and May 31
- Visual observations must be conducted during the first hour of discharge at all discharge locations.
- Discharges of temporarily stored or contained storm water must be observed at the time of discharge.
- Indicate "None" in the first column of this form if you did not conduct a monthly visual observation.
- Make additional copies of this form as necessary.
- Until a monthly visual observation is made, record any eligible storm events that do not result in a storm water discharge and note the date, time, name, and title of who observed there was no storm water discharge.

Observation Date: February 1-28 2010	Drainage Location Description	#1 NONE 2/20	#2 NONE 2/27	#3	#4
Observers Name: Bart Lee	Observation Time	2:00 ☑ P.M. ☐ A.M.	3:00 ☑ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
Title: Gm	Time Discharge Began	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
Signature:	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☑	YES ☐ NO ☑	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: March 1-31 2010	Drainage Location Description	#1 NONE -	#2 NO Significant Rain Storms	#3	#4
Observers Name: Bart Lee	Observation Time	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
Title: Gm	Time Discharge Began	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
Signature:	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: April 1-30 2010	Drainage Location Description	#1 NONE 4/5	#2 NONE 4/12	#3 NONE 4/22	#4
Observers Name: Bart Lee	Observation Time	3:00 ☐ P.M. ☐ A.M.	1:00 ☑ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
Title: Gm	Time Discharge Began	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
Signature:	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☑	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: May 1-30 2010	Drainage Location Description	#1 NONE -	#2 No Storms.	#3	#4
Observers Name: Bart Lee	Observation Time	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
Title: Gm	Time Discharge Began	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.	☐ P.M. ☐ A.M.
Signature:	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐

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SIDE A

FORM 5-ANNUAL COMPREHENSIVE SITE COMPLIANCE EVALUATION
POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY BMP STATUS

EVALUATION DATE: 6.28.10 INSPECTOR NAME: [illegible] TITLE: [illegible] SIGNATURE: [illegible]

POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY AREA (as identified in your SWPPP)				
Perimeter Drainage Swale	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED? ☐ YES ☑ NO ARE ADDITIONAL/REVISED BMPs NECESSARY? ☐ YES ☑ NO	If yes, to either question, complete the next two columns of this form	Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation
Construction Entrance	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED? ☐ YES ☑ NO ARE ADDITIONAL/REVISED BMPs NECESSARY? ☐ YES ☑ NO	If yes, to either question, complete the next two columns of this form	Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation
Material Storage Location	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED? ☐ YES ☑ NO ARE ADDITIONAL/REVISED BMPs NECESSARY? ☐ YES ☑ NO	If yes, to either question, complete the next two columns of this form	Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation
Equipment Storage Location	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED? ☐ YES ☑ NO ARE ADDITIONAL/REVISED BMPs NECESSARY? ☐ YES ☑ NO	If yes, to either question, complete the next two columns of this form	Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation

2009-2010 Annual Report for storm water discharges associated with industrial activities.

Explanations

E.1 - No discharges took place to sample.
E.2 - No discharges took place to sample during the first storm during scheduled operating hours.
E.5 - No samples were taken so reducing in accordance with section B.7.d is not applicable
E.6 - No discharges took place to sample
E.10.c - No analyzes was done because no discharges took place.
G.1 - No discharges took place so there was no visual observation of discharges for any of the months.

Form 4 - October - No Discharges – No rain storms

Form 4 – November - No discharges
11/28 Rain Event – not on site.

Form 4 - December - No discharges
12/7 Rain Event – No Discharge

Form 4 - January - No discharges
1/13 Rain Event – No Discharge
1/18 Rain Event – No Discharge
1/19 Rain Event – No Discharge
1/20 Rain Event – No Discharge
1/21 Rain Event – No Discharge
1/22 Rain Event – No Discharge
1/23 Rain Event – No Discharge – No business hours
1/26 Rain Event – No Discharge
1/27 Rain Event – No Discharge

Form 4 - February - 2/20 Rain Event – No Discharge
2/27 Rain Event – No Discharge

Form 4 - March - No significant rain storm – No Discharge

Form 4 - April - 4/5 Rain Event – No Discharge
4/12 Rain Event – No Discharge
4/22 Rain Event – No Discharge

Form 4 - May - No Discharges – No Rain Events

2010-2011 Annual Report for State Water Resources Control Board

Facility ID Number 8331022115

Riverside Mining Limited

3500 Pyrite Ave

Riverside CA 92509

Explanation Page...

Why this report is late.

The correspondence was received by the office at 3500 Pyrite but not given to me until July 28. This is my first year monitoring the program, so I did not know what to expect. We have put in several administrative controls to ensure this delay will not happen again. This problem has been corrected. Thank you for your patience.

Please add my email stephenvh@stonevalleymaterials.com to the reminder list as well.

E2

While prepared to take a second sample, we did not get enough rain to cause discharge during business hours during that period. It seem to rain almost every weekend in February and March! We will make sure to get both samples next year even if it is after hours.

Linda S. Adams
Secretary for
Environmental Protection

State Water Resources Control Board

Division of Water Quality
1001 I Street • Sacramento, California 95814 • (916) 341-5538
Mailing Address: P.O. Box 1977 • Sacramento, California • 95812-1977
Fax (916) 341-5543 • http://www.waterboards.ca.gov/water_issues/programs/stormwater/

Edmund G. Brown Jr.
Governor

To Interested Parties:

2010-2011 ANNUAL REPORT ANNUAL REPORT FOR STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITIES

Storm Water Multi-Application Reporting and Tracking System (SMARTS) allows an individual discharger to file and submit their Annual Report electronically to the Regional Water Board. Currently SMARTS is not a mandatory reporting method, but we encourage all dischargers to register and use SMARTS.

To register to use SMARTS please visit: https://smarts.waterboards.ca.gov and download the SMARTS LRP registration form and instructions. Please fill out the form and mail it back to: SMARTS Registration, P.O. Box 1977, Sacramento, CA 95812. Once a complete registration form is received, a login name and password will be emailed to you.

For SMARTS registration questions or information please contact the SMARTS help center at 1-866-563-3107 or by email at smarts@waterboards.ca.gov.

To receive email updates on Storm Water Industrial permitting issues, please sign up at http://www.waterboards.ca.gov/resources/email_subscriptions/swrcb_subscribe.shtml The Storm Water program currently maintains five email lists:

- Storm Water Database Issues
- Storm Water Construction Permitting Issues
- Storm Water Industrial Permitting Issues
- Storm Water Municipal Permitting Issues
- Sustainable Development

For all other permitting questions please contact the Storm Water Section at 1-866-563-3107 or by email at stormwater@waterboards.ca.gov.

Sincerely,

Storm Water Section

State of California
STATE WATER RESOURCES CONTROL BOARD

2010-2011
ANNUAL REPORT
FOR
STORM WATER DISCHARGES ASSOCIATED
WITH INDUSTRIAL ACTIVITIES

Reporting Period July 1, 2010 through June 30, 2011

An annual report is required to be submitted to your local Regional Water Quality Control Board (Regional Board) by July 1 of each year. This document must be certified and signed, under penalty of perjury, by the appropriate official of your company. Many of the Annual Report questions require an explanation. Please provide explanations on a separate sheet as an attachment. **Retain a copy of the completed Annual Report for your records.**

Please circle or highlight any information contained in Items A, B, and C below that is new or revised so we can update our records. Please remember that a Notice of Termination and new Notice of Intent are required whenever a facility operation is relocated or changes ownership.

If you have any questions, please contact your Regional Board Industrial Storm Water Permit Contact. The names, telephone numbers and e-mail addresses of the Regional Board contacts, as well as the Regional Board office addresses can be found at http://www.waterboards.ca.gov/stormwtr/contact.html. To find your Regional Board information, match the first digit of your WDID number with the corresponding number that appears in parenthesis on the first line of each Regional Board office.

GENERAL INFORMATION:

A. Facility Information:

Facility WDID No: 833102215

Facility Business Name: RIVERSIDE Mining LIMITED
Contact Person: BART PATEL
Physical Address: 3500B PYRITE STREET
e-mail: BART@ERCONUSA.COM
City: RIVERSIDE
CA Zip: 92509 Phone: 951-571-3281
Standard Industrial Classification (SIC) Code(s): 1423

B. Facility Operator Information:

Operator Name: RIVERSIDE Mining LIMITED
Contact Person: BART PATEL
Mailing Address: 3500 B PYRITE STREET
e-mail: BART@ERCONUSA.COM
City: RIVERSIDE
State: CA Zip: 92509 Phone: 951-571-3281

C. Facility Billing Information:

Operator Name: RIVERSIDE Mining LIMITED
Contact Person: BART PATEL
Mailing Address: 3500B PYRITE STREET
e-mail: BART@ERCONUSA.COM
City: RIVERSIDE
State: CA Zip: 92509 Phone: 951-571-3281

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SPECIFIC INFORMATION

MONITORING AND REPORTING PROGRAM

D. SAMPLING AND ANALYSIS EXEMPTIONS AND REDUCTIONS

1. For the reporting period, was your facility exempt from collecting and analyzing samples from **two** storm events in accordance with sections B.12 or 15 of the General Permit?

   ☐ **YES** Go to Item D.2 ☒ **NO** Go to Section E

2. Indicate the reason your facility is exempt from collecting and analyzing samples from **two** storm events. Attach a copy of the first page of the appropriate certification if you check boxes ii, iii, iv, or v.

   i. ☐ Participating in an Approved Group Monitoring Plan **Group Name:** _____

   ii. ☐ Submitted **No Exposure Certification (NEC)** Date Submitted: ___/___/___

   Re-evaluation Date: ___/___/___

   Does facility continue to satisfy NEC conditions? ☐ YES ☐ NO

   iii. ☐ Submitted **Sampling Reduction Certification (SRC)** Date Submitted: ___/___/___

   Re-evaluation Date: ___/___/___

   Does facility continue to satisfy SRC conditions? ☐ YES ☐ NO

   iv. ☐ Received Regional Board Certification Certification Date: ___/___/___

   v. ☐ Received Local Agency Certification Certification Date: ___/___/___

3. If you checked boxes i or iii above, were you scheduled to sample **one** storm event during the reporting year?

   ☐ **YES** Go to Section E ☐ **NO** Go to Section F

4. If you checked boxes ii, iv, or v, go to Section F.

E. SAMPLING AND ANALYSIS RESULTS

1. How many storm events did you sample? 1

   If less than 2, **attach explanation** (if you checked item D.2.i or iii. above, only attach explanation if you answer "0").

2. Did you collect storm water samples from the first storm of the wet season that produced a discharge during scheduled facility operating hours? (Section B.5 of the General Permit)

   ☒ **YES** ☐ **NO** **attach explanation** (Please note that if you do not sample the first storm event, you are still required to sample 2 storm events)

3. How many storm water discharge locations are at your facility? 3

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4. For each storm event sampled, did you collect and analyze a sample from each of the facility's' storm water discharge locations? ☒ YES, go to Item E.6 ☐ NO

5. Was sample collection or analysis reduced in accordance with Section B.7.d of the General Permit? ☐ YES ☐ NO, **attach explanation**

   If "YES", **attach documentation** supporting your determination that two or more drainage areas are substantially identical.

   Date facility's drainage areas were last evaluated ___/___/_____

6. Were all samples collected during the first hour of discharge? ☒ YES ☐ NO, **attach explanation**

7. Was all storm water sampling preceded by three (3) working days without a storm water discharge? ☒ YES ☐ NO, **attach explanation**

8. Were there any discharges of storm water that had been temporarily stored or contained? (such as from a pond) ☐ YES ☒ NO, go to Item E.10

9. Did you collect and analyze samples of temporarily stored or contained storm water discharges from two storm events? (or one storm event if you checked item D.2.i or iii. above) ☐ YES ☐ NO, **attach explanation**

10. Section B.5. of the General Permit requires you to analyze storm water samples for pH, Total Suspended Solids (TSS), Specific Conductance (SC), Total Organic Carbon (TOC) or Oil and Grease (O&G), other pollutants likely to be present in storm water discharges in significant quantities, and analytical parameters listed in Table D of the General Permit.

    a. Does Table D contain any additional parameters related to your facility's SIC code(s)? ☒ YES ☐ NO, Go to Item E.11

    b. Did you analyze all storm water samples for the applicable parameters listed in Table D? ☒ YES ☐ NO

    c. If you did not analyze all storm water samples for the applicable Table D parameters, check one of the following reasons:

       _____ In prior sampling years, the parameter(s) have not been detected in significant quantities from two consecutive sampling events. **Attach explanation**

       _____ The parameter(s) is not likely to be present in storm water discharges and authorized non-storm water discharges in significant quantities based upon the facility operator's evaluation. **Attach explanation**

       _____ Other. **Attach explanation**

11. For each storm event sampled, attach a copy of the laboratory analytical reports and report the sampling and analysis results using **Form 1** or its equivalent. The following must be provided for each sample collected:

- Date and time of sample collection
- Name and title of sampler
- Parameters tested
- Name of analytical testing laboratory
- Discharge location identification
- Testing results
- Test methods used
- Test detection limits
- Date of testing
- Copies of the laboratory analytical results

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F. QUARTERLY VISUAL OBSERVATIONS

1. **Authorized Non-Storm Water Discharges**

Section B.3.b of the General Permit requires quarterly visual observations of all authorized non-storm water discharges and their sources.

a. Do authorized non-storm water discharges occur at your facility?

☐ YES ☒ NO Go to Item F.2

b. Indicate whether you visually observed all authorized non-storm water discharges and their sources during the quarters when they were discharged. **Attach an explanation for any "NO" answers.** Indicate "N/A" for quarters without any authorized non-storm water discharges.

July-September	☐ YES	☐ NO	☐ N/A	October-December	☐ YES	☐ NO	☐ N/A
January-March	☐ YES	☐ NO	☐ N/A	April-June	☐ YES	☐ NO	☐ N/A

c. Use **Form 2** to report quarterly visual observations of authorized non-storm water discharges or provide the following information:

i. name of each authorized non-storm water discharge
ii. date and time of observation
iii. source and location of each authorized non-storm water discharge
iv. characteristics of the discharge at its source and impacted drainage area/discharge location
v. name, title, and signature of observer
vi. **any** new or revised BMPs necessary to reduce or prevent pollutants in authorized non-storm water discharges. Provide new or revised BMP implementation date.

2. **Unauthorized Non-Storm Water Discharges**

Section B.3.a of the General Permit requires quarterly visual observations of all drainage areas to detect the presence of unauthorized non-storm water discharges and their sources.

a. Indicate whether you visually observed all drainage areas to detect the presence of unauthorized non- storm water discharges and their sources. **Attach an explanation for any "NO" answers.**

July-September	☒ YES	☐ NO	October-December	☒ YES	☐ NO
January-March	☒ YES	☐ NO	April-June	☒ YES	☐ NO

b. Based upon the quarterly visual observations, were any unauthorized non-storm water discharges detected?

☐ YES ☒ NO Go to Item F.2.d

c. Have each of the unauthorized non-storm water discharges been eliminated or permitted?

☐ YES ☐ NO **Attach explanation**

d. Use **Form 3** to report quarterly unauthorized non-storm water discharge visual observations or provide the following information:

i. name of each unauthorized non-storm water discharge
ii. date and time of observation
iii. source and location of each unauthorized non-storm water discharge
iv. characteristics of the discharge at its source and impacted drainage area/discharge location
v. name, title, and signature of observer
vi. **any** corrective actions necessary to eliminate the source of each unauthorized non-storm water discharge and to clean impacted drainage areas. Provide date unauthorized non-storm water discharge(s) was eliminated or scheduled to be eliminated.

G. MONTHLY WET SEASON VISUAL OBSERVATIONS

Section B.4.a of the General Permit requires you to conduct monthly visual observations of storm water discharges at all storm water discharge locations during the wet season. These observations shall occur during the first hour of discharge or, in the case of temporarily stored or contained storm water, at the time of discharge.

1. Indicate below whether monthly visual observations of storm water discharges occurred at all discharge locations. **Attach an explanation for any "NO" answers.** Include in this explanation whether any eligible storm events occurred during scheduled facility operating hours that did not result in a storm water discharge, and provide the date, time, name and title of the person who observed that there was no storm water discharge.

	YES	NO		YES	NO
October	☒	☐	February	☒	☐
November	☒	☐	March	☒	☐
December	☒	☐	April	☒	☐
January	☒	☐	May	☒	☐

2. Report monthly wet season visual observations using **Form 4** or provide the following information:

   a. date, time, and location of observation
   b. name and title of observer
   c. characteristics of the discharge (i.e., odor, color, etc.) and source of any pollutants observed
   d. **any** new or revised BMPs necessary to reduce or prevent pollutants in storm water discharges. Provide new or revised BMP implementation date.

ANNUAL COMPREHENSIVE SITE COMPLIANCE EVALUATION (ACSCE)

H. ACSCE CHECKLIST

Section A.9 of the General Permit requires the facility operator to conduct one ACSCE in each reporting period (July 1-June 30). Evaluations must be conducted within 8-16 months of each other. The SWPPP and monitoring program shall be revised and implemented, as necessary, within 90 days of the evaluation. The checklist below includes the minimum steps necessary to complete a ACSCE. Indicate whether you have performed each step below. **Attach an explanation for any "NO" answers.**

1. Have you inspected all potential pollutant sources and industrial activities areas? ☒ YES ☐ NO
   The following areas should be inspected:

   - areas where spills and leaks have occurred during the last year
   - outdoor wash and rinse areas
   - process/manufacturing areas
   - loading, unloading, and transfer areas
   - waste storage/disposal areas
   - dust/particulate generating areas
   - erosion areas
   - building repair, remodeling, and construction
   - material storage areas
   - vehicle/equipment storage areas
   - truck parking and access areas
   - rooftop equipment areas
   - vehicle fueling/maintenance areas
   - non-storm water discharge generating areas

2. Have you reviewed your SWPPP to assure that its BMPs address existing potential pollutant sources and industrial activities areas? ☒ YES ☐ NO

3. Have you inspected the entire facility to verify that the SWPPP's site map is up-to-date? The following site map items should be verified: ☒ YES ☐ NO

   - facility boundaries
   - outline of all storm water drainage areas
   - areas impacted by run-on
   - storm water discharges locations
   - storm water collection and conveyance system
   - structural control measures such as catch basins, berms, containment areas, oil/water separators, etc.

4. Have you reviewed all General Permit compliance records generated since the last annual evaluation? ☒ YES ☐ NO

The following records should be reviewed:

- quarterly authorized non-storm water discharge visual observations
- monthly storm water discharge visual observation
- records of spills/leaks and associated clean-up/response activities
- quarterly unauthorized non-storm water discharge visual observations
- Sampling and Analysis records
- preventative maintenance inspection and maintenance records

5. Have you reviewed the major elements of the SWPPP to assure compliance with the General Permit? ☒ YES ☐ NO

The following SWPPP items should be reviewed:

- pollution prevention team
- list of significant materials
- description of potential pollutant sources
- assessment of potential pollutant sources
- identification and description of the BMPs to be implemented for each potential pollutant source

6. Have you reviewed your SWPPP to assure that a) the BMPs are adequate in reducing or preventing pollutants in storm water discharges and authorized non-storm water discharges, and b) the BMPs are being implemented? ☒ YES ☐ NO

The following BMP categories should be reviewed:

- good housekeeping practices
- spill response
- employee training
- erosion control
- quality assurance
- preventative maintenance
- material handling and storage practices
- waste handling/storage
- structural BMPs

7. Has all material handling equipment and equipment needed to implement the SWPPP been inspected? ☒ YES ☐ NO

I. ACSCE EVALUATION REPORT

The facility operator is required to provide an evaluation report that includes:

- identification of personnel performing the evaluation
- the date(s) of the evaluation
- necessary SWPPP revisions
- schedule for implementing SWPPP revisions
- any incidents of non-compliance and the corrective actions taken

Use **Form 5** to report the results of your evaluation or develop an equivalent form.

J. ACSCE CERTIFICATION

The facility operator is required to certify compliance with the Industrial Activities Storm Water General Permit. To certify compliance, both the SWPPP and Monitoring Program must be up to date and be fully implemented.

Based upon your ACSCE, do you certify compliance with the Industrial Activities Storm Water General Permit? ☒ YES ☐ NO

If you answered "NO" **attach an explanation** to the ACSCE Evaluation Report why you are not in compliance with the Industrial Activities Storm Water General Permit.

2010-2011

ANNUAL REPORT

ATTACHMENT SUMMARY

Answer the questions below to help you determine what should be attached to this annual report. Answer NA (Not Applicable) to questions 2-4 if you are not required to provide those attachments.

1. Have you attached Forms 1,2,3,4, and 5 or their equivalent?	☒ YES (Mandatory)		
2. If you conducted sampling and analysis, have you attached the laboratory analytical reports?	☒ YES	☐ NO	☐ NA
3. If you checked box II, III, IV, or V in item D.2 of this Annual Report, have you attached the first page of the appropriate certifications?	☐ YES	☐ NO	☒ NA
4. Have you attached an explanation for each "NO" answer in items E.1, E.2, E.5-E.7, E.9, E.10.c, F.1.b, F.2.a, F.2.c, G.1, H.1-H.7, or J?	☒ YES	☐ NO	☐ NA

ANNUAL REPORT CERTIFICATION

I am duly authorized to sign reports required by the INDUSTRIAL ACTIVITIES STORM WATER GENERAL PERMIT (see Standard Provision C.9) and I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those person directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Printed Name: B. D. PATEL.

Signature: _____ Date: 8/3/2011

Title: _____

DESCRIPTION OF BASIC ANALYTICAL PARAMETERS

The Industrial Activities Storm Water General Permit (General Permit) requires you to analyze storm water samples for at least four parameters. These are pH, Total Suspended Solids (TSS), Specific Conductance (SC),and Total Organic Carbon (TOC). Oil and Grease (O&G) may be substituted for TOC. In addition, you must monitor for any other pollutants which you believe to be present in your storm water discharge as a result of industrial activity and analytical parameters listed in Table D of the General Permit. There are no numeric limitations for the parameters you test for.

The four parameters which the General Permit requires to be tested are considered *indicator* parameters. In other words, regardless of what type of facility you operate, these parameters are nonspecific and general enough to usually provide some indication whether pollutants are present in your storm water discharge. The following briefly explains what each of these parameters mean:

pH is a numeric measure of the hydrogen-ion concentration. The neutral, or acceptable, range is within 6.5 to 8.5. At values less than 6.5, the water is considered acidic; above 8.5 it is considered alkaline or basic. An example of an acidic substance is vinegar, and a alkaline or basic substance is liquid antacid. Pure rainfall tends to have a pH of a little less than 7. There may be sources of materials or industrial activities which could increase or decrease the pH of your storm water discharge. If the pH levels of your storm water discharge are high or low, you should conduct a thorough evaluation of all potential pollutant sources at your site.

Total Suspended Solids (TSS) is a measure of the undissolved solids that are present in your storm water discharge. Sources of TSS include sediment from erosion of exposed land, and dirt from impervious (i.e. paved) areas. Sediment by itself can be very toxic to aquatic life because it covers feeding and breeding grounds, and can smother organisms living on the bottom of a water body. Toxic chemicals and other pollutants also adhere to sediment particles. This provides a medium by which toxic or other pollutants end up in our water ways and ultimately in human and aquatic life. TSS levels vary in runoff from undisturbed land. It has been shown that TSS levels increase significantly due to land development.

Specific Conductance (SC) is a numerical expression of the ability of the water to carry an electric current. SC can be used to assess the degree of mineralization, salinity, or estimate the total dissolved solids concentration of a water sample. Because of air pollution, most rain water has a SC a little above zero. A high SC could affect the usability of waters for drinking, irrigation, and other commercial or industrial use.

Total Organic Carbon (TOC) is a measure of the total organic matter present in water. (All organic matter contains carbon) This test is sensitive and able to detect small concentrations of organic matter. Organic matter is naturally occurring in animals, plants, and man. Organic matter may also be man made (so called synthetic organics). Synthetic organics include pesticides, fuels, solvents, and paints. Natural organic matter utilizes the oxygen in a receiving water to biodegrade. Too much organic matter could place a significant oxygen demand on the water, and possibly impact its quality. Synthetic organics either do not biodegrade or biodegrade very slowly. Synthetic organics are a source of toxic chemicals that can have adverse affects at very low concentrations. Some of these chemicals bioaccumulate in aquatic life. If your levels of TOC are high, you should evaluate all sources of natural or synthetic organics you may use at your site.

Oil and Grease (O&G) is a measure of the amount of oil and grease present in your storm water discharge. At very low concentrations, O&G can cause a sheen (that floating "rainbow") on the surface of water (1 qt. of oil can pollute 250,000 gallons of water). O&G can adversely affect aquatic life and create unsightly floating material and film on water, thus making it undrinkable. Sources of O&G include maintenance shops, vehicles, machines and roadways.

If you have any questions regarding whether or not your constituent concentrations are too high, please contact your local Regional Board office. The United States Environmental Protection Agency (USEPA) has published stormwater discharge benchmarks for a number of parameters. These benchmarks may be helpful when evaluating whether additional BMPs are appropriate. These benchmarks can be accessed at our website at http://www.waterboards.ca.gov. It is contained in the Sampling and Analysis Reduction Certification.

See Storm Water Contacts at

http://www.waterboards.ca.gov/water_issues/programs/stormwater/contact.shtml

SIDE A

ANNUAL REPORT
FORM 3-QUARTERLY VISUAL OBSERVATIONS OF UNAUTHORIZED NON-STORM WATER DISCHARGES (NSWDs)

- Unauthorized NSWDs are discharges (such as wash or rinse waters) that do not meet the conditions provided in Section D (pages 5-6) of the General Permit.
- Quarterly visual observations are required to observe current and detect prior unauthorized NSWDs.
- Quarterly visual observations are required during dry weather and at all facility drainage areas.
- Each unauthorized NSWD source, impacted drainage area, and discharge location must be identified and observed.
- Unauthorized NSWDs that can not be eliminated within 90 days of observation must be reported to the Regional Board in accordance with Section A.10.e of the General Permit.
- Make additional copies of this form as necessary.

QUARTER: JULY-SEPT. DATE/TIME OF OBSERVATIONS 10/4/10 9:00 ☑ AM ☐ PM	Observers Name: STEPHEN VANDER HART Title: VP OPERATIONS Signature: Stephen V Hart	WERE UNAUTHORIZED NSWDs OBSERVED? ☐ YES ☒ NO WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NSWDs? ☐ YES ☒ NO	If YES to either question, complete reverse side.
QUARTER: OCT.-DEC. DATE/TIME OF OBSERVATIONS 12/15/10 9:00 ☑ AM ☐ PM	Observers Name: STEPHEN V HART Title: VP OPERATIONS Signature: Steph V Hart	WERE UNAUTHORIZED NSWDs OBSERVED? ☐ YES ☒ NO WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NSWDs? ☐ YES ☒ NO	If YES to either question, complete reverse side.
QUARTER: JAN.-MARCH DATE/TIME OF OBSERVATIONS 3/9/11 9:00 ☑ AM ☐ PM	Observers Name: STEPHEN V HART Title: VP OPERATIONS Signature: Steph V Hart	WERE UNAUTHORIZED NSWDs OBSERVED? ☐ YES ☒ NO WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NSWDs? ☐ YES ☒ NO	If YES to either question, complete reverse side.
QUARTER: APRIL-JUNE DATE/TIME OF OBSERVATIONS 6/10/11 9:00 ☑ AM ☐ PM	Observers Name: STEPHEN V HART Title: VP OPERATIONS Signature: Steph V Hart	WERE UNAUTHORIZED NSWDs OBSERVED? ☐ YES ☒ NO WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NSWDs? ☐ YES ☒ NO	If YES to either question, complete reverse side.

ANNUAL REPORT

SIDE B

FORM 3 QUARTERLY VISUAL OBSERVATIONS OF UNAUTHORIZED NON-STORM WATER DISCHARGES (NSWDs)

OBSERVATION DATE (FROM REVERSE SIDE)	NAME OF UNAUTHORIZED NSWD EXAMPLE: Vehicle Wash Water	SOURCE AND LOCATION OF UNAUTHORIZED NSWD EXAMPLE: NW Corner of Parking Lot	DESCRIBE UNAUTHORIZED NSWD CHARACTERISTICS Indicate whether unauthorized NSWD is clear, cloudy, discolored, causing stains; contains floating objects or an oil sheen, has odors, etc.		DESCRIBE CORRECTIVE ACTIONS TO ELIMINATE UNAUTHORIZED NSWD AND TO CLEAN IMPACTED DRAINAGE AREAS. PROVIDE UNAUTHORIZED NSWD ELIMINATION DATE.
			AT THE UNAUTHORIZED NSWD SOURCE	AT THE UNAUTHORIZED NSWD AREA AND DISCHARGE LOCATION	
__/__/__ __:__ ☐AM ☐PM					
__/__/__ __:__ ☐AM ☐PM					
__/__/__ __:__ ☐AM ☐PM					
__/__/__ __:__ ☐AM ☐PM					

ANNUAL REPORT

SIDE A

FORM 2-QUARTERLY VISUAL OBSERVATIONS OF AUTHORIZED NON-STORM WATER DISCHARGES (NSWDs)

* Quarterly dry weather visual observations are required of each authorized NSWD.
* Observe each authorized NSWD source, impacted drainage area, and discharge location.
* Authorized NSWDs must meet the conditions provided in Section D (pages 5-6), of the General Permit.
* Make additional copies of this form as necessary.

QUARTER: JULY-SEPT. DATE: 10/4/10	Observers Name: STEPHEN VANDER HART Title: VP OPERATIONS Signature: Stephen Vander Hart	WERE ANY AUTHORIZED NSWDs DISCHARGED DURING THIS QUARTER? ☐ YES ☒ NO If YES, complete reverse side of this form.
QUARTER: OCT.-DEC. DATE: 12/15/10	Observers Name: STEPH V HART Title: VP OPERATIONS Signature: Steph V Hart	WERE ANY AUTHORIZED NSWDs DISCHARGED DURING THIS QUARTER? ☐ YES ☒ NO If YES, complete reverse side of this form.
QUARTER: JAN.-MARCH DATE: 3/9/11	Observers Name: STEPH V HART Title: VP OPERATIONS Signature: Steph V Hart	WERE ANY AUTHORIZED NSWDs DISCHARGED DURING THIS QUARTER? ☐ YES ☒ NO If YES, complete reverse side of this form.
QUARTER: APRIL-JUNE DATE: 6/10/11	Observers Name: STEPH V HART Title: VP OPERATIONS Signature: Steph V Hart	WERE ANY AUTHORIZED NSWDs DISCHARGED DURING THIS QUARTER? ☐ YES ☒ NO If YES, complete reverse side of this form.

ANNUAL REPORT

SIDE B

FORM 2-QUARTERLY VISUAL OBSERVATIONS OF AUTHORIZED NON-STORM WATER DISCHARGES (NSWDs)

DATE /TIME OF OBSERVATION	SOURCE AND LOCATION OF AUTHORIZED NSWD EXAMPLE: Air conditioner Units on Building C	NAME OF AUTHORIZED NSWD EXAMPLE: Air conditioner condensate	DESCRIBE AUTHORIZED NSWD CHARACTERISTICS Indicate whether authorized NSWD is clear, cloudy, or discolored, causing staining, contains floating objects or an oil sheen, has odors, etc.		DESCRIBE ANY REVISED OR NEW BMPs AND PROVIDE THEIR IMPLEMENTATION DATE
			At the NSWD Source	At the NSWD Drainage Area and Discharge Location	
__/__/__ __:__ ☐AM ☐PM					
__/__/__ __:__ ☐AM ☐PM					
__/__/__ __:__ ☐AM ☐PM					
__/__/__ __:__ ☐AM ☐PM					
__/__/__ __:__ ☐AM ☐PM					

ANNUAL REPORT

SIDE A

FORM 1-SAMPLING & ANALYSIS RESULTS

FIRST STORM EVENT

- If analytical results are less than the detection limit (or non detectable), show the value as less than the numerical value of the detection limit (example: <.05)
- If you did not analyze for a required parameter, do not report "0". Instead, leave the appropriate box blank
- When analysis is done using portable analysis (such as portable pH meters, SC meters, etc.), indicate "PA" in the appropriate test method used box.
- Make additional copies of this form as necessary.

NAME OF PERSON COLLECTING SAMPLE(S): STEPHEN VANDER HART TITLE: VP OPERATIONS SIGNATURE: Stephen V Hart

DESCRIBE DISCHARGE LOCATION Example: NW Out Fall	DATE/TIME OF SAMPLE COLLECTION	TIME DISCHARGE STARTED	ANALYTICAL RESULTS For First Storm Event									
			BASIC PARAMETERS					OTHER PARAMETERS				
			PH	TSS	SC	O&G	TOC					
POND #2	12/20/10 7:00 ☒ AM ☐ PM	5:00 ☒ AM ☐ PM	SEE		ATTACHED							
POND #1	12/22/10 4:30 ☐ AM ☒ PM	3:00 ☐ AM ☒ PM										
POND #3	12/22/10 4:30 ☐ AM ☒ PM	3:00 ☐ AM ☒ PM										
	/ / : ☐ AM ☐ PM	: ☐ AM ☐ PM										
TEST REPORTING UNITS:			pH Units	mg/l	umho/cm	mg/l	mg/l					
TEST METHOD DETECTION LIMIT:												
TEST METHOD USED:												
ANALYZED BY (SELF/LAB): LAB												

TSS - Total Suspended Solids SC - Specific Conductance O&G - Oil & Grease TOC - Total Organic Carbon

ANNUAL REPORT

FORM 1-SAMPLING & ANALYSIS RESULTS

SIDE B

SECOND STORM EVENT

- If analytical results are less than the detection limit (or non detectable), show the value as less than the numerical value of the detection limit (example: <.05)
- If you did not analyze for a required parameter, do not report "0". Instead, leave the appropriate box blank
- When analysis is done using portable analysis (such as portable pH meters, SC meters, etc.), indicate "PA" in the appropriate test method used box.

NAME OF PERSON COLLECTING SAMPLE(S):_____ TITLE: _____ SIGNATURE: _____

DESCRIBE DISCHARGE LOCATION Example: NW Out Fall	DATE/TIME OF SAMPLE COLLECTION	TIME DISCHARGE STARTED	ANALYTICAL RESULTS For Second Storm Event									
			BASIC PARAMETERS					OTHER PARAMETERS				
			PH	TSS	SC	O&G	TOC					
	__/__/__ ☐AM ___:___ ☐PM	☐AM ___:___ ☐PM										
	__/__/__ ☐AM ___:___ ☐PM	☐AM ___:___ ☐PM										
	__/__/__ ☐AM ___:___ ☐PM	☐AM ___:___ ☐PM										
	__/__/__ ☐AM ___:___ ☐PM	☐AM ___:___ ☐PM										
TEST REPORTING UNITS:			pH Units	mg/l	umho/cm	mg/l	mg/l					
TEST METHOD DETECTION LIMIT:												
TEST METHOD USED:												
ANALYZED BY (SELF/LAB):												

TSS - Total Suspended Solids SC - Specific Conductance O&G - Oil & Grease TOC - Total Organic Carbon

E.S.BABCOCK&Sons,Inc.
Environmental Laboratories est 1906

Client Name: Stone Valley Materials
Contact: Stephen
Address: 3500-B Pyrite
Riverside, CA 92509

Report Date: 06-Jan-2011

Analytical Report: Page 1 of 4
Project Name: Stormwater
Project Number: Storm Water

Work Order Number: A0L2465

Received on Ice (Y/N): Yes Temp: 10 °C

Attached is the analytical report for the sample(s) received for your project. Below is a list of the individual sample descriptions with the corresponding laboratory number(s). Also, enclosed is a copy of the Chain of Custody document (if received with your sample(s)). Please note any unused portion of the sample(s) may be responsibly discarded after 30 days from the above report date, unless you have requested otherwise.

Thank you for the opportunity to serve your analytical needs. If you have any questions or concerns regarding this report please contact our client service department.

Sample Identification

Lab Sample #	Client Sample ID	Matrix	Date Sampled	By	Date Submitted	By
A0L2465-01	Pond # 1 - Storm Water Stone Valley Materials	Liquid	12/22/10 16:30	Stephen Van Der	12/23/10 10:00	Stephen Van Der Hart
A0L2465-02	Pond # 3 - Storm Water Stone Valley Materials	Liquid	12/22/10 16:35	Stephen Van Der	12/23/10 10:00	Stephen Van Der Hart

E.S.BABCOCK&Sons,Inc.
Environmental Laboratories est 1905

Client Name: Stone Valley Materials
Contact: Stephen
Address: 3500-B Pyrite
Riverside, CA 92509

Report Date: 06-Jan-2011

Analytical Report: Page 2 of 4
Project Name: Stormwater
Project Number: Storm Water

Work Order Number: A0L2465

Received on Ice (Y/N): Yes Temp: 10 °C

Laboratory Reference Number
A0L2465-01

Sample Description	Matrix	Sampled Date/Time	Received Date/Time
Pond # 1 - Storm Water Stone Valley Materials	Liquid	12/22/10 16:30	12/23/10 10:00

Analyte(s)	Result	RDL	Units	Method	Analysis Date	Analyst	Flag
Aggregate Properties							
pH	9.9	1.0	pH Units	SM 4500H+ B	12/23/10 23:44	kam	
Specific Conductance	130	1.0	umhos/cm	SM 2510 B	12/23/10 23:44	kam	
Solids							
Total Suspended Solids	1600	40	mg/L	SM 2540D	12/28/10 12:45	ss	
Aggregate Organic Compounds							
Total Organic Carbon	2.9	0.70	mg/L	SM 5310B	12/30/10 00:00	cmd	
Oil & Grease (HEM)	ND	5.0	mg/L	EPA 1664A	01/04/11 14:36	lgt	

E.S.BABCOCK&Sons,Inc.
Environmental Laboratories est 1906

Client Name: Stone Valley Materials
Contact: Stephen
Address: 3500-B Pyrite
Riverside, CA 92509

Report Date: 06-Jan-2011

Project Name: Stormwater
Project Number: Storm Water

Work Order Number: A0L2465
Received on Ice (Y/N): Yes Temp: 10 °C

Laboratory Reference Number
A0L2465-02

Sample Description	Matrix	Sampled Date/Time	Received Date/Time
Pond # 3 - Storm Water Stone Valley Materials	Liquid	12/22/10 16:35	12/23/10 10:00

Analyte(s)	Result	RDL	Units	Method	Analysis Date	Analyst	Flag
Aggregate Properties							
pH	8.0	1.0	pH Units	SM 4500H+ B	12/23/10 23:44	kam	
Specific Conductance	160	1.0	umhos/cm	SM 2510 B	12/23/10 23:44	kam	
Solids							
Total Suspended Solids	1100	66	mg/L	SM 2540D	12/28/10 12:45	ss	
Aggregate Organic Compounds							
Total Organic Carbon	3.2	0.70	mg/L	SM 5310B	12/30/10 00:00	cmd	
Oil & Grease (HEM)	ND	5.0	mg/L	EPA 1664A	01/04/11 14:36	lgt	

E.S.BABCOCK&Sons,Inc.
Environmental Laboratories est 1906

Client Name: Stone Valley Materials
Contact: Stephen
Address: 3500-B Pyrite
Riverside, CA 92509

Report Date: 06-Jan-2011

Analytical Report: Page 4 of 4
Project Name: Stormwater
Project Number: Storm Water

Work Order Number: A0L2465

Received on Ice (Y/N): Yes Temp: 10 °C

Notes and Definitions

pH:	Regulatory 15 minute holding time exceeded	A0L2465-01
pH:	Regulatory 15 minute holding time exceeded	A0L2465-02

ND: Analyte NOT DETECTED at or above the Method Detection Limit **(if MDL is reported)**, otherwise at or above the Reportable Detection Limit (RDL)

NR: Not Reported

RDL: Reportable Detection Limit

MDL: Method Detection Limit

* / (Non-NELAP): NELAP does not offer accreditation for this analyte/method/matrix combination

Approval

Enclosed are the analytical results for the submitted sample(s). Babcock Laboratories certify the data presented as part of this report meet the minimum quality standards in the referenced analytical methods. Any exceptions have been noted. Babcock Laboratories and its officers and employees assume no responsibility and make no warranty, express or implied, for uses or interpretations made by any recipients, intended or unintended, of this report.

cc:

e-Short.rpt

E.S.BABCOCK&Sons,Inc.
Environmental Laboratories est 1906

Client Name: Stone Valley Materials
Contact: Stephen
Address: 3500-B Pyrite
Riverside, CA 92509

Report Date: 29-Dec-2010

Analytical Report: Page 1 of 3
Project Name: Stormwater
Project Number: Storm Water

Work Order Number: A0L2006
Received on Ice (Y/N): Yes Temp: 11 °C

Attached is the analytical report for the sample(s) received for your project. Below is a list of the individual sample descriptions with the corresponding laboratory number(s). Also, enclosed is a copy of the Chain of Custody document (if received with your sample(s)). Please note any unused portion of the sample(s) may be responsibly discarded after 30 days from the above report date, unless you have requested otherwise.

Thank you for the opportunity to serve your analytical needs. If you have any questions or concerns regarding this report please contact our client service department.

Sample Identification

Lab Sample #	Client Sample ID	Matrix	Date Sampled	By	Date Submitted	By
A0L2006-01	Pond #2 - Storm Water Stone Valley Materials	Liquid	12/20/10 07:00	Stephen Van Der	12/20/10 10:02	Stephen Van Der Hart

E.S.BABCOCK&Sons,Inc.
Environmental Laboratories est 1906

Client Name: Stone Valley Materials
Contact: Stephen
Address: 3500-B Pyrite
Riverside, CA 92509

Report Date: 29-Dec-2010

Analytical Report: Page 2 of 3
Project Name: Stormwater
Project Number: Storm Water

Work Order Number: A0L2006
Received on Ice (Y/N): Yes Temp: 11 °C

Laboratory Reference Number
A0L2006-01

Sample Description	Matrix	Sampled Date/Time	Received Date/Time
Pond #2 - Storm Water Stone Valley Materials	Liquid	12/20/10 07:00	12/20/10 10:02

Analyte(s)	Result	RDL	Units	Method	Analysis Date	Analyst	Flag
Aggregate Properties							
pH	7.4	1.0	pH Units	SM 4500H+ B	12/20/10 21:00	sbd	
Specific Conductance	360	1.0	umhos/cm	SM 2510 B	12/20/10 21:00	sbd	
Solids							
Total Suspended Solids	290	20	mg/L	SM 2540D	12/24/10 09:45	jma	
Aggregate Organic Compounds							
Total Organic Carbon	2.3	0.70	mg/L	SM 5310B	12/21/10 23:43	cmd	
Oil & Grease (HEM)	ND	5.0	mg/L	EPA 1664A	12/21/10 14:36	lgt	

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Environmental Laboratories est 1906

Client Name: Stone Valley Materials
Contact: Stephen
Address: 3500-B Pyrite
Riverside, CA 92509

Report Date: 06-Jan-2011

Analytical Report: Page 1 of 1
Project Name: Stormwater
Project Number: Storm Water

Work Order Number: A0L2465

Received on Ice (Y/N): Yes Temp: 10 °C

E.S.BABCOCK&Sons,Inc.
Environmental Laboratories est 1906
6100 Quail Valley Court Riverside, CA 92507
(951) 653-3351 • FAX (951) 653-1662
www.babcocklabs.com

Chain of Custody & Sample Information Record

Client: STONE VALLEY MATERIALS Contact: STEPHEN VANDER HART Fax No. 951-361-3370
Phone No. 909-973-6048 email: STEPHENH@STONEVALLEYMATERIALS.COM
Project Name: STORM WATER Turn Around Time: Routine *72 Hour Rush *48 Hour Rush *24 Hour Rush
Project Location: *Lab TAT Approval: By: *Additional Charges Apply

Additional Reporting Requests: Include QC Data Package: ☐ Yes ☐ No; FAX Results: ☐ Yes ☐ No; Email Results: ☐ Yes ☐ No; State EDT: ☐ Yes ☐ No (include Source Number in Notes)

Sampler Information
Name: STEPHEN VANDER HART
Employer: STONEVALLEY MATERIALS
Signature: Steph V Hart

Sample ID	Date	Time	Unpreserved	H2SO4	HCl	HNO3	Na2S2O3	NaOH	NaOH/Zn Acetate	NH4Cl	MCAA	Total # of Containers	Routine	Resample	Special	Analysis Requested	Matrix	Notes
POND #1	12/20	930p	1	3								4						
POND #3	12/20	1135p	1	3								4						

DW = Drinking Water
WW = Waste Water
GW = Ground Water
S = Source
SG = Sludge
L = Liquid
M = Miscellaneous

Relinquished By (sign): [signature] Print Name / Company: [signature] Date / Time: 12/23/10 1000 Received By (sign): [signature] Print Name / Company: [signature]

(For Lab Use Only) Sample Integrity Upon Receipt/Acceptance Criteria
Sample(s) Submitted on Ice? Yes No
Custody Seal(s) Intact? Yes No NA
Sample(s) Intact? Yes No
Temperature: 10 °C ☐ Cooler Blank
Sample meets laboratory acceptance criteria? Yes No
Permission to continue: Yes No
Deviation/Notes:
Signature/Date:

Lab No. A0L2465
Logged in By/Date: [signature] DEC 23 2010
Page 1 of 1
Rev 3/09

E.S.BABCOCK&Sons,Inc.
Environmental Laboratories est 1906

Client Name: Stone Valley Materials
Contact: Stephen
Address: 3500-B Pyrite
Riverside, CA 92509

Report Date: 29-Dec-2010

Analytical Report: Page 3 of 3
Project Name: Stormwater
Project Number: Storm Water

Work Order Number: A0L2006

Received on Ice (Y/N): Yes Temp: 11 °C

Notes and Definitions

pH: Regulatory 15 minute holding time exceeded A0L2006-01

ND: Analyte NOT DETECTED at or above the Method Detection Limit **(if MDL is reported)**, otherwise at or above the Reportable Detection Limit (RDL)

NR: Not Reported

RDL: Reportable Detection Limit

MDL: Method Detection Limit

* / (Non-NELAP): NELAP does not offer accreditation for this analyte/method/matrix combination

Approval

Enclosed are the analytical results for the submitted sample(s). Babcock Laboratories certify the data presented as part of this report meet the minimum quality standards in the referenced analytical methods. Any exceptions have been noted. Babcock Laboratories and its officers and employees assume no responsibility and make no warranty, express or implied, for uses or interpretations made by any recipients, intended or unintended, of this report.

Robin Glenney, Project Manager

cc:

e-Short.rpt

E.S.BABCOCK&Sons,Inc.

Environmental Laboratories est 1906

Client Name: Stone Valley Materials
Contact: Stephen
Address: 3500-B Pyrite
Riverside, CA 92509

Report Date: 29-Dec-2010

Analytical Report: Page 1 of 1
Project Name: Stormwater
Project Number: Storm Water

Work Order Number: A0L2006

Received on Ice (Y/N): Yes Temp: 11 °C

E.S.BABCOCK&Sons,Inc. 6100 Quail Valley Court Riverside, CA 92507 (951) 653-3351 FAX (951) 653-1662 www.babcocklabs.com

Environmental Laboratories est 1906

Chain of Custody & Sample Information Record

Client: Stone Valley Materials Contact: Stephen Fax No: 951-341-3230

Phone No: 951-273-1278 email: stephen@stonevalleymaterials.com

Project Name: Stone Valley Turn-Around Time: Routine *72 Hour Rush *48 Hour Rush *24 Hour Rush

Project Location: *Lab TAT Approval: By: *Additional Charges Apply

Additional Requests: Include QC Data Package ☐ Yes ☐ No; Fax Results ☐ Yes ☐ No; Email Results ☐ Yes ☐ No; Store EDT ☐ Yes ☐ No; (Include Source Number in Notes)

Sampler Information*: Name: Stephen Stone Valley Materials; Employer: Stone Valley Materials; Signature: Stephen Valley

Sample ID	Date	Time	Unpreserved	H_2SO_4	HCl	HNO_3	NaOH	$Na_2S_2O_3$	$NaOH/Zn$ Acetate	NH_4Cl	MCAA	Total # of Containers	Routine	Rosamble	Special	Sample Type	Analysis Requested	Matrix	Notes
Pond #2	12/20	700	13									4				L	XXXX	L	
			13									3					XXXX		
			13									4					XXXX		

CW = Drinking Water; WW = Waste Water; GW = Ground Water; S = Source; SG = Sludge; L = Liquid; M = Miscellaneous

Relinquished By (sign)	Print Name / Company	Date / Time	Received By (sign)	Print Name / Company
[signature]	Stone Valley Materials	12-20-10 10:02	[signature]	C. Madrigal/ESB

(For Lab Use Only) Sample Integrity Upon Receipt/Acceptance Criteria

Sample(s) Submitted on Ice? Yes No
Custody Seal(s) Intact? Yes No NA
Sample(s) Intact? Yes No
Temperature: ___ °C ☐ Cooler Blank

Sample meets laboratory acceptance criteria? Yes No
Permission to continue: Yes No
Deviation/Notes: ___
Signature/Date: ___

Lab No. A0L2006
Logged in By/Date: DEC 20 2010
Page ___ of ___
Rev. 3/07

20: .011

ANNUAL REPORT

SIDE A

FORM 5-ANNUAL COMPREHENSIVE SITE COMPLIANCE EVALUATION
POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY BMP STATUS

EVALUATION DATE: 6/10/11 INSPECTOR NAME: STEPH V HART TITLE: VP of OPERATIONS SIGNATURE: Steph V Hart

POTENTIAL POLLUTANT SOURCE/INDUSTRIAL ACTIVITY AREA (as identified in your SWPPP)			Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation
ACTIVE MINE AREA	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED? ☐ YES ☒ NO	If yes, to either question, complete the next two columns of this form		
	ARE ADDITIONAL/REVISED BMPs NECESSARY? ☐ YES ☒ NO			
EQUIPMENT FUELING AREA	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED? ☐ YES ☒ NO	If yes, to either question, complete the next two columns of this form		
	ARE ADDITIONAL/REVISED BMPs NECESSARY? ☐ YES ☒ NO			
EQUIPMENT MAINTENACE AREA	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED? ☐ YES ☒ NO	If yes, to either question, complete the next two columns of this form		
	ARE ADDITIONAL/REVISED BMPs NECESSARY? ☐ YES ☒ NO			
	HAVE ANY BMPs NOT BEEN FULLY IMPLEMENTED? ☐ YES ☐ NO	If yes, to either question, complete the next two columns of this form		
	ARE ADDITIONAL/REVISED BMPs NECESSARY? ☐ YES ☐ NO			

201 .011

ANNUAL REPORT

FORM 4-MONTHLY VISUAL OBSERVATIONS OF STORM WATER DISCHARGES

SIDE A

- Storm water discharge visual observations are required for at least one storm event per month between October 1 and May 31.
- Visual observations must be conducted during the first hour of discharge at all discharge locations.
- Discharges of temporarily stored or contained storm water must be observed at the time of discharge.
- Indicate "None" in the first column of this form if you did not conduct a monthly visual observation.
- Make additional copies of this form as necessary.
- Until a monthly visual observation is made, record any eligible storm events that do not result in a storm water discharge and note the date, time, name, and title of who observed there was no storm water discharge.

		#1	#2	#3	#4
Observation Date: October 6 2010 (6th, 18th, 19th, 20th, 21st, 22nd, 25)	Drainage Location Description	NO DISCHARGE.			
Observers Name: STEPH V HART	Observation Time	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
Title: VP OPERATIONS	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
Signature: Steph V Hart	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: November 8 2010 (8th, 23rd, 24th)	Drainage Location Description	NO DISCHARGE			
Observers Name: STEPH V HART	Observation Time	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
Title: VP OPERATIONS	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
Signature: Steph V Hart	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: December 20 2010 (20th, 21st, 22nd, 29th)	Drainage Location Description	20th	22nd		
Observers Name: STEPH V HART	Observation Time	700 : ☐ P.M. ☒ A.M.	730: ☐ P.M. ☒ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
Title: VP OPERATIONS	Time Discharge Began	600 : ☐ P.M. ☒ A.M.	700: ☐ P.M. ☒ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
Signature: Steph V Hart	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☐
Observation Date: January 3 2011	Drainage Location Description	NO DISCHARGE			
Observers Name: STEPH V HART	Observation Time	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
Title: VP OPERATIONS	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
Signature: steph V Hart	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐

ANNUAL REPORT

SIDE B

FORM 4-MONTHLY VISUAL OBSERVATIONS OF STORM WATER DISCHARGES

DATE/TIME OF OBSERVATION (From Reverse Side)	DRAINAGE AREA DESCRIPTION EXAMPLE: Discharge from material storage Area #2	DESCRIBE STORM WATER DISCHARGE CHARACTERISTICS Indicate whether storm water discharge is clear, cloudy, or discolored; causing staining; containing floating objects or an oil sheen, has odors, etc.	IDENTIFY AND DESCRIBE SOURCE(S) OF POLLUTANTS EXAMPLE: Oil sheen caused by oil dripped by trucks in vehicle maintenance area.	DESCRIBE ANY REVISED OR NEW BMPs AND THEIR DATE OF IMPLEMENTATION
12/20/10 7:00 ☒ AM ☐ PM	POND #2	WATER WAS MUDDY WITH NO OIL SHEEN		PLACED MORE ROCK IN PONDS TO SLOW WATER 12-20-10
12/22/10 7:30 ☒ AM ☐ PM	POND #1 POND #3	WATER LESS MUDDY NO OIL SHEEN		BUILD BERMS TO GUIDE WATER 12-22-10
/ / : ☐ AM ☐ PM				
/ / : ☐ AM ☐ PM				
/ / : ☐ AM ☐ PM				

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ANNUAL REPORT

FORM 4 (Continued)-MONTHLY VISUAL OBSERVATIONS OF STORM WATER DISCHARGES

SIDE A

- Storm water discharge visual observations are required for at least one storm event per month between October 1 and May 31.
- Visual observations must be conducted during the first hour of discharge at all discharge locations.
- Discharges of temporarily stored or contained storm water must be observed at the time of discharge.
- Indicate "None" in the first column of this form if you did not conduct a monthly visual observation.
- Make additional copies of this form as necessary.
- Until a monthly visual observation is made, record any eligible storm events that do not result in a storm water discharge and note the date, time, name, and title of who observed there was no storm water discharge.

Observation Date: February 25 2011 Observers Name: STEPH V HART Title: VP OPERATIONS Signature: Steph V Hart	Drainage Location Description	#1 no Runoff	#2 2/19/11	#3 WEEKEND STORM	#4
	Observation Time	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: March 21 2011 21th 23th 25th Observers Name: STEPH V HART Title: VP OPERATIONS Signature: Steph V Hart	Drainage Location Description	#1 MARCH 21	#2 MARCH 23 STORM	#3 WEEKEND	#4
	Observation Time	9 00 : ☐ P.M. ☒ A.M.	200 : ☒ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Time Discharge Began	600 : ☐ P.M. ☒ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☒	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: April 8 2011 Observers Name: Steph V Hart Title: VP OPERATIONS Signature: Steph V Hart	Drainage Location Description	#1 NONE	#2	#3	#4
	Observation Time	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☒	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐
Observation Date: May 17 2011 17th 18th Observers Name: STEPH V HART Title: VP OPERATIONS Signature: Steph V Hart	Drainage Location Description	#1 NONE	#2	#3	#4
	Observation Time	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Time Discharge Began	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.	: ☐ P.M. ☐ A.M.
	Were Pollutants Observed (If yes, complete reverse side)	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐	YES ☐ NO ☐

ANNUAL REPORT

FORM 4 (Continued)-MONTHLY VISUAL OBSERVATIONS OF STORM WATER DISCHARGES

SIDE B

DATE/TIME OF OBSERVATION (From Reverse Side)	DRAINAGE AREA DESCRIPTION EXAMPLE: Discharge from material storage Area #2	DESCRIBE STORM WATER DISCHARGE CHARACTERISTICS Indicate whether storm water discharge is clear, cloudy, or discolored; causing staining; containing floating objects or an oil sheen, has odors, etc.	IDENTIFY AND DESCRIBE SOURCE(S) OF POLLUTANTS EXAMPLE: Oil sheen caused by oil dripped by trucks in vehicle maintenance area.	DESCRIBE ANY REVISED OR NEW BMPs AND THEIR DATE OF IMPLEMENTATION
3/21/11 9:00 ☒ AM ☐ PM	Ponds 1,2 & 3	SEDIMENT IN WATER NO ODOR OR SHEEN VERY LITTLE RUN OFF		
3/23/11 2:00 ☐ AM ☒ PM	Ponds 1,2,3	MUDDY WATER NO ODOR OR SHEEN VERY LITTLE RUN OFF		
/ / : ☐ AM ☐ PM				
/ / : ☐ AM ☐ PM				
/ / : ☐ AM ☐ PM				

July 1, 2010 - July 1, 2011

October 6, 2010	.01" (.2mm)	February 25, 2010	.2" (5mm)
★ October 17, 2010	.01" (.2mm)	★ February 26, 2010	.74" (18.8mm)
October 18, 2010	.12" (.3mm)	March 7, 2010	.01" (.2mm)
October 19, 2010	.07" (1.7mm)	★ March 20, 2010	.58" (14.7mm)
October 20, 2010	.01" (.2mm)	March 21, 2010	.37" (9.4mm)
October 21, 2010	.04" (1mm)	March 23, 2010	.27" (6.8mm)
October 22, 2010	.02" (.5mm)	March 25, 2010	.05" (1.2mm)
October 25, 2010	.03" (.7mm)	April 8, 2010	.1" (2.5mm)
★ October 30, 2010	.07" (1.7mm)	★ April 9, 2010	.5" (1.2)
November 8, 2010	.13" (3.3mm)	May 9, 2010	.01" (.2mm)
★ November 20, 2010	.27" (6.8mm)	★ May 15, 2010	.05" (1.2mm)
★ November 21, 2010	.19" (4.8mm)	May 17, 2010	.01" (.2mm)
November 23, 2010	.03" (.7mm)	May 18, 2010	.3" (7.6mm)
November 24, 2010	.24" (6.1mm)		
★ November 27, 2010	.06" (1.5mm)		
★ December 5, 2010	.33" (8.3mm)		
December 6, 2010	.16" (4mm)		
December 16, 2010	.23" (5.8mm)		
December 17, 2010	.04" (1mm)		
★ December 18 2010	.16" (4mm)		
★ December 19 2010	1.17" (29.7)		
December 20, 2010	2.05" (52mm)		
December 21, 2010	1.52" (38.6mm)		
December 22, 2010	2.64" (67mm)		
★ December 25, 2010	.14" (3.5mm)		
★ December 26, 2010	.03" (.7mm)		
December 29, 2010	.47" (11.9mm)		
★ January 2, 2010	.11" (2.7mm)		
January 3, 2010	.13" (3.3mm)		
★ January 30, 2010	.11" (2.7mm)		
January 31, 2010	.01" (.2mm)		
February 16, 2010	.17" (4.3mm)		
February 17, 2010	.01" (.2mm)		
February 18, 2010	.31" (7.8mm)		
★ February 19, 2010	.56" (14.2mm)		
★ February 20, 2010	.06" (1.5mm)		

Provided by [illegible]

Date	Shot	1 Lb Booster	Booster 3/4 Lb		Booster 1/2 Lb		PowerDitch		ANFO
		Lbs	Units	Lbs	Units	Lbs	Units	Lbs	Lbs
1/6/11	1	88							
1/11/11	2				57	29			55
1/13/11	3				52	26			55
2/10/11	4				75	38			
2/23/11	5				119	60			
3/14/11	6				108	54			
3/15/11	7		77	57.75					6160
4/1/11	8				160	80	32	80	165
4/6/11	9	131							
4/27/11	10	175							
5/24/11	11		83	62.25					3740
6/24/11	12		137	102.75					
7/11/11	13		120	90					
7/29/11	14	90							
8/29/11	15	44							
9/9/11	T&M		12	9					275
9/20/11	16	111							
10/4/11	17		61	45.75					
10/14/11	T&M		64	48					
10/21/11	18	68							
11/18/11	19		64	48					
Total by product:		**707**	**618**	**464**	**571**	**286**	**32**	**80**	**10,450**

CentraControl 7000	Fortel 2.5x16		Fortel 3x16		Total Lbs/
Lbs	Units	Lbs	Units	Lbs	Shot
12,040					12,128
					84
					81
15,060					15,098
20,380					20,440
21,120					21,174
	120	399.96			6,618
	72	239.98			565
16,760					16,891
26,380					26,555
			193	966.93	4,769
6,400					6,503
10,960					11,050
15,040					15,130
9,360					9,404
			7	35.07	319
10,840					10,951
4,160					4,206
					48
6,660					6,728
7,500					7,548
182,660	**192**	**640**	**200**	**1,002**	**196,288**

Material Safety Data Sheet

Dyno Nobel Inc.
2650 Decker Lake Boulevard, Suite 300
Salt Lake City, Utah 84119
Phone: 801-364-4800 Fax: 801-321-6703
E-Mail: dnna.hse@am.dynonobel.com
FOR 24 HOUR EMERGENCY, CALL CHEMTREC (USA) 800-424-9300
CANUTEC (CANADA) 613-996-6666

MSDS # 1108
Date 08/05/08

Supercedes
MSDS # 1108 01/23/06

SECTION I - PRODUCT IDENTIFICATION

Trade Name(s):

DYNO® CORD SENSITIVE BOOSTERS - CS35, CS45, CS90, CS135

TROJAN® SPARTAN®
TROJAN® SPARTAN® Slider
TROJAN® Stinger
TROJAN® NB
TROJAN® NB UNIVERSAL
TROJAN® Twinplex

Product Class: Cast Boosters

Product Appearance & Odor: Tan to brown solid with no odor. May also be silvery gray. Packaged in paper or plastic tube.

DOT Hazard Shipping Description: Booster 1.1D UN0042 II

NFPA Hazard Classification: Not Available (See Section IV - Special Fire Fighting Procedures)

SECTION II - HAZARDOUS INGREDIENTS

			Occupational Exposure Limits	
Ingredients:	**CAS#**	**% (Range)**	**ACGIH TLV-TWA**	**OSHA PEL-TWA**
Pentaerythritol Tetranitrate (PETN)	78-11-5	35-70	None Established	None Established
Trinitrotoluene	118-96-7	30-50	0.1 mg/m^3 (skin)	1.5 mg/m^3 (skin)
RDX	121-82-4	0-25	0.5 mg/m^3 (skin)	1.5 mg/m^3 (skin)
HMX	2691-41-0	0-5	None Established	None Established
Aluminum	7429-90-5	0-15	10 mg/m^3 (dust)	15 mg/m^3 (total)

Ingredients, other than those mentioned above, as used in this product are not hazardous as defined under current Department of Labor regulations, or are present in deminimus concentrations (less than 0.1% for carcinogens, less than 1.0% for other hazardous materials).

DYNO
Dyno Nobel
Groundbreaking Performance

SECTION III - PHYSICAL DATA

Melting Point: 176° F (80° C) (TNT)
Vapor Density: Not applicable
Percent Volatile by Volume: Not applicable
Evaporation Rate (Butyl Acetate = 1): Not applicable
Vapor Pressure: 0.042mm Hg at 80° C (TNT)
Density: 1.55 - 1.65 g/cc
Solubility in Water: < 0.01%

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point: Not applicable
Flammable Limits: Not applicable
Extinguishing Media: (See Special Fire Fighting Procedures section).
Special Fire Fighting Procedures: Do not attempt to fight fires involving explosive materials. Evacuate all personnel to a predetermined safe location, no less than 2,500 feet in all directions.
Unusual Fire and Explosion Hazards: Can explode or detonate under fire conditions. Burning material may produce toxic vapors.

SECTION V - HEALTH HAZARD DATA

Effects of Overexposure

Eyes: Particulates in the eye may cause irritation, redness, and tearing. Prolonged or repeated contact may cause cataracts, optic neuritis, blurred vision or amblyopia.
Skin: Prolonged contact may cause irritation, severe eczema and sensitization dermatitis. TNT may be absorbed through the skin, which may be indicated by orange staining on exposed skin. See systemic effects below.
Ingestion: Harmful if swallowed. See systemic effects below.
Inhalation: Inhalation of dusts may cause irritation, sneezing or coughing. See systemic effects below.
Systemic or Other Effects: TNT is an irritant, neurotoxin, hepatotoxin, nephrotoxin and bone marrow depressant. Although exposure is unlikely, acute or chronic exposure may cause sensitization dermatitis, headache, dizziness, jaundice, lethargy, or problems with the liver or blood such as toxic nephritis, aplastic anemia, hemolytic anemia or methemoglobin formation. PETN is a known coronary vasodilator, and ingestion or inhalation may result in a lowering of blood pressure, headache or faintness, and a decreased tolerance for grain alcohol. Repeated over-exposure may result in chest pains in the absence of exposure.

Emergency and First Aid Procedures

Eyes: Irrigate with running water for at least fifteen minutes. If irritation persists, seek medical attention.
Skin: Remove contaminated clothing. Wash skin thoroughly with soap and water.
Ingestion: Seek medical attention.
Inhalation: In case of irritation, remove to fresh air. Seek medical attention if chronic symptoms occur.
Special Considerations: None.

SECTION VI - REACTIVITY DATA

Stability: Stable under normal conditions, may explode when subjected to fire, supersonic shock or high-energy projectile impact, especially when confined or in large quantities.
Conditions to Avoid: Keep away from heat, flame, friction, impact, ignition sources and strong shock.
Materials to Avoid (Incompatibility): Corrosives (strong acids and bases or alkalis).
Hazardous Decomposition Products: Nitrogen Oxides (NO_X), Carbon Monoxide (CO)
Hazardous Polymerization: Will not occur.

Material Safety Data Sheet

SECTION VII - SPILL OR LEAK PROCEDURES

Steps to be taken in Case Material is Released or Spilled: Protect from all ignition sources. In case of fire evacuate area not less than 2,500 feet in all directions. Notify authorities in accordance with emergency response procedures. Only personnel trained in emergency response should respond. If no fire danger is present, and product is undamaged and/or uncontaminated, repackage product in original packaging or other clean DOT approved container. Ensure that a complete account of product has been made and is verified. Follow applicable Federal, State and local spill reporting requirements.
Waste Disposal Method: Disposal must comply with Federal, State and local regulations. If product becomes a waste, it is potentially regulated as a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR, part 261. Review disposal requirements with a person knowledgeable with applicable environmental law (RCRA) before disposing of any explosive material.

SECTION VIII - SPECIAL PROTECTION INFORMATION

Ventilation: Not required for normal handling.
Respiratory Protection: None normally required.
Protective Clothing: Non-permeable gloves and work clothing that reduce skin contact are recommended.
Eye Protection: Safety glasses are recommended.
Other Precautions Required: None.

SECTION IX - SPECIAL PRECAUTIONS

Precautions to be taken in handling and storage: Store in cool, dry location. Store in compliance with all Federal, State and local regulations. Keep away from heat, flame, ignition sources or strong shock.
Precautions to be taken during use: Avoid breathing the fumes or gases from detonation of explosives. Use accepted safe industry practices when using explosive materials. Unintended detonation of explosives or explosive devices can cause serious injury or death.
Other Precautions: It is recommended that users of explosives material be familiar with the Institute of Makers of Explosives Safety Library publications.

SECTION X - SPECIAL INFORMATION

This product contains the following substances that are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

Chemical Name	CAS Number	% By Weight
None Applicable		

Disclaimer

Dyno Nobel Inc. and its subsidiaries disclaim any warranties with respect to this product, the safety or suitability thereof, the information contained herein, or the results to be obtained, whether express or implied, INCLUDING WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND/OR OTHER WARRANTY. The information contained herein is provided for reference purposes only and is intended only for persons having relevant technical skills. Because conditions and manner of use are outside of our control, the user is responsible for determining the conditions of safe use of the product. Buyers and users assume all risk, responsibility and liability whatsoever from any and all injuries (including death), losses, or damages to persons or property arising from the use of this product or information. Under no circumstances shall either Dyno Nobel Inc. or any of its subsidiaries be liable for special, consequential or incidental damages or for anticipated loss of profits.

Material Safety Data Sheet

Preparation Date: 09-Aug-2007 **Revision Date:** 23-Mar-2011 **Revision Number:** 2

SECTION 1 – PRODUCT AND COMPANY INFORMATION

Supplier(s):

Orica Canada Inc.	Orica USA Inc
Maple Street	33101 E Quincy Ave
Brownsburg, QC	Watkins, CO 80137-9406
For MSDS Requests: 1-450-533-4201	For MSDS Requests: 1-303-268-5000

Product Name:	**Pentex™, BST™, Osx™ & ProTECT™ Cast Boosters**
Product Code:	20083
Alternate Name(s):	BST™MPB, BST™ D, Pentex™ CSL, Pentex™ SL, Pentex™ DUO, Pentex™ AP, Pentex™ SB, Pentex™ D, Pentex™ CD, BSX and Osx™ 8 Seismic Boosters, Osx™ 8 L Seismic Boosters, Osx™ 8 Z Seismic Boosters, Pentex™ Avalanche DUO, Pentex™ ProTECT-i, Pentex™ ProTECT-e, AVR, Pentex™ Powerplus™ P (Pentex™ PPP)
UN-No:	UN0042
Recommended Use:	Used for initiation of explosive mixtures.

Emergency Telephone Number: FOR CHEMICAL EMERGENCIES (24 HOUR) INVOLVING TRANSPORTATION, SPILL, LEAK, RELEASE, FIRE OR ACCIDENTS: **IN CANADA CALL:** ORICA CANANDA TRANSPORTATION EMERGENCY RESPONSE SYSTEM AT **1-877-561-3636.** IN US CALL: CHEMTREC **1-800-424-9300. IN THE U.S.** FOR LOST, STOLEN OR MISPLACED EXPLOSIVES CALL: BATFE **1-800-800-3855.** FORM ATF F5400.0 MUST BE COMPLETED AND LOCAL AUTHORITIES (STATE/MUNICIPAL POLICE, ETC.) MUST BE ADVISED.

SECTION 2 – HAZARD IDENTIFICATION

Emergency Overview:
Danger. Risk of explosion by shock, fire or other sources of ignition. Irritating to eyes, respiratory system and skin.

Appearance:	**Physical State:**	**Odor:**
Tan to brown	Solid	None

SECTION 3 – COMPOSITION/ INFORMATION ON INGREDIENTS

Chemical Name	**CAS-No**	**Weight %**
2,4,6-Trinitrotoluene (TNT)	118-96-7	30-90
Cyclotrimethylene Trinitramine (RDX)	121-82-4	0-70
Pentaerythritol Tetranitrate (PETN)	78-11-5	0-60
Aluminum	7429-90-5	0-15
Enzymes	9014-01-1	0-5
Enzymes	9000-90-2	0-5

SECTION 4- FIRST AID MEASURES

General Advice:	Not applicable; this is a packaged product that will not result in exposure to the contents under normal conditions of use. In the event of contact, administer first aid appropriate for symptoms present.
Eye Contact:	Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
Skin Contact:	Wash off immediately with soap and plenty of water, removing all contaminated clothes and shoes. If skin irritation persists, call a physician.
Inhalation:	Move victim to fresh air. Give artificial respiration ONLY if breathing has stopped. Give cardiopulmonary resuscitation (CPR) if there is not breathing AND no pulse. Obtain medical advice IMMEDIATELY.

Ingestion:	Rinse mouth. Harmful is swallowed. Seek medical attention IMMEDIATELY.
Notes to Physician:	No information available.

SECTION 5 – FIRE-FIGHTING MEASURES

Flammable properties:	Product burns if ignited, with possible transition to detonation. May ignite or explode if heated under confinement.
Suitable extinguishing media:	DO NOT FIGHT FIRES INVOLVING EXPLOSIVES. Evacuate surrounding areas. When controlling fire before involvement of explosives, fire-fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear. Water may be applied through fixed extinguishing system (sprinklers) as long as people need not be present for the system to operate. Water may be used on small fires.
Unsuitable extinguishing media:	DO NOT FIGHT FIRES INVOLVING EXPLOSIVES.
Specific hazards arising from the Chemical:	DO NOT FIGHT FIRES INVOLVING EXPLOSIVE MATERIALS. Immediately evacuate all personnel from the area to a safe distance. Guard against re-entry. This product is a high explosive with a mass detonation hazard. Thermal decomposition can lead to release of irritating gases and vapors.
Protective equipment and precautions for fire fighters:	As in any fire, wear self-contained breathing apparatus pressure-demand, NIOSH approved (or equivalent) and full protective gear.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Methods for containment:	Collect loose or spilled solid material for storage or transport to secured magazine.
Methods for cleaning up:	Review fire and explosion hazards before proceeding with clean up. Remove and protect ignition sources. Wear protective equipment during clean up. Mop up water using non-sparking tools. It is suggested that only personnel trained in Emergency Response should respond. Verify complete account of product(s). Notify authorities and follow applicable spill reporting requirements.

SECTION 7 - HANDLING AND STORAGE

Handling:	This product is an explosive and should only be used under the supervision of trained personnel. Protect containers from physical damage. Keep away from incompatible materials, heat, sparks, flames and other ignition sources. Avoid rough handling.
Storage:	Store under moderate temperatures recommended by a technical services representative. Store under dry conditions in a well ventilated magazine that has been approved for explosive storage. Do NOT store explosives in a detonator magazine or detonators in an explosive magazine. Keep away from heat, sparks and flames. Keep containers closed. Explosives should be kept well away from initiating explosives; protected from physical damage; separated from oxidizing materials, combustibles, and sources of heat. Keep away from incompatibles.

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Measures:	Full-handling precautions should be taken at all times.
Personal Protective Equipment	
Eye/Face Protection:	Safety glasses with side-shields are recommended to prevent eye contact.
Skin Protection:	Long sleeved clothing. Impervious gloves.
Respiratory protection:	Use a NIOSH-approved respirator or equivalent during post-detonation clean up operations.
Hygiene Measures:	Handle in accordance with good industrial hygiene and safety practice.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Tan to Brown	**Odor:**	None
		Viscosity:	No information available
Physical State:	Solid	**Melting Point/Range:**	80°C/ 176°F
pH:	No data available		
Flammable Limits (upper):	No data available	**Flammable Limits (lower):**	No data available
Explosion Power:	No data available	**Specific Gravity:**	1.5-1.7 g/cc

Water Solubility:	Negligible	**Other Solubility:**	No information available
Vapor Pressure:	Not available	**Oxidizing Properties:**	No information available
Partition Coefficient (n-octanol/water):	No data available.		

SECTION 10 - STABILITY AND REACTIVITY

Stability:	Can explode from impact, heat or friction. PETN explodes at 190-210°C (374-410°F). Stable up to approximately 70°C.
Conditions to avoid:	Keep away from heat, impact and friction. Refer to Product Bulletin for proper applications and use procedures.
Incompatible materials;	Strong acids. (Nitric Acid). Strong oxidizing agents.
Hazardous decomposition products:	Carbon Monoxide & Nitrogen oxides (NO_x).

SECTION 11 - TOXICOLOGICAL INFORMATION

<u>Acute Toxicity</u>

Product Information:	Decomposition products may be toxic.
Carcinogenicity:	The ingredients of this product are not classified as carcinogenic by ACGIH (American Conference of Governmental Industrial hygienists) or IARC (International Agency for Research on Cancer), not regulated as carcinogens by OSHA (Occupational Safety and Health Administration), and not listed as carcinogens by T\NTP (National Toxicology Program).
Irritation:	Not applicable.
Corrosivity:	Not applicable.

SECTION 12 - ECOLOGICAL INFORMATION

Ecotoxicity effects:	Contains no substances known to be hazardous to the environment or not degradable in waste water treatment plants.

SECTION 13 - DISPOSAL CONSIDERATIONS

Waste Disposal Method:	Burn under supervision of an expert at and explosive burning ground or destroy by detonation in boreholes, in accordance with applicable local, provincial and federal regulations. Call upon the services of an Orica Canada Inc. or Orica USA Inc. Technical Representative.
Contaminated Packaging:	No information available.

SECTION 14 - TRANSPORT INFORMATION

DOT Proper Shipping Name:	Boosters, without detonator
Hazard Class:	1.1D
UN-No:	UN0042
Packing Group:	II
TDG Proper Shipping Name:	Boosters, without detonator
Hazard Class:	1.1D
UN-No:	UN0042
Packing Group:	II

SECTION 15 - REGULATORY INFORMATION

CANADIAN CLASSIFICATION:	This product has been classified in accordance with the hazard criteria of the CPR (Controlled Products Regulations) and this MSDS contains all the information required by the CPR
WHMIS hazard class:	This product is an explosive and is not regulated by WHMIS.
USA CLASSIFICATION:	

SARA Regulations Sections 313 and 40 CFR 372: No reportable components present.
SARA 311/312 Hazardous Categorization

Acute Health Hazard:	Yes
Chronic Health Hazard:	No
Fire Hazard:	Yes
Sudden Release of Pressure Hazard:	Yes
Ozone Protection and 40 CFR 42:	No reportable quantities of ozone depleting agents.

Other Regulations/Legislations which apply to this product: No information available.

TSCA: Complies **DSL:** Complies **NDSL:** Complies

SECTION 16 - OTHER INFORMATION

Prepared By: **Safety, Health & Environment**
303-268-5000

Preparation Date: 09-Aug-07
Revision Date: 23-Mar-2011

The information contained herein is offered as a guide to the handling of this specific material and has been prepared in good faith by technically knowledgeable personnel. It is not intended to be all-inclusive and the manner and conditions of use and handling may involve other and additional considerations. No warranty of any kind is given or implied and Orica will not be liable for any damages, losses, injuries or consequential damages which may result from the use of or reliance on any information contained herein.

End of MSDS

Material Safety Data Sheet

Preparation Date: 18-Feb-2008 **Revision Date:** 2-April-2009 **Revision Number:** 1

SECTION 1 – PRODUCT AND COMPANY IDENTIFICATION

Supplier(s):

Orica Canada Inc.	Orica USA Inc.
Maple Street	33101 E. Quincy Avenue
Brownsburg, QC	Watkins, CO 80137-9406
For MSDS Requests: 1-450-533-4201	For MSDS Requests: 1-303-268-5000

Product Name:	**Centra™ Control 25, 30, 40, 50, 70, 80, 100 & ANE (USA)**
Product Code:	2120
Alternate Name(s):	Apex™ Gold 2502 Series
UN-No:	UN0332
Recommended Use:	A booster sensitive emulsion explosive.

Emergency Telephone Number: FOR CHEMICAL EMERGENCIES (24 HOUR) INVOLVING TRANSPORTATION, SPILL, LEAK, RELEASE, FIRE OR ACCIDENTS: **IN CANADA CALL:** THE ORICA TRANSPORTATION EMERGENCY RESPONSE SYSTEM AT **1-877-561-3636. IN THE U.S. CALL: CHEMTREC 1-800-424-9300. IN THE U.S.:** FOR LOST, STOLEN, OR MISPLACED EXPLOSIVES CALL: BATF **1-800-800-3855.** FORM ATF F 5400.0 MUST BE COMPLETED AND LOCAL AUTHORITIES (STATE/MUNICIPAL POLICE, ETC.) MUST BE ADVISED.

SECTION 2 – HAZARD IDENTIFICATION

Emergency Overview:
Risk of explosion by shock, fire of other sources of ignition. May cause skin irritation and/or dermatitis. This product contains one or more substances, which are classified in the EU as carcinogenic, mutagenic and/or reprotoxic. Irritating to eyes. Harmful if swallowed. Oxidizing agent. May cause methemoglobinemia. May cause liver damage. May cause kidney damage.

Appearance:	**Physical State:**	**Odor:**
Pink, viscous putty-like	Viscous, putty-like	Diesel

SECTION 3 – COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	**CAS-No**	**Weight %**
Ammonium Nitrate	6484-52-2	60-80
Diesel Fuel	68476-34-6	1-6
Mineral Oil	64742-53-6	1-6

Note: Diesel Fuel may be substituted for Mineral Oil in the emulsion matrix component.

SECTION 4 – FIRST AID MEASURES

General Advice:	In case of accident or if you feel unwell, seek medical advice IMMEDIATELY (show the product label where possible).
Eye Contact:	Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Immediate medical attention is required.
Skin Contact:	Wash off immediately with soap and plenty of water, removing all contaminated clothes and shoes. If skin irritation persists, call a physician.
Inhalation:	Move victim to fresh air. Give artificial respiration ONLY if breathing has stopped. Give cardiopulmonary resuscitation (CPR) if there is no breathing AND no pulse. Obtain medical advice IMMEDIATELY.
Ingestion:	Immediate medical attention is required. Do no induce vomiting. Clean mouth with water and afterwards drink plenty of water. If spontaneous vomiting occurs, have victim lean forward with head positioned to avoid breathing in of vomitus, rinse mouth and administer more water. Never give anything by mouth to and unconscious person.

Notes to physician: Symptomatic. Administer oxygen if there are signs of cyanosis. If clinical condition deteriorates, administer 10cc Methylene Blue intravenously. It is unlikely for this to be required with methemoglobin level of less than 40%.

SECTION 5 – FIRE-FIGHTING MEASURES

Flammable properties: Not itself combustible but assists fire in burning materials. The product does not flash. Rate of burning: does not sustain burning at atmospheric pressure.

Suitable extinguishing media: DO NOT FIGHT FIRES INVOLVING EXPLOSIVES. Evacuate surrounding areas. When controlling fire before involvement of explosives, fire-fighters should wear positive pressure self-containing breathing apparatus (SCBA) and full turnout gear. Water may be applied through fixed extinguishing system (sprinklers) as long as people need not be present for the system to operate.

Unsuitable extinguishing media: DO NOT FIGHT FIRES INVOLVING EXPLOSIVES. Attempts to smother a fire involving this product will be ineffective as it is its own oxygen source. Smother this product could lead to decomposition and explosion. This product is more sensitive to detonation if contaminated with organic or oxidisable material or if heated while confined. Unless the mass of product on fire is flooded with water, re-ignition is possible.

Specific hazards arising from the chemical: This product is a high explosive with mass detonation hazard. DO NOT FIGHT FIRES INVOLVING EXPLOSIVE MATERIALS. Immediately evacuate all personnel from the area to a safe distance. Guard against re-entry. Thermal decomposition can lead to release of irritating gases and vapors.

Protective equipment and precautions for firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, NIOSH approved (or equivalent) and full protective gear.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Methods for containment: Contain or absorb leaking putty with sand or earth or other suitable substance.

Methods for cleaning up: Avoid the use of metal tools containing iron and/or copper. Be careful to avoid shock, friction, and contact with grit. Collect product for recovery or disposal. For release to land, contain discharge by constructing dykes or applying inert absorbent; for release to water, utilize damming and/or water diversion to minimize the spread of contamination. Collect contaminated soil and water, and absorbent for proper disposal. Notify applicable government authority if release is reportable or could adversely affect the environment.

Other information: Deactivating chemicals: Detergents will break up emulsions if mixed in.

SECTION 7 – HANDLING AND STORAGE

Handling: This product is an explosive and should only be used under the supervision of trained personnel. The use of coveralls is recommended. Use good industrial hygiene and housekeeping practices. Keep away from open flames, hot surfaces and sources of ignition.

Storage: Store under moderate temperatures recommended by a technical services representative. Store under dry conditions in a well ventilated magazine that has been approved for either detonator storage or explosive storage. Do NOT store explosives in a detonator magazine or detonators in an explosive magazine. Keep away from heat, spark and flames. Keep containers closed. Explosives should be kept well away from initiating explosives; protected from physical damage; separated from oxidizing materials; combustibles, and sources of heat. Keep away from incompatibles. Ideal storage temperature is 10-27°C (50-80°F). Do not expose sealed containers to temperatures above 40°C (104°F).

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Diesel Fuel	TWA: 100 mg/m³ Skin		
Mineral Oil	5 mg/m³	5 mg/m³	

Other exposure guidelines: Ammonium Nitrate: ORICA Guideline 5 mg/m³ (internal TWA)

Engineering Measures: No information available.

Personal Protective Equipment

Eye/Face Protection: Tightly fitting safety goggles.

Skin Protection: User should verify impermeability under normal conditions of use prior to general use. Impervious butyl rubber gloves.

Respiratory Protection: In case of insufficient ventilation wear suitable respiratory equipment. A NIOSH-approved respirator, if required.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety practice. Recommendations listed in this section indicate the type of equipment, which will provide protection against over exposure to this product. Conditions of use, adequacy of engineering or other control measures, and actual exposures will dictate the need for specific protective devices at your workplace.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Pink, viscous putty-like	**Odor:**	Diesel
Physical State:	Viscous, putty-like	**Viscosity:**	No information available
pH:	4- 6	**Flash Point:**	Not applicable
Autoignition Temperature:	230-265°C/ 446-509°F	**Boiling Point/Range:**	None
Melting Point/Range:	Not available	**Flammable Limits (Upper):**	Not applicable
Flammable Limits (Lower):	Not applicable	**Explosion Power:**	No data available
Specific Gravity:	1.20 – 1.30 g/cc	**Water Solubility:**	Negligible
Other Solubility:	No data available	**Vapor Pressure:**	0 mmHg @ 20°C
Oxidizing Properties:	Oxidizer	**Partition Coefficient (n-octanol/water):**	No data available

SECTION 10 – STABILITY AND REACTIVITY

Stability: Stable under normal conditions. Decomposition Temperature: Ammonium Nitrate will spontaneously decompose at 210°C (410°F).

Conditions to avoid: Keep away from open flames, hot surfaces and sources of ignition. Not expected to be sensitive to static discharge. Not expected to be sensitive to mechanical impact.

Incompatible materials: Avoid oxidizable materials, metal powder, bronze & copper alloys, fuels (e.g. lubricants, machine oils), fluorocarbon lubricants, acids, corrosive liquids, chlorate, sulphur, sodium nitrite, charcoal, coke and other finely divided combustibles. Strong oxidizing and reducing agents.

Hazardous decomposition products: The following toxic decomposition products may be released. At temperatures above 210°C (410°F), decomposition may be explosive, especially if confined. Nitrogen oxides (NOx). Carbon oxide. Hydrocarbons.

Hazardous Polymerization: None under normal processing. Hazardous polymerization does not occur. Explosive material under shock conditions.

SECTION 11 – TOXICOLOGICAL INFORMATION

Acute Toxicity

Product Information: Irritating to eyes. May cause skin irritation. Harmful if swallowed.

Chemical name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Ammonium Nitrate	2217 mg/kg Rat	3000 mg/kg Rabbit	88.8 mg/L Rat 4 h
Diesel Fuel	>5000 mg/kg (rabbit)		
Mineral Oil	4300 mg/kg Rat		

Subchronic Toxicity (28 Days): Ammonium Nitrate: Ingestion may cause methemoglobinemia. Initial manifestation of methemoglobinemia is cyanosis, characterized by navy lips, tongue and mucous membranes, with skin color being slate grey. Further manifestation is characterized by headache, weakness, dyspnea, dizziness, stupor, respiratory distress and death due to anoxia. If ingested, nitrates may be reduced to nitrites by bacteria in the digestive tract. Signs and symptoms of nitrite poisoning include methemoglobinemia, nausea, dizziness, increased heart rate, hypotension, fainting and, possibly shock.

Chronic Toxicity: May cause methemoglobinemia.

Carcinogenicity: The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical name	ACGIH	IARC	NTP	OSHA
Diesel Fuel	A3			

Legend: A3: Confirmed as an animal carcinogen.
Mutagenic effects: There is no evidence of mutagenic potential.

Irritation: Irritating to eyes. May cause irritation of respiratory tract. May cause skin irritation in susceptible persons.
Reproductive effects: No information is available and no adverse reproductive effects are anticipated.
Developmental effects: No information is available and no adverse developmental effects are anticipated.
Target Organ: Eyes, skin, respiratory system, blood, liver, urinary tract, gastrointestinal tract (GI), endocrine system, & immune system.

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicity effects: Dissolves slowly in water. Harmful to aquatic life at low concentrations.
Environmental Effects: Can be dangerous if allowed to enter drinking water intakes. Do not contaminate domestic or irrigation water supplies, lakes, streams, ponds, or rivers.

Persistence/Degradability: Some water resistance but soluble with extended time periods.

Mobility in Environmental media: Dissolves slowly in water.

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste Disposal Method: Burn under supervision of an expert at an explosive burning ground or destroy by detonation in boreholes, in accordance with applicable local, provincial and federal regulations. Call upon the services of an Orica Technical Representative.

SECTION 14 – TRANSPORT INFORMATION

DOT Proper Shipping Name: Explosive blasting type E
Hazard Class: 1.5D
UN-No: UN0332
Packing group: II
TDG Proper Shipping Name: Explosive blasting type E
Hazard Class: 1.5D
UN-No: UN0332
Packing group: II

Transportation Emergency Telephone Number: 1-877-561-3636 or CHEMTREC: 1-800-424-9300

SECTION 15 – REGULATORY INFORMATION

CANADIAN CLASSIFICATION: This product has been classified in accordance with the hazard criteria of the CPR (Controlled Products Regulations) and this MSDS contains all the information required by the CPR

WHMIS hazard class: This product is an explosive and is not regulated by WHMIS.
USA CLASSIFICATION:
SARA Regulations Sections 313 and 40 CFR 372: This product contains the following toxic chemical(s) subject to reporting requirements, Ammonium Nitrate (6484-52-2).
SARA 311/312 Hazardous Categorization
Acute Heath Hazard: Yes
Chronic Health Hazard: Yes
Fire Hazard: Yes
Reactive Hazard: No
Sudden Release of Pressure Hazard: Yes
Ozone Protection and 40 CFR 42: No reportable quantities of ozone depleting agents
Other Regulations/Legislations which apply to this product: New Jersey Right-to-Know, Pennsylvania Right-to-Know, Massachusetts Right-to-Know, Rhode Island Right-to-Know, Florida, New Jersey Special Health Hazard Substance List, Minnesota Hazardous Substance List, California Director's List of Hazardous Substances, California Proposition 65.

TSCA: Complies **DSL:** Complies **NDSL:** Complies

The components in the product are on the following international inventory lists:

Chemical Name	TSCA	DSL	NDSL	ENCS	EINECS	ELINCS	CHINA	KECL	PICCS	AICS
Ammonium Nitrate	X	X	-	X	X	-	X	X	X	X
Diesel Fuel	X	X	-	-	X	-	X	X	X	X
Mineral Oil	X	X	-	-	X	-	X	X	X	X

Legend: X – Listed

SECTION 16 – OTHER INFORMATION

Prepared by: **Safety Health & Environment**
303-268-5000

Preparation Date: 18-Feb-2008
Revision Date: 2-April-2009

The information contained herein is offered only as guide to the handling of this specific material and has been prepared in good faith by technically knowledgeable personnel. It is not intended to be all-inclusive and the manner and conditions of use and handling may involve other and additional considerations. No warranty of any kind is given or implied and Orica will not be liable for any damages, losses, injuries or consequential damages which may result from the use of or reliance on any information contained herein.

End of MSDS

Material Safety Data Sheet

Preparation Date: 22-Mar-2006 **Revision Date:** 28-Oct-2008 **Revision Number:** 1

SECTION 1 – PRODUCT AND COMPANY IDENTIFICATION

Supplier(s):

Orica Canada Inc.	Orica USA Inc.
Maple Street	33101 E. Quincy Avenue
Brownsburg, QC	Watkins, CO 80137-9406
For MSDS Requests: 450-533-4201	For MSDS Requests: 1 303-268-5000

Product Name:	**POWERDITCH™ 1000, POWERPRO™, POWERFRAC™, GELDYNE™, COALITE™ 8SU, DYNASHEAR™, GEL COALITE™ Z, & XACTEX™**
Product Code:	40053
Alternate Name(s):	Not available
UN-No:	UN0081
Recommended Use:	A detonator-sensitive gelatin explosive.

Emergency Telephone Number: FOR CHEMICAL EMERGENCIES (24 HOUR) INVOLVING TRANSPORTATION, SPILL, LEAK, RELEASE, FIRE OR ACCIDENTS: **IN CANADA CALL:** THE ORICA TRANSPORTATION EMERGENCY RESPONSE SYSTEM AT **1-877-561-3636. IN THE U.S. CALL: CHEMTREC 1-800-424-9300. IN THE U.S.:** FOR LOST, STOLEN, OR MISPLACED EXPLOSIVES CALL: BATF **1-800-800-3855.** FORM ATF F 5400.0 MUST BE COMPLETED AND LOCAL AUTHORITIES (STATE/MUNICIPAL POLICE, ETC.) MUST BE ADVISED.

SECTION 2 – HAZARD IDENTIFICATION

Emergency Overview:
Risk of explosion by shock, fire of other sources of ignition. Very toxic if swallowed. Irritating to eyes, respiratory system and skin. Oxidizing agent.

Appearance:	**Physical State:**	**Odor:**
Light pink	Semi-Solid	Characteristic

SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	**CAS-No**	**Weight %**
Ammonium Nitrate	6484-52-2	0-75
Sodium Nitrate	7631-99-4	0-50
Ethylene glycol, Dinitrate	628-96-6	8-76
Sulphur	7704-34-9	0-4
Nitroglycerin	55-63-0	1-20
Nitrocellulose	9004-70-0	0-6

SECTION 4 – FIRST AID MEASURES

General Advice:	In case of accident or if you feel unwell, seek medical advice IMMEDIATELY (show the product label where possible).
Eye Contact:	Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Immediate medical attention is required.
Skin Contact:	Wash off immediately with soap and plenty of water, removing all contaminated clothes and shoes. If skin irritation persists, call a physician.
Inhalation:	Move victim to fresh air. Give artificial respiration ONLY if breathing has stopped. Give cardiopulmonary resuscitation (CPR) if there is no breathing AND no pulse. Obtain medical advice IMMEDIATELY.
Ingestion:	Immediate medical attention is required. Do no induce vomiting. Clean mouth with water and afterwards drink plenty of water. If spontaneous vomiting occurs, have victim lean forward with head positioned to avoid breathing in of vomitus, rinse mouth and administer more water. Never give anything by mouth to and unconscious person.

Notes to physician: Symptomatic. Administer oxygen if there are signs of cyanosis. If clinical condition deteriorates, administer 10cc Methylene Blue intravenously. It is unlikely for this to be required with methemoglobin level of less than 40%.

SECTION 5 – FIRE-FIGHTING MEASURES

Flammable properties: Not itself combustible but assists fire in burning materials. The product does not flash. Explosive power: 337 kJ/100 g.

Suitable extinguishing media: DO NOT FIGHT FIRES INVOLVING EXPLOSIVES. Evacuate surrounding areas to a predetermined safe location no less than 2500 feet (800 meters) in all directions. When controlling fire before involvement of explosives, fire-fighters should wear positive pressure self-containing breathing apparatus (SCBA) and full turnout gear. Water may be applied through fixed extinguishing system (sprinklers) as long as people need not be present for the system to operate.

Unsuitable extinguishing media: DO NOT FIGHT FIRES INVOLVING EXPLOSIVES. Attempts to smother a fire involving this product will be ineffective as it is its own oxygen source. Smother this product could lead to decomposition and explosion. This product is more sensitive to detonation if contaminated with organic or oxidisable material or if heated while confined. Unless the mass of product on fire is flooded with water, re-ignition is possible.

Specific hazards arising from the chemical: This product is a high explosive with mass detonation hazard. DO NOT FIGHT FIRES INVOLVING EXPLOSIVE MATERIALS. Immediately evacuate all personnel from the area to a safe distance. Guard against re-entry. Thermal decomposition can lead to release of irritating gases and vapors.

Protective equipment and precautions for firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, NIOSH approved (or equivalent) and full protective gear.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Methods for containment: Contain or absorb leaking putty with sand or earth or other suitable substance.

Methods for cleaning up: Avoid the use of metal tools containing iron and/or copper. Be careful to avoid shock, friction, and contact with grit. Collect product for recovery or disposal. For release to land, contain discharge by constructing dykes or applying inert absorbent; for release to water, utilize damming and/or water diversion to minimize the spread of contamination. Collect contaminated soil and water, and absorbent for proper disposal. Notify applicable government authority if release is reportable or could adversely affect the environment.

SECTION 7 – HANDLING AND STORAGE

Handling: This product is an explosive and should only be used under the supervision of trained personnel. The use of coveralls is recommended. Use good industrial hygiene and housekeeping practices. Keep away from open flames, hot surfaces and sources of ignition.

Storage: Store under moderate temperatures recommended by a technical services representative. Store under dry conditions in a well ventilated magazine that has been approved for either detonator storage or explosive storage. Do NOT store explosives in a detonator magazine or detonators in an explosive magazine. Keep away from heat, spark and flames. Keep containers closed. Explosives should be kept well away from initiating explosives; protected from physical damage; separated from oxidizing materials; combustibles, and sources of heat. Keep away from incompatibles. Ideal storage temperature is 10-27°C (50-80°F). Do not expose sealed containers to temperatures above 40°C (104°F).

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Sodium Nitrate	10 mg/cu m (nuisance dust)	NA	
Ethylene glycol, Dinitrate	TWA: 0.05 ppm Skin	Ceiling: 0.2 ppm Ceiling: 1 mg/ m^3 Skin	
Nitroglycerin	(TWA skin) 0.46 mg/ cu m	Ceiling: 0.2 ppm Ceiling: 2 mg/ m^3 Skin	

Other exposure guidelines: Ammonium Nitrate: ORICA Guideline 5 mg/m^3 (internal TWA)

Engineering Measures: No information available.

Personal Protective Equipment

Eye/Face Protection: Face-shield. Tightly fitting safety goggles.

Skin Protection: User should verify impermeability under normal conditions of use prior to general use. Impervious gloves. Nitrile Rubber.

Respiratory Protection: In case of insufficient ventilation wear suitable respiratory equipment. A NIOSH-approved respirator, if required.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety practice. Recommendations listed in this section indicate the type of equipment, which will provide protection against over exposure to this product. Conditions of use, adequacy of engineering or other control measures, and actual exposures will dictate the need for specific protective devices at your workplace.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Light pink	**Odor:**	Characteristic
Physical State:	Semi-Solid	**Viscosity:**	No information available
pH:	7	**Flash Point:**	> 100 °C
Autoignition Temperature:	-222°C (liquid NG) >=100>=212	**Boiling Point/Range:**	Not available
Melting Point/Range:	Not available	**Flammable Limits (Upper):**	Not applicable
Flammable Limits (Lower):	Not applicable	**Explosion Power:**	No data available
Specific Gravity:	085- 1.48 g/cc	**Water Solubility:**	In soluble in water
Other Solubility:	Slightly soluble in standard organic solvents	**Vapor Pressure:**	Not applicable
Oxidizing Properties:	Oxidizer	**Partition Coefficient (n-octanol/water):**	No data available

SECTION 10 – STABILITY AND REACTIVITY

Stability: Stable under normal conditions. Decomposition Temperature: Ammonium Nitrate will spontaneously decompose at 210°C (410°F). NG explodes at 222°C (431.6°F)

Conditions to avoid: Keep away from open flames, hot surfaces and sources of ignition.

Incompatible materials: Avoid oxidizable materials, metal powder, bronze & copper alloys, fuels (e.g. lubricants, machine oils), fluorocarbon lubricants, acids, corrosive liquids, chlorate, sulphur, sodium nitrite, charcoal, coke and other finely divided combustibles. Strong oxidizing and reducing agents.

Hazardous decomposition products: The following toxic decomposition products may be released. At temperatures above 210°C, decomposition may be explosive, especially if confined. Nitrogen oxides (NOx). Carbon oxide. Hydrocarbons.

Hazardous Polymerization: None under normal processing. Hazardous polymerization does not occur. Explosive material under shock conditions.

SECTION 11 – TOXICOLOGICAL INFORMATION

Acute Toxicity

Product Information: Irritating to eyes. May cause skin irritation. Harmful if swallowed.

Chemical name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Ammonium Nitrate	2217 mg/kg Rat	3000 mg/kg Rabbit	88.8 mg/L Rat 4 h
Sodium Nitrate	1267-4300 mg/kg Rat		
Ethylene glycol, Dinitrate	460 mg/ kg Rat 540 mg/ kg Mouse		
Nitroglycerin	105 mg/ kg Rat 115 mg/ kg Mouse	280 mg/ kg Rabbit	
Nitrocellulose	5 g/ kg Mouse 5 g/ kg Rat		

Subchronic Toxicity (28 Days): Sodium Nitrate; Ammonium Nitrate: Ingestion may cause methemoglobinemia. Initial manifestation of methemoglobinemia is cyanosis, characterized by navy lips, tongue and mucous membranes, with skin color being slate grey. Further manifestation is characterized by headache, weakness, dyspnea, dizziness, stupor, respiratory distress and death due to anoxia. If ingested, nitrates may be reduced to nitrites by bacteria in the digestive tract. Signs and symptoms of nitrite poisoning include methemoglobinemia, nausea, dizziness, increased heart rate, hypotension, fainting and, possibly shock.

Chronic Toxicity: May cause methemoglobinemia.

Carcinogenicity: The ingredients of this product are not classified as carcinogenic by ACGIH (American Conference of Governmental Industrial Hygienists) or IARC (International Agency for Research on Cancer), not regulated as carcinogens by OSHA (Occupational Safety and Health Administration), and not listed as carcinogens by T\NTP (National Toxicology Program).

Mutagenic effects: There is no evidence of mutagenic potential.

Irritation: Irritating to eyes. May cause irritation of respiratory tract. May cause skin irritation in susceptible persons.

Reproductive effects: No information is available and no adverse reproductive effects are anticipated.

Developmental effects: No information is available and no adverse developmental effects are anticipated.

Target Organ: Eyes, skin, respiratory system, blood, liver urinary tract, & gastrointestinal tract (GI).

Other Adverse Effects: Prolonged or repeated exposure to organic nitrates may develop a tolerance due to chronic dilation of the blood vessels. This tolerance disappears rapidly after a few days away from exposure and withdrawal symptoms consisting of angina and heart attack have been reported in chronically exposed workers. Another type of tolerance loss is the "Monday morning disease", where workers experience headaches, dizziness, postural weakness and other symptoms.

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicity effects: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Chemical Name	Freshwater Algae Data	Freshwater Fish Species Data	Microtox Data	Water Flea Data	log Pow
Sodium Nitrate					-3.8

Persistence/Degradability: Nitroglycerin is water-insoluble and remains explosive.

Mobility in Environmental media: Dissolves slowly in water.

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste Disposal Method: Burn under supervision of an expert at an explosive burning ground or destroy by detonation in boreholes, in accordance with applicable local, provincial and federal regulations. Call upon the services of an Orica Technical Representative.

US EPA Waste Number: No data available on product.

Chemical Name	RCRA	RCRA- Basis for listing	RCRA- D Series Wastes	RCRA- U Series Wastes
Nitroglycerin –55-63-0	Waste number P081			

SECTION 14 – TRANSPORT INFORMATION

DOT Proper Shipping Name: Explosive Blasting Type A
Hazard Class: 1.1D
UN-No: UN0081
Packing group: II

TDG Proper Shipping Name: Explosive Blasting Type A
Hazard Class: 1.1D
UN-No: UN0081
Packing group: II

Transportation Emergency Telephone Number: 1-877-561-3636 or CHEMTREC: 1-800-424-9300

SECTION 15 – REGULATORY INFORMATION

CANADIAN CLASSIFICATION: This product has been classified in accordance with the hazard criteria of the CPR (Controlled Products Regulations) and this MSDS contains all the information required by the CPR

WHMIS hazard class: This product is an explosive and is not regulated by WHMIS.

USA CLASSIFICATION:

SARA Regulations Sections 313 and 40 CFR 372: This product contains the following toxic chemical(s) subject to reporting requirements, Ammonium Nitrate (6484-52-2), Sodium Nitrate (7631-99-4), Nitroglycerin (55-63-0), Nitrocellulose (9004-70-0), Sulphur (7704-34-9), & Ethylene Glycol, Dinitrate (628-96-6)

SARA 311/312 Hazardous Categorization

Acute Heath Hazard: Yes
Chronic Health Hazard: Yes
Fire Hazard: Yes
Reactive Hazard: Yes
Sudden Release of Pressure Hazard: No

Ozone Protection and 40 CFR 42: No reportable quantities of ozone depleting agents

Other Regulations/Legislations which apply to this product: New Jersey Right-to-Know, Pennsylvania Right-to-Know, Massachusetts Right-to-Know, Rhode Island Right-to-Know, Florida, New Jersey Special Health Hazard Substance List, Minnesota Hazardous Substance List, California Director's List of Hazardous Substances, California Proposition 65.

TSCA: Complies **DSL:** Complies **NDSL:** Complies

The components in the product are on the following international inventory lists:

Chemical Name	TSCA	DSL	NDSL	ENCS	EINECS	ELINCS	CHINA	KECL	PICCS	AICS
Ammonium Nitrate	X	X	-	X	X	-	X	X	X	X
Sodium Nitrate	X	X	-	X	X	X	X	X	X	X
Ethylene Glycol, Dinitrate	X	X	-	-	X	-	-	X	-	X
Sulphur	X	X	-	X	X	X	X	X	X	X
Nitroglycerin	X	X	-	X	X	-	-	X	X	X
Nitrocellulose	X	X	-	X	-	-	X	X	X	X

Legend: X – Listed

SECTION 16 – OTHER INFORMATION

Prepared by: **Safety Health & Environment**
303-268-5000

Preparation Date: 22-Mar-2006
Revision Date: 28-Oct-2008

The information contained herein is offered only as guide to the handling of this specific material and has been prepared in good faith by technically knowledgeable personnel. It is not intended to be all-inclusive and the manner and conditions of use and handling may involve other and additional considerations. No warranty of any kind is given or implied and Orica will not be liable for any damages, losses, injuries or consequential damages which may result from the use of or reliance on any information contained herein.

End of MSDS

Material Safety Data Sheet

Preparation Date: 25-Mar-2006 **Revision Date:** 18-Jul-2008 **Revision Number:** 1

SECTION 1 – PRODUCT AND COMPANY IDENTIFICATION

Supplier(s):

Orica Canada Inc.	Orica USA Inc.
Maple Street	33101 E. Quincy Avenue
Brownsburg, QC	Watkins, CO 80137-9406
For MSDS Requests: 1-450-533-4201	For MSDS Requests: 1-303-268-5000

Product Name:	**Fortel™ Extra**
Product Code:	102
Alternate Name(s):	Apex ™ Extra
UN-No:	UN0332
Recommended Use:	A booster sensitive emulsion explosive.

Emergency Telephone Number: FOR CHEMICAL EMERGENCIES (24 HOUR) INVOLVING TRANSPORTATION, SPILL, LEAK, RELEASE, FIRE OR ACCIDENTS: **IN CANADA CALL:** THE ORICA TRANSPORTATION EMERGENCY RESPONSE SYSTEM AT **1-877-561-3636. IN THE U.S. CALL: CHEMTREC 1-800-424-9300. IN THE U.S.:** FOR LOST, STOLEN, OR MISPLACED EXPLOSIVES CALL: BATF **1-800-800-3855.** FORM ATF F 5400.0 MUST BE COMPLETED AND LOCAL AUTHORITIES (STATE/MUNICIPAL POLICE, ETC.) MUST BE ADVISED.

SECTION 2 – HAZARD IDENTIFICATION

Emergency Overview:
Risk of explosion by shock, fire of other sources of ignition. May cause skin irritation and/or dermatitis. Irritating to eyes. Harmful if swallowed. Oxidizing agent. May cause methemoglobinemia. May cause liver damage. May cause kidney damage.

Appearance:	**Physical State:**	**Odor:**
Off-white, viscous putty-like	Viscous, putty-like	Odorless to slight diesel

SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	**CAS-No**	**Weight %**
Ammonium Nitrate	6484-52-2	60-100
Aluminum	7429-90-5	1-5
Mineral Oil	64742-53-6	1-6

SECTION 4 – FIRST AID MEASURES

General Advice:	In case of accident or if you feel unwell, seek medical advice IMMEDIATELY (show the product label where possible).
Eye Contact:	Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Immediate medical attention is required.
Skin Contact:	Wash off immediately with soap and plenty of water, removing all contaminated clothes and shoes. If skin irritation persists, call a physician.
Inhalation:	Move victim to fresh air. Give artificial respiration ONLY if breathing has stopped. Give cardiopulmonary resuscitation (CPR) if there is not breathing AND no pulse. Obtain medical advice IMMEDIATELY.
Ingestion:	Immediate medical attention is required. Do no induce vomiting. Clean mouth with water and afterwards drink plenty of water. If spontaneous vomiting occurs, have victim lean forward with head positioned to avoid breathing in of vomitus, rinse mouth and administer more water. Never give anything by mouth to and unconscious person.
Notes to physician:	Symptomatic. Administer oxygen if there are signs of cyanosis. If clinical condition deteriorates, administer 10cc Methylene Blue intravenously. It is unlikely for this to be required with methemoglobin level of less than 40%.

SECTION 5 – FIRE-FIGHTING MEASURES

Flammable properties: Not itself combustible but assists fire in burning materials. The product does not flash. Rate of burning: does not sustain burning at atmospheric pressure.

Suitable extinguishing media: DO NOT FIGHT FIRES INVOLVING EXPLOSIVES. Evacuate surrounding areas. When controlling fire before involvement of explosives, fire-fighters should wear positive pressure self-containing breathing apparatus (SCBA) and full turnout gear. Water may be applied through fixed extinguishing system (sprinklers) as long as people need not be present for the system to operate.

Unsuitable extinguishing media: DO NOT FIGHT FIRES INVOLVING EXPLOSIVES. Attempts to smother a fire involving this product will be ineffective as it is its own oxygen source. Smother this product could leat to decomposition and explosion. This product is more sensitive to detonation if contaminated with organic or oxidisable material or if heated while confined. Unless the mass of product on fire is flooded with water, re-ignition is possible.

Specific hazards arising from the chemical: This product is a high explosive with mass detonation hazard. DO NOT FIGHT FIRES INVOLVING EXPLOSIVE MATERIALS. Immediately evacuate all personnel from the area to a safe distance. Guard against re-entry. Thermal decomposition can lead to release of irritating gases and vapors.

Protective equipment and precautions for firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, NIOSH approved (or equivalent) and full protective gear.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Methods for containment: Avoid dust formation. Do not breathe dust. Contain or absorb leaking putty with sand or earth or other suitable substance.

Methods for cleaning up: Avoid the use of metal tools containing iron and/or copper. Be careful to avoid shock, friction, and contact with grit. Collect product for recovery or disposal. For release to land, contain discharge by constructing dykes or applying inert absorbent; for release to water, utilize damming and/or water diversion to minimize the spread of contamination. Collect contaminated soil and water, and absorbent for proper disposal. Notify applicable government authority if release is reportable or could adversely affect the environment.

Other information: Deactivating chemicals: Detergents will break up emulsions if mixed in.

SECTION 7 – HANDLING AND STORAGE

Handling: This product is an explosive and should only be used under the supervision of trained personnel. The use of coveralls is recommended. Use good industrial hygiene and housekeeping practices. Keep away from open flames, hot surfaces and sources of ignition.

Storage: Store under moderate temperatures recommended by a technical services representative. Store under dry conditions in a well ventilated magazine that has been approved for either detonator storage or explosive storage. Do NOT store explosives in a detonator magazine or detonators in an explosive magazine. Keep away from heat, spark and flames. Keep containers closed. Explosives should be kept well away from initiating explosives; protected from physical damage; separated from oxidizing materials; combustibles, and sources of heat. Keep away from incompatibles. Ideal storage temperature is 10-27°C (50-80°F). Do not expose sealed containers to temperatures above 40°C (104°F).

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Aluminum	TWA: 10 mg/m³ TWA: 5 mg/m³	TWA: 15 mg/ m³ TWA: 5 mg/ m³	
Mineral Oil	5 mg/m³	5 mg/ m³	

Other exposure guidelines: Ammonium Nitrate: ORICA Guideline 5 mg/m^3 (internal TWA)

Engineering Measures: No information available.

Personal Protective Equipment

Eye/Face Protection: Tightly fitting safety goggles.

Skin Protection: User should verify impermeability under normal conditions of use prior to general use. Impervious butyl rubber gloves.

Respiratory Protection: In case of insufficient ventilation wear suitable respiratory equipment. A NIOSH-approved respirator, if required.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety practice. Recommendations listed in this section indicate the type of equipment, which will provide protection against over exposure to this product. Conditions of use, adequacy of engineering or other control measures, and actual exposures will dictate the need for specific protective devices at your workplace.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Off-white, viscous putty-like	**Odor:**	Odorless to slight diesel
Physical State:	Viscous, putty-like	**Viscosity:**	No information available
pH:	Not available	**Flash Point:**	Not applicable
Autoignition Temperature:	230-265°C/ 446-509°F	**Boiling Point/Range:**	100°C/ 212°F
Melting Point/Range:	(Ammonium Nitrate) 0-167°C/ 32-333°F	**Flammable Limits (Upper):**	Not applicable
Flammable Limits (Lower):	Not Applicable	**Explosion Power:**	No data available
Specific Gravity:	1.25 g/cc	**Water Solubility:**	Insoluble in water
Other Solubility:	Slightly soluble in organic solvents	**Vapor Pressure:**	0 mmHg @ 20°C
Oxidizing Properties:	Oxidizer	**Partition Coefficient (n-octanol/water):**	No data available

SECTION 10 – STABILITY AND REACTIVITY

Stability: Stable under normal conditions. Decomposition Temperature: Ammonium Nitrate will spontaneously decompose at 210°C (410°F).

Conditions to avoid: Keep away from open flames, hot surfaces and sources of ignition. Not expected to be sensitive to static discharge. Not expected to be sensitive to mechanical impact.

Incompatible materials: Avoid oxidizable materials, metal powder, bronze & copper alloys, fuels (e.g. lubricants, machine oils), fluorocarbon lubricants, acids, corrosive liquids, chlorate, sulphur, sodium nitrite, charcoal, coke and other finely divided combustibles. Strong oxidizing and reducing agents.

Hazardous decomposition products: The following toxic decomposition products may be released. At temperatures above 210°C, decomposition may be explosive, especially if confined. Nitrogen oxides (NOx). Carbon oxide. Hydrocarbons.

Hazardous Polymerization: None under normal processing. Hazardous polymerization does not occur. Explosive material under shock conditions.

SECTION 11 – TOXICOLOGICAL INFORMATION

Acute Toxicity

Product Information: Irritating to eyes. May cause skin irritation. Harmful if swallowed.

Chemical name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Ammonium Nitrate	2217 mg/kg Rat	3000 mg/kg Rabbit	88.8 mg/L Rat 4 h
Mineral Oil	4300 mg/kg Rat		

Subchronic Toxicity (28 Days): Ammonium Nitrate: Ingestion may cause methemoglobinemia. Initial manifestation of methemoglobinemia is cyanosis, characterized by navy lips, tongue and mucous membranes, with skin color being slate grey. Further manifestation is characterized by headache, weakness, dyspnea, dizziness, stupor, respiratory distress and death due to anoxia. If ingested, nitrates may be reduced to nitrites by bacteria in the digestive tract. Signs and symptoms of nitrite poisoning include methemoglobinemia, nausea, dizziness, increased heart rate, hypotension, fainting and, possibly shock.

Chronic Toxicity: May cause methemoglobinemia.

Carcinogenicity: The ingredients of this product are not classified as carcinogenic by ACGIH (American Conference of Governmental Industrial Hygienists) or IARC (International Agency for Research on Cancer), not regulated as carcinogens by OSHA (Occupational Safety and Health Administration), and not listed as carcinogens by T\NTP (National Toxicology Program).

Mutagenic effects: There is no evidence of mutagenic potential.

Irritation: Irritating to eyes. May cause irritation of respiratory tract. May cause skin irritation in susceptible persons.

Reproductive effects: No information is available and no adverse reproductive effects are anticipated.

Developmental effects: No information is available and no adverse developmental effects are anticipated.
Target Organ: Eyes, skin, respiratory system, blood, liver urinary tract, & gastrointestinal tract (GI).

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicity effects: Dissolves slowly in water. Harmful to aquatic life at low concentrations.
Environmental Effects: Can be dangerous if allowed to enter drinking water intakes. Do not contaminate domestic or irrigation water supplies, lakes, streams, ponds, or rivers.

Persistence/Degradability: Some water resistance but soluble with extended time periods.
Mobility in Environmental media: Dissolves slowly in water.

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste Disposal Method: Burn under supervision of an expert at an explosive burning ground or destroy by detonation in boreholes, in accordance with applicable local, provincial and federal regulations. Call upon the services of an Orica Technical Representative.

SECTION 14 – TRANSPORT INFORMATION

DOT Proper Shipping Name: Explosive, blasting type E
Hazard Class: 1.5D
UN-No: UN0332
Packing group: II
TDG Proper Shipping Name: Explosive, blasting type E
Hazard Class: 1.5D
UN-No: UN0332
Packing group: II

Transportation Emergency Telephone Number: 1-877-561-3636 or CHEMTREC: 1-800-424-9300

SECTION 15 – REGULATORY INFORMATION

CANADIAN CLASSIFICATION: This product has been classified in accordance with the hazard criteria of the CPR (Controlled Products Regulations) and this MSDS contains all the information required by the CPR
WHMIS hazard class: This product is an explosive and is not regulated by WHMIS.
USA CLASSIFICATION:
SARA Regulations Sections 313 and 40 CFR 372: This product contains the following toxic chemical(s) subject to reporting requirements, Ammonium Nitrate (6484-52-2), Aluminum (7429-90-5) & Mineral Oil (64742-53-6).
SARA 311/312 Hazardous Categorization
Acute Heath Hazard: Yes
Chronic Health Hazard: Yes
Fire Hazard: Yes
Reactive Hazard: No
Sudden Release of Pressure Hazard: Yes
Ozone Protection and 40 CFR 42: No reportable quantities of ozone depleting agents
Other Regulations/Legislations which apply to this product: New Jersey Right-to-Know, Pennsylvania Right-to-Know, Massachusetts Right-to-Know, Rhode Island Right-to-Know, Florida, New Jersey Special Health Hazard Substance List, Minnesota Hazardous Substance List, California Director's List of Hazardous Substances, California Proposition 65.

TSCA: Complies **DSL:** Complies **NDSL:** Complies

The components in the product are on the following international inventory lists:

Chemical Name	TSCA	DSL	NDSL	ENCS	EINECS	ELINCS	CHINA	KECL	PICCS	AICS
Ammonium Nitrate	X	X	-	X	X	-	X	X	X	X
Aluminum	X	X	-	-	X	-	X	X	X	X
Mineral Oil	X	X	-	-	X	-	X	X	X	X

Legend: X – Listed

SECTION 16 – OTHER INFORMATION

Prepared by:	**Safety Health & Environment** 303-268-5000
Preparation Date:	25-Mar-2006
Revision Date:	18-Jul-2008

The information contained herein is offered only as guide to the handling of this specific material and has been prepared in good faith by technically knowledgeable personnel. It is not intended to be all-inclusive and the manner and conditions of use and handling may involve other and additional considerations. No warranty of any kind is given or implied and Orica will not be liable for any damages, losses, injuries or consequential damages which may result from the use of or reliance on any information contained herein.

End of MSDS

SERVICE ORDER

FORM NO. AES004-A

SERVICE ORDER NO.
1760009

ASBURY ENVIRONMENTAL SERVICES
1300 SOUTH SANTA FE, COMPTON CA 90221
LOS ANGELES OFFICE 1-800-974-4495 SAN DIEGO OFFICE 1-800-748-5744
TRANSPORTER EPA # CAD028277036

SHIPPED TO
STONE VALLEY MATERIALS
3500 PYRITE STREET SUITE B
RIVERSIDE, CA 92509
(909) 610-3270

3500 PYRITE STREET SUIT
RIVERSIDE, CA 92509
(909) 610-3270

CUSTOMER #	PURCHASE ORDER #	ROUTE #	TRUCK #	CONTACT NAME	ORDER TAKEN BY	HALIDES
STU100		13	20	SUZETTE	monique	

DATE REQUIRED	DATE ENTERED	NEXT SERVICE DATE	CUSTOMER EPA #	MANIFEST #
10/31/2011	10/28/2011		CAL000331646	009006591 JK

PART #	DESCRIPTION	QTY	UNIT PRICE	QTY P/U	TOTAL
WO	USED OIL / MIXED OILS	200	$0.00	150	$0.00
WOSC	USED OIL SERVICE CHARGE	1	$0.00		$0.00
	SUZETTE 909-610--3270				
	Cross Streets:		PAGED	DRIVER TOTAL	

CASH REC'D: _____ CHECK # _____ PLEASE PAY FROM THIS SERVICE ORDER

WASTE DISPOSAL INFORMATION

- [X] NON-RCRA HAZARDOUS WASTE, LIQUID (USED OIL/MIXED OILS) *NO PLACARDS REQUIRED* STATE CODE 221
- [ ] NON-RCRA HAZARDOUS WASTE, LIQUID (ETHYLENE GLYCOL SOLUTIONS) *NO PLACARDS REQUIRED* STATE CODE _____
- [ ] OTHER: _____
- [X] DESIGNATED TSDF: ADVANCED ENVIRONMENTAL INC., 13579 WHITTRAM AVE., FONTANA, CA 92335, (909)356-9025, CAT080025711
- [ ] ALTERNATE TSDF: _____
- [ ] SA RECYCLING: 2035 E. 15TH Street, Los Angeles, CA 90021 1 (800) 645-3458

DRUMS P/U: _____ EMPTY DRUMS: _____ FACILITY: _____ BSC _____

GENERATOR WASTE CERTIFICATION
PLEASE CHECK THE APPROPRIATE BOX

This is to certify that the waste described above is properly classified, described, packaged, marked and labeled, and is in proper condition for transportation, according to applicable State and federal regulations. By signing below I also hereby certify that:

(Waste oil generator/customer MUST check ONE of the following three boxes)

☑ #1) I have not mixed any of the waste described above with any other hazardous waste, the total halide content is LESS than 1,000 ppm, and the waste does not contain any PCBs. I have complied with the requirements of the applicable California used oil management regulations to determine this is true. I agree to accept the additional charges for the disposal of this waste if the information I have provided about this waste is incorrect

☐ #2) I have not mixed any of the waste described above with any other hazardous waste, the total halide content is GREATER than 1,000 ppm, and the waste does not contain any PCBs. I have provided proper documentation to Asbury Environmental Services to rebut the presumption that this waste was mixed with other hazardous waste. I agree to accept the additional charges for the disposal of this waste if the information I have provided about this waste is incorrect

☐ #3) This waste is from a tank which collects waste oil from household "do-it-yourself" (DIY) and/or conditionally exempt small quantity generator (CESQG) sources. To the best of my knowledge, the only waste oil contained in my DIY/ CESQG collection tank is soley from DIY and/or CESQG sources. I have not mixed this waste oil with any other hazardous waste or waste oil from other sources. I agree to accept the additional charges for disposal of this waste if the information I have provided about this waste is incorrect

(All generators/customers MUST read the following text and check the associated box.)

☑ #4) If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human life and the environment; Or, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me that I can afford.

[signature] 11/02/11
Customer Signature Date

[signature] 11/02/11
Driver Signature Date

[signature]
Print Name

SCOT SHESENS
Print Drivers Name

SERVICE ORDER

FORM NO. AES004-A

SERVICE ORDER NO.
1760009

ASBURY ENVIRONMENTAL SERVICES
1300 SOUTH SANTA FE, COMPTON CA 90221
LOS ANGELES OFFICE 1-800-974-4495 SAN DIEGO OFFICE 1-800-748-5744
TRANSPORTER EPA # CAD028277036

SHIPPED TO
STONE VALLEY MATERIALS
3500 PYRITE STREET SUITE B
RIVERSIDE, CA 92509
(909) 610-3270

3500 PYRITE STREET SUIT
RIVERSIDE, CA 92509
(909) 610-3270

CUSTOMER #	PURCHASE ORDER #	ROUTE #	TRUCK #	CONTACT NAME	ORDER TAKEN BY	HALIDES
STO100		13	20	SUZETTE	monique	

DATE REQUIRED	DATE ENTERED	NEXT SERVICE DATE	CUSTOMER EPA #	MANIFEST #
10/31/2011	10/28/2011		CAL000351646	00900 6591 JK

PART #	DESCRIPTION	QTY	UNIT PRICE	QTY P/U	TOTAL
WO	USED OIL / MIXED OILS	200	$0.00	(150)	$0.00
WOSC	USED OIL SERVICE CHARGE	1	$0.00		$0.00
	SUZETTE 909-610--3270				
	Cross Streets		PAGED	DRIVER TOTAL	

CASH REC'D: _____ CHECK # _____ PLEASE PAY FROM THIS SERVICE ORDER

WASTE DISPOSAL INFORMATION

- [X] NON-RCRA HAZARDOUS WASTE, LIQUID (USED OIL/MIXED OILS) *NO PLACARDS REQUIRED* STATE CODE 221
- [ ] NON-RCRA HAZARDOUS WASTE, LIQUID (ETHYLENE GLYCOL SOLUTIONS) *NO PLACARDS REQUIRED* STATE CODE _____
- [ ] OTHER: _____
- [X] DESIGNATED TSDF: ADVANCED ENVIRONMENTAL INC., 13579 WHITTRAM AVE., FONTANA, CA 92335, (909)354-9025, CAT080025711
- [ ] ALTERNATE TSDF: _____
- [ ] SA RECYCLING: 2035 E. 15TH Street, Los Angeles, CA 90021 1 (800) 645-3458

DRUMS P/U: _____ EMPTY DRUMS: _____ FACILITY: _____ BSC _____

GENERATOR WASTE CERTIFICATION
PLEASE CHECK THE APPROPRIATE BOX

This is to certify that the waste described above is properly classified, described, packaged, marked and labeled, and is in proper condition for transportation, according to applicable State and federal regulations. By signing below I also hereby certify that:

(Waste oil generator/customer MUST check ONE of the following three boxes)

☑ #1) I have not mixed any of the waste described above with any other hazardous waste, the total halide content is LESS than 1,000 ppm, and the waste does not contain any PCBs. I have complied with the requirements of the applicable California used oil management regulations to determine this is true. I agree to accept the additional charges for the disposal of this waste if the information I have provided about this waste is incorrect

☐ #2) I have not mixed any of the waste described above with any other hazardous waste, the total halide content is GREATER than 1,000 ppm, and the waste does not contain any PCBs. I have provided proper documentation to Asbury Environmental Services to rebut the presumption that this waste was mixed with other hazardous waste. I agree to accept the additional charges for the disposal of this waste if the information I have provided about this waste is incorrect

☐ #3) This waste is from a tank which collects waste oil from household "do-it-yourself" (DIY) and/or conditionally exempt small quantity generator (CESQG) sources. To the best of my knowledge, the only waste oil contained in my DIY/ CESQG collection tank is soley from DIY and/or CESQG sources. I have not mixed this waste oil with any other hazardous waste or waste oil from other sources. I agree to accept the additional charges for disposal of this waste if the information I have provided about this waste is incorrect

(All generators/customers MUST read the following text and check the associated box.)

☑ #4) If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human life and the environment; Or, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me that I can afford.

[signature] 11/02/11
Customer Signature Date

[signature] 11/02/11
Driver Signature Date

[signature]
Print Name

SAT SHESENS
Print Drivers Name

SERVICE ORDER

FORM NO. AES004-A

SERVICE ORDER NO.
1760809

ASBURY ENVIRONMENTAL SERVICES
1300 SOUTH SANTA FE, COMPTON CA 90221
LOS ANGELES OFFICE 1-800-974-4495 SAN DIEGO OFFICE 1-800-748-5744
TRANSPORTER EPA # CAD028277036

SHIPPED TO
STONE VALLEY MATERIALS
3500 PYRITE STREET SUITE B
RIVERSIDE, CA 92509
(909) 610-3270

3500 PYRITE STREET SUIT
RIVERSIDE, CA 92509
(909) 610-3270

CUSTOMER #	PURCHASE ORDER #	ROUTE #	TRUCK #	CONTACT NAME	ORDER TAKEN BY	HALIDES
ST0100		13	20	SUZETTE	monique	

DATE REQUIRED	DATE ENTERED	NEXT SERVICE DATE	CUSTOMER EPA #	MANIFEST #
10/31/2011	10/28/2011		CAL000361646	00000654 1 JK

PART #	DESCRIPTION	QTY	UNIT PRICE	QTY P/U	TOTAL
WO	USED OIL / MIXED OILS	200	$0.00	(150)	$0.00
WOSC	USED OIL SERVICE CHARGE	1	$0.00		$0.00
	SUZETTE 909-610--3270				
	Cross Streets:		PAGED	DRIVER TOTAL	

CASH REC'D:_____ CHECK #_____ PLEASE PAY FROM THIS SERVICE ORDER

WASTE DISPOSAL INFORMATION

- [X] NON-RCRA HAZARDOUS WASTE, LIQUID (USED OIL/MIXED OILS) *NO PLACARDS REQUIRED* STATE CODE 221
- [ ] NON-RCRA HAZARDOUS WASTE, LIQUID (ETHYLENE GLYCOL SOLUTIONS) *NO PLACARDS REQUIRED* STATE CODE _____
- [ ] OTHER: _____
- [X] DESIGNATED TSDF: ADVANCED ENVIRONMENTAL INC., 13579 WHITTRAM AVE., FONTANA, CA 92335, (909) 356-9025, CAT080025711
- [ ] ALTERNATE TSDF: _____
- [ ] SA RECYCLING: 2035 E. 15TH Street, Los Angeles, CA 90021 1 (800) 645-3458

DRUMS P/U:_____ EMPTY DRUMS:_____ FACILITY: _____ BSC_____

GENERATOR WASTE CERTIFICATION
PLEASE CHECK THE APPROPRIATE BOX

This is to certify that the waste described above is properly classified, described, packaged, marked and labeled, and is in proper condition for transportation, according to applicable State and federal regulations. By signing below I also hereby certify that:

(Waste oil generator/customer MUST check ONE of the following three boxes)

☑ #1) I have not mixed any of the waste described above with any other hazardous waste, the total halide content is LESS than 1,000 ppm, and the waste does not contain any PCBs. I have complied with the requirements of the applicable California used oil management regulations to determine this is true. I agree to accept the additional charges for the disposal of this waste if the information I have provided about this waste is incorrect

☐ #2) I have not mixed any of the waste described above with any other hazardous waste, the total halide content is GREATER than 1,000 ppm, and the waste does not contain any PCBs. I have provided proper documentation to Asbury Environmental Services to rebut the presumption that this waste was mixed with other hazardous waste. I agree to accept the additional charges for the disposal of this waste if the information I have provided about this waste is incorrect

☐ #3) This waste is from a tank which collects waste oil from household "do-it-yourself" (DIY) and/or conditionally exempt small quantity generator (CESQG) sources. To the best of my knowledge, the only waste oil contained in my DIY/ CESQG collection tank is soley from DIY and/or CESQG sources. I have not mixed this waste oil with any other hazardous waste or waste oil from other sources. I agree to accept the additional charges for disposal of this waste if the information I have provided about this waste is incorrect

(All generators/customers MUST read the following text and check the associated box.)

☑ #4) If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human life and the environment; Or, If I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me that I can afford.

[signature] 11/02/11
Customer Signature Date

[signature] 11/02/11
Driver Signature Date

[signature]
Print Name

[signature]
Print Drivers Name

SERVICE ORDER

FORM NO. AES004-A

SERVICE ORDER NO.
1760009

ASBURY ENVIRONMENTAL SERVICES
1300 SOUTH SANTA FE, COMPTON CA 90221
LOS ANGELES OFFICE 1-800-974-4495 SAN DIEGO OFFICE 1-800-748-5744
TRANSPORTER EPA # CAD028277036

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(909) 610-3270

CUSTOMER #	PURCHASE ORDER #	ROUTE #	TRUCK #	CONTACT NAME	ORDER TAKEN BY	HALIDES
STU100		13	20	SUZETTE	monique	

DATE REQUIRED	DATE ENTERED	NEXT SERVICE DATE	CUSTOMER EPA #	MANIFEST #
10/31/2011	10/28/2011		CAL000361646	009006591 WK

PART #	DESCRIPTION	QTY	UNIT PRICE	QTY P/U	TOTAL
WO	USED OIL / MIXED OILS	200	$0.00	(150)	$0.00
WOSC	USED OIL SERVICE CHARGE	1	$0.00		$0.00
SUZETTE 909-610--3270					
Cross Streets:			PAGED	DRIVER TOTAL	

CASH REC'D: _____ CHECK # _____ PLEASE PAY FROM THIS SERVICE ORDER

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- [ ] ALTERNATE TSDF: _____
- [ ] SA RECYCLING: 2035 E. 15TH Street, Los Angeles, CA 90021 1 (800) 645-3458

DRUMS P/U: _____ EMPTY DRUMS: _____ FACILITY: _____ BSC _____

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[signature] 11/02/11
Customer Signature Date

[signature] 11/02/11
Driver Signature Date

[signature]
Print Name

SAT SHESENS
Print Drivers Name

SERVICE ORDER

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SERVICE ORDER NO.
1760009

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CUSTOMER #	PURCHASE ORDER #	ROUTE #	TRUCK #	CONTACT NAME	ORDER TAKEN BY	HALIDES
STO100		13	20	SUZETTE	monique	

DATE REQUIRED	DATE ENTERED	NEXT SERVICE DATE	CUSTOMER EPA #	MANIFEST #
10/31/2011	10/28/2011		CAL000361646	00900 6591 JK

PART #	DESCRIPTION	QTY	UNIT PRICE	QTY P/U	TOTAL
WO	USED OIL / MIXED OILS	200	$0.00	(150)	$0.00
WOSC	USED OIL SERVICE CHARGE	1	$0.00		$0.00
	SUZETTE 909-610--3270				
	Cross Streets		PAGED	DRIVER TOTAL	

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Customer Signature Date

[signature] 11/02/11
Driver Signature Date

[signature]
Print Name

SCOT SHESENS
Print Drivers Name

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