

City of Brookings

MEETING AGENDA

CITY COUNCIL

Monday, June 11, 2018, 7:00pm

City Hall Council Chambers, 898 Elk Drive, Brookings, OR 97415

The City Council will meet in Executive Session at 6:30 PM, in the City's Manager's office, under the authority of ORS 192.660(2)(i) "To review and evaluate the employment-related performance of the chief executive officer of any public body, a public officer, employee or staff member who does not request an open hearing."

CITY COUNCIL

A. Call to Order

B. Pledge of Allegiance

C. Roll Call

D. Ceremonies/Appointments

1. Appointing Barbara Ciaramella to TPAC Committee [Pg. 3]
2. Americanism Week Proclamation [Pg. 6]
 - a. Proclamation [Pg. 7]

E. Resolutions

1. Appointing City Representative to the Border Coast Regional Airport Authority [City Manager, Pg. 8]
 - a. Resolution 18-R-1132 [Pg. 9]
2. Appointing City Representative to the South West Area Commission on Transportation [City Manager, Pg. 10]
 - a. Resolution 18-R-1138 [Pg. 11]

F. Oral Requests and Communications from the audience

1. Public Comments on non-agenda items – 5 minute limit per person.*

G. Staff Reports

1. Chetco River Gage Maintenance Agreement [City Manager, Pg. 12]
 - a. Letter and Agreement [Pg. 13]
2. 1st Amendment to Lone Ranch Agreement [City Manager, Pg. 17]
 - a. Current Lone Ranch Infrastructure Agreement [Pg. 21]
 - b. Proposed First Amendment to Agreement [Pg. 25]
 - c. Lone Ranch Infrastructure Review Report [Pg. 27]
 - d. Lone Ranch Development plan [Pg. 46]
 - e. May 7 Council Workshop Report [Pg. 48]
 - f. Notes from Councilor Triglia [Pg. 51]
 - g. Land Use Board of Appeals Final Order February 24, 2009 [Pg. 52]
 - h. Draft Executive Summary for Water System Response and Protection Plan [Pg. 63]

- i. Lone Ranch Master Plan application May 2004/November 2006 Revision; Part J [Pg. 70]
- j. Response to comments on proposed findings regarding water service; Timothy Ramis, Attorney at Law representing U.S. Borax, August 6, 2008 [Pg. 71]
- k. Brookings Planning Commission Final Order and Findings of Fact February 1, 2011 (41-page staff report available upon request) [Pg. 73]
- l. Brookings Planning Commission Final Order and Findings of Fact November 17, 2015 [Pg. 80]
- m. Email on possible impact on City water quantity by Chetco Bar Fire; Ronan Igloria, PE, GSI Water Solutions [Pg. 84]
- n. Email on possible impact on City water quantity by Glen Leverich, Senior Geomorphologist/Geologist with Stillwater Sciences [Pg. 85]
- o. Statewide Planning Goal 5 [Pg. 86]
- p. Statewide Planning Goal 6 [Pg. 89]
- q. Statewide Planning Goal 16 [Pg. 91]
- r. Water production/use chart [Pg. 99]
- 3. Council Liaisons [City Recorder, Pg. 101]
 - a. Liaison spreadsheet [Pg. 103]

H. Consent Calendar

- 1. Approve Council minutes for May 29, 2018 [Pg. 104]
- 2. Accept Parks and Recreation Commission minutes for March 22, 2018 [Pg. 109]

I. Informational Non-Action Items

- 1. May Vouchers [Pg. 110]
- 2. Committee Vacancies [Pg. 113]

J. Remarks from Mayor and Councilors

K. Adjournment

*Obtain Public Comment Forms and view the agenda and packet information on-line at www.brookings.or.us, at City Hall and at the local library. Return completed Public Comment Forms to the City Recorder before the start of meeting or during regular business hours.

All public meetings are held in accessible locations. Auxiliary aids will be provided upon request with at least 14 days advance notification. Please contact 469-1102 if you have any questions regarding this notice.



Rcv'd
JUN 04 2018
JTD

City of Brookings

898 Elk Drive, Brookings, OR 97415

Phone: 541-469-2163 Fax: 541-469-3650

www.brookings.or.us

APPLICATION TO SERVE ON A COMMISSION OR COMMITTEE

PART I Contact Information:

Applicant Name: BARBARA J. CIARANELLA
Physical Address: 98825 PLEASANT HILL DR. #10
Mailing Address: P.O. Box 1103, Brookings, OR 97415
Email Address: rediva2012@gmail.com Phone: 541-661-2117

PART II Position Selection, Requirements and Restrictions: (Please answer all that apply)

1. Commission/Committee applying for:
- | | <u>Composition (i)</u> | <u>Term (ii)</u> |
|---|--------------------------|------------------|
| <input type="checkbox"/> Planning Commission/Commission for Citizen Involvement (iii) | 5 Electors, 2 UGB | 4 years |
| <input type="checkbox"/> Budget Committee | 5 Electors | 3 years |
| <input type="checkbox"/> Parks and Recreation Commission | 4 Residents, 1 UGB | 2 years |
| <input type="checkbox"/> Public Art Committee (PAC) (iii) | 3 Residents, 2 UGB | 3 years |
| <input type="checkbox"/> Traffic Safety Committee | 2 Residents | 2 years |
| <input checked="" type="checkbox"/> Tourism Promotion Advisory Committee (TPAC) (iii) | 4 Residents, 3 Curry Co. | 3 years |
| <input type="checkbox"/> Other (please specify): _____ | | |
2. City residents: How long have you lived in the City of Brookings? 8 years _____ months
Planning & Budget Applicants Only: Are you a City elector (registered voter)? ☐ Yes ☐ No
3. UGB residents: How long have you lived in the UGB? _____ years 6 months
4. What is your current occupation? owner / Visitor Center / Realtor

NOTES:

(i) Membership requirements:

- Residents must reside inside City limits; resident/UGB status determined by physical address.
- Electors are registered voters of the City of Brookings (verified by County Elections Office).
- UGB members must reside within the Brookings Urban Growth Boundary (contact the Planning Department at 541-469-1137 for assistance in determining UGB status).

(ii) Term: Appointments to fill mid-term vacancies will be for the remainder of that term.

(iii) Other restrictions:

- Planning Commission: No more than two (2) Commissioners may be principally involved, as individuals, members or partners, in the buying, selling or development of real estate for profit. No two (2) members shall be involved in the same kind of business or profession.
- TPAC: The three (3) Curry Co. members must own property, own a business or be employed in the City.
- PAC: Three (3) members must have an art background.

PART III Background Information: (Attach additional pages if needed)

1. List your related experience and/or background to the position you are applying for:

Have 25 yrs. in travel industry. Owned own Travel Agency, Worked for major airline, Ran Cheissy Field for Travel Oregon. WAS charter member of TPAC.

2. List any unrelated work history, educational background, and volunteer experience you may have:

Have done events from 10 to 10,000. Want to work with local groups to promote TOURISM & off SEASON EVENTS.

Have business at Port of Beokings would like to see city & port work together more on promoting each

3. Briefly describe your interest in this position and what you hope to accomplish:

I Resigned from position because I thought that by having the Visitor & Tour Center I may get help from county or city AND DID NOT WANT THERE TO BE A CONFLICT.

I've never Accepted ANY MONIES from outside SOURCES AND FEEL THAT I SHOULD HAVE A SEAT ON THIS COMMITTEE SINCE I SPEAK DIRECTLY WITH OUR VISITORS ON A DAY TO DAY BASIS, YEAR ROUND. I HAVE LOTS OF INFO & SUGGESTIONS TO BRING TO THE TABLE.

PART IV Volunteer Agreement: *Please read and check off the following before signing:*

- ☒ I acknowledge that I will not be under the direct supervision and control of the City in connection with the voluntary services for which I have applied.
- ☒ I acknowledge that I will receive no compensation or expense reimbursement from the City in connection with any volunteer services for which I have applied.
- ☒ I understand and agree that my volunteer service will be donated to the City at times other than my regular work hours.
- ☒ I understand that if the position I applied for requires me to be an elector of the City of Brookings, that the City has permission to verify my status as a registered voter.
- ☒ I agree to release the City from all matters relating to the voluntary service for which I have applied, including compliance, if any is required, with social security, withholdings, insurance and all other regulations and reportings governing such matters. I assume full responsibility for any injuries or damages suffered by or arising from the voluntary service described herein. (*Planning Commission applicants, see ** below*)
- ☒ I agree to release, indemnify and hold the City harmless from and against any and all actions, causes of action, claims, demands, liabilities, losses, damages or expenses, of whatsoever kind and nature, including attorney fees, which City may sustain or incur as a result of errors or omissions in the performance of the voluntary service set forth herein.
- ☒ By signing this application voluntarily, I, the Applicant, do hereby acknowledge that I have read and agree to the terms stated above and that I understand and acknowledge that this document will become public information and may be distributed to the public and news media as part of a City Council Agenda Packet.

Barbara J. Ciarella

Applicant (print name)

Barbara J. Ciarella

Applicant's Signature

4/7/18

Date

****Planning Commissioners** holding office on April 1st of each year are required to file an Annual Statement of Economic Interest with the Oregon Government Ethics Commission (OGE). You may view a sample form at [http://www.oregon.gov/ogec/docs/sei/sei-11 form sample only for website.pdf](http://www.oregon.gov/ogec/docs/sei/sei-11_form_sample_only_for_website.pdf). Official forms provided by OGE.

Submit completed applications by mail or in person to the City Recorder, 898 Elk Drive, Brookings, OR 97415. Regular business hours are 9 am to 4:30 pm, Monday – Friday.

Commission and Committee contact information:

- Planning Commission: 541-469-1137 - mschexnayder@brookings.or.us
- Budget Committee: 541-469-1123 - jhoward@brookings.or.us
- Parks and Recreation Commission, Public Art Committee, Tourism Promotion Advisory Committee and Traffic Safety Committee: 541-469-1103 - lziemer@brookings.or.us

CITY OF BROOKINGS

COUNCIL AGENDA REPORT

Meeting Date: June 11, 2018

Originating Dept: City Recorder



Signature (submitted by)


City Manager Approval

Subject: Americanism Week Proclamation

Recommended Motion:

Motion to authorize the Mayor to proclaim the week of June 10-16, 2018, as "Supreme Americanism Week."

Financial Impact:

None.

Reviewed by Finance & Human Resources Director: _____

Background/Discussion:

This is an annual request from the local Emblem Club to proclaim the week of June 10-16, 2018 as "Supreme Americanism Week."

Attachment(s):

- a. Proclamation

City of Brookings *Proclamation*

Whereas, strengthening the Unity of the United States of America is vital and there is a need to strengthen the American Heart of Emblem, the beliefs of each individual and each Club; and

Whereas, in these interests, it seems appropriate at this time to restate our Citizen Principles by pledging to bear true allegiance to the Constitution of the United States of America, and to the Flag which is the Emblem of our Country; and

Whereas, in keeping with our pledge, the Supreme Emblem Club of the United States of America has adopted the Flag of our Country as our Order's Emblem and the name "Emblem" by which our organization is known throughout the land; and

Whereas, we are Citizens dedicated to the belief that the United States shall be sustained, preserved and perpetuated; and

Whereas, in keeping with our principles, it seems obligatory that we act to more forcefully display these beliefs; that each club create an Americanism Committee and originate and participate with others in patriotic community endeavors; that each Emblem member complete a patriotic deed each day and engage in assisting the Americanism Program of the Benevolent and Protective Order of Elks on every occasion we are invited to participate; and that each club and club member actively work to fulfill our dedicated purpose of bearing true allegiance to the Constitution and Flag of the United States of America.

Now, Therefore, Be it Resolved, I, Jake Pieper, Mayor of the City of Brookings, do hereby proclaim the week of June 11th through June 17th, 2018, as

SUPREME AMERICANISM WEEK.

In Witness Whereof, I, Mayor Jake Piper, do hereto set my hand and cause the official seal of the City of Brookings, Oregon, to be affixed this 11th day of June, 2018.

Mayor Jake Piper

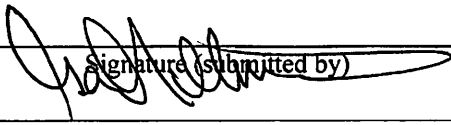


CITY OF BROOKINGS

COUNCIL AGENDA REPORT

Meeting Date: June 11, 2018

Originating Dept: City Manager


Signature (submitted by)


City Manager Approval

Subject: Resolution 18-R-1132 Appointing Gary Milliman as City Representative to the Border Coast Regional Airport Authority and Appointing Janell Howard as Alternate.

Recommended Motion: Motion to adopt Resolution 18-R-1132

Financial Impact:

Mileage for meeting attendance in Crescent City.

Reviewed by Finance & Human Resources Director: 

Background/Discussion:

The City is a member of the Border Coast Regional Airport Authority (BCRAA), which manages the Del Norte County Regional Airport. The City has a representative on the BCRAA Board of Directors. The current Director is Mayor Jake Pieper and the Alternate is City Manager Gary Milliman.

This Resolution would appoint Milliman as the City's primary representative and incoming City Manager Janell Howard as the City's alternate representative effective July 1, 2018. Milliman will provide the City Council with a written monthly report concerning BCRAA business, and will appear at City Council meetings periodically to report on BCRAA activities and seek policy direction as needed.

BCRAA Board meetings are held monthly in Crescent City during the day and Councilor members have had difficulty participating during the work day. Milliman has served as the City's Alternate representative since 2007. Milliman will have a dual role as City representative to the South West Area Commission on Transportation and BCRAA.

Milliman will serve in as the City's BCRAA representative as a community service and will receive compensation for travel expenses only.

Attachment(s):

- a. Resolution 18-R-1132

**CITY OF BROOKINGS
STATE OF OREGON**

RESOLUTION 18-R-1132

A RESOLUTION OF THE CITY OF BROOKINGS APPOINTING GARY MILLIMAN TO A FULFILL THE TERM ENDING OCTOBER 3, 2019 ON THE BORDER COAST REGIONAL AIRPORT AUTHORITY BOARD OF COMMISSIONERS AND APPOINTING JANELL HOWARD AS ALTERNATE.

WHEREAS, the City of Brookings (City), by authority of the Border Coast Regional Airport Authority (BCRAA) Joint Powers Agreement, holds a position on the BCRAA's Board of Commissioners; and

WHEREAS, the position is currently held by Mayor Jake Pieper, and he is desirous of appointing Gary Milliman as his replacement.

NOW THEREFORE BE IT RESOLVED, by the City Council of the City of Brookings, Curry County, Oregon, that Gary Milliman is hereby appointed to fulfill the term ending October 3, 2019, on the Border Coast Regional Airport Authority Board of Commissioners and Janell Howard is appointed as alternate, effective July 1, 2018.

Passed by the City Council _____, 2018; effective the same date.

Attest:

Mayor Jake Pieper

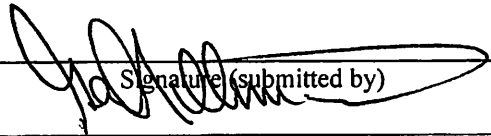
City Recorder Teri Davis

CITY OF BROOKINGS

COUNCIL AGENDA REPORT

Meeting Date: June 11, 2018

Originating Dept: City Manager


Signature (submitted by)


City Manager Approval

Subject: Resolution 18-R-1138 Appointing Gary Milliman as City Representative to the South West Area Commission on Transportation and Appointing Janell Howard as Alternate.

Recommended Motion: Motion to adopt Resolution 18-R-1138

Financial Impact:

Mileage for meeting attendance.

Reviewed by Finance & Human Resources Director: 

Background/Discussion:

The South West Area Commission on Transportation (SWACT) bylaws provide for a member representative from Brookings. Gary Milliman has represented the City on the SWACT for a number of years and currently serves as SWACT Chair.

This Resolution would appoint Milliman as the City's primary representative and incoming City Manager Janell Howard as the City's alternate representative effective July 1, 2018. Milliman will provide the City Council with a written monthly report concerning SWACT business, and will appear at City Council meetings periodically to report on SWACT activities and seek policy direction as needed.

SWACT meetings are held quarterly in Coquille, but there are periodic meetings at other locations. Milliman will have a dual role as City representative to the South West Area Commission on Transportation and BCRAA.

Milliman will serve in as the City's SWACT representative as a community service and will receive compensation for travel expenses only.

Attachment(s):

- a. Resolution 18-R-1138

**CITY OF BROOKINGS
STATE OF OREGON**

RESOLUTION 18-R-1138

A RESOLUTION OF THE CITY OF BROOKINGS APPOINTING GARY MILLIMAN TO SERVE AS THE PRIMARY CITY OF BROOKINGS REPRESENTATIVE TO THE SOUTH WEST AREA COMMISSION ON TRANSPORTATION AND APPOINTING JANELL HOWARD AS ALTERNATE.

WHEREAS, the South West Area Commission on Transportation (SWACT) bylaws provide for a member representative from Brookings; and

WHEREAS, Gary Milliman has represented the City on the SWACT for a number of years and currently serves as SWACT Chair; and

WHEREAS, Milliman will report periodically to City Council on SWACT activities and will receive compensation only for travel expenses related to the appointment.

NOW THEREFORE BE IT RESOLVED, by the City Council of the City of Brookings, Curry County, Oregon, that Gary Milliman is hereby appointed to serve as the Primary City of Brookings Representative to the South West Area Commission on Transportation and Janell Howard is appointed as alternate, effective July 1, 2018.

Passed by the City Council _____, 2018; effective the same date.

Attest:

Mayor Jake Pieper

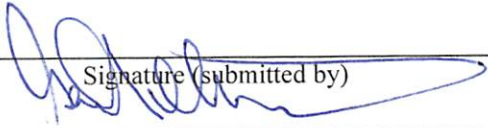
City Recorder Teri Davis

CITY OF BROOKINGS

COUNCIL AGENDA REPORT

Meeting Date: June 11, 2018

Originating Dept: City Manager


Signature (submitted by)

City Manager Approval

Subject: Chetco River Gage Maintenance Agreement

Recommended Motion:

Motion to authorize the City Manager to execute the joint funding agreement with the U.S. Geological Survey for maintenance of the flow gage on the Chetco River.

Financial Impact:

\$2,716.25 annual cost; a 4.1 per cent increase from prior year.

Reviewed by Finance & Human Resources Director: 

Background/Discussion:

The City has had an agreement with the U.S. Department of the Interior, U.S. Geological Survey (USGS) for many years to share the cost of maintaining the river flow gage on the Chetco River. According to USGS, the total cost for the federal fiscal 2019 will be \$21,350. USGS will pay \$9,635 of this amount using Federal Stream Gage Program funds. The City share is \$10,889, and the City bills a portion of this cost to the following agencies:

U.S. Forest Service (12.5%)
Cal-Ore Enhancement (12.5%)
Harbor Water PUD (25%)
Port of Brookings, Harbor (25%)

Thus, the City's "out of pocket" cost would be \$2,722.25. The City uses stream gage information to determine the appropriate conservation response needed when flows drop below certain statutory levels.

We have received a new agreement from USGS for the 2019 federal fiscal year.

Attachment(s):

- a. Letter and agreement



United States Department of the Interior

U.S. GEOLOGICAL SURVEY

Oregon Water Science Center

2130 SW 5th Avenue

Portland, OR 97201

<http://or.water.usgs.gov/>

May 31, 2018

Gary Milliman, City Manager
City of Brookings
898 Elk Drive
Brookings, OR 97415

Dear Mr. Milliman,

The U.S. Geological Survey (USGS) and the City of Brookings collaboratively maintain the operation of the Chetco River gage (14400000) near Brookings, Oregon. This letter and subsequent joint-funding agreement (JFA) provide the mechanism to continue this relationship and collaboration in Federal fiscal year (FFY) 2019 (October 1, 2018 through September 30, 2019).

The total cost to maintain this gage in FFY 2019 will be \$10,889 provided by the City. Enclosed is a signed original of our standard JFA for the project covering the period October 1, 2018 through September 30, 2019. The USGS will provide \$10,461 in Federal Priority Streamgage Program funds making the total gage program \$21,350.

Please sign and return one fully-executed original to Andrew Kerslake at kerslake@usgs.gov. The signed agreement is not a bill and no funds are required at this time; rather, the agreement is our legal authority that permits the work to be done and authorizes USGS to accept funds. The USGS Water Resources Cooperative Program operates under the authority of statute 43 USC 50, which allows us to perform this work. The Oregon Water Science Center DUNS number is 137883463.

Federal law requires that we have a signed agreement to continue this work; therefore, please return the signed agreement as soon as possible. If, for any reason, the agreement cannot be signed and returned in the near future, please contact Keith Overton at (503) 251-3246 or email koverton@usgs.gov to make alternative arrangements.

This is a fixed cost agreement to be billed annually via Down Payment Request (automated Form DI-1040). We can bill you on a specific date if that is more convenient relative to your fiscal year planning and budgeting process. Please allow 30 days from the end of the billing period for issuance of the bill. If you experience any problems with your invoice(s), please contact Andrew Kerslake at (503) 251-3253.

The results of all work under this agreement will be available for publication by USGS in collaboration with the City. During the course of this jointly planned activity and partnership, USGS may provide unpublished USGS data or information to your office for scientific peer and (or) courtesy review. Guidance concerning USGS's non-disclosure policy will be provided with any review material and is further explained in USGS Fundamental Science Practices at <http://www.usgs.gov/fsp/>.

Sincerely,

JAMES CRAMMOND Digitally signed by JAMES
CRAMMOND
Date: 2018.05.31 16:57:38 -07'00'

James D. Crammond
Center Director

Cc: To file, available upon request

U.S. Department of the Interior
U.S. Geological Survey
Joint Funding Agreement
FOR
Water Resource Investigations

Customer #: 6000001712
Agreement #: 19WNOR000171200
Project #: YF00D7U
TIN #: 93-6002703

Fixed Cost Agreement YES[X] NO[]

THIS AGREEMENT is entered into as of October 1, 2018, by the U.S. GEOLOGICAL SURVEY, Oregon Water Science Center, UNITED STATES DEPARTMENT OF THE INTERIOR, party of the first part, and the City of Brookings, party of the second part.

1. The parties hereto agree that subject to the availability of appropriations and in accordance with their respective authorities there shall be maintained in the operation of the Chetco River gage (14400000) near Brookings, Oregon, herein called the program. The USGS legal authority is 43 USC 36C; 43 USC 50, and 43 USC 50b.

2. The following amounts shall be contributed to cover all of the cost of the necessary field and analytical work directly related to this program. 2(b) include In-Kind-Services in the amount of \$0.00

- (a) \$0 by the party of the first part during the period
October 1, 2018 to September 30, 2019
- (b) \$10,889 by the party of the second part during the period
October 1, 2018 to September 30, 2019
- (c) Contributions are provided by the party of the first part through other USGS regional or national programs, in the amount of: \$10,461

Description of the USGS regional/national program: Federal Priority Streamgage Program

- (d) Additional or reduced amounts by each party during the above period or succeeding periods as may be determined by mutual agreement and set forth in an exchange of letters between the parties.
- (e) The performance period may be changed by mutual agreement and set forth in an exchange of letters between the parties.

3. The costs of this program may be paid by either party in conformity with the laws and regulations respectively governing each party.

4. The field and analytical work pertaining to this program shall be under the direction of or subject to periodic review by an authorized representative of the party of the first part.

5. The areas to be included in the program shall be determined by mutual agreement between the parties hereto or their authorized representatives. The methods employed in the field and office shall be those adopted by the party of the first part to insure the required standards of accuracy subject to modification by mutual agreement.

6. During the course of this program, all field and analytical work of either party pertaining to this program shall be open to the inspection of the other party, and if the work is not being carried on in a mutually satisfactory manner, either party may terminate this agreement upon 60 days written notice to the other party.

7. The original records resulting from this program will be deposited in the office of origin of those records. Upon request, copies of the original records will be provided to the office of the other party.

8. The maps, records or reports resulting from this program shall be made available to the public as promptly as possible. The maps, records or reports normally will be published by the party of the first part. However, the party of the second part reserves the right to publish the results of this program, and if already published by the party of the first part shall, upon request, be furnished by the party of the first part, at cost, impressions suitable for purposes of reproduction similar to that for which the original copy was prepared. The maps, records or reports published by either party shall contain a statement of the cooperative relations between the parties. The Parties acknowledge that scientific information and data developed as a result of the Scope of Work (SOW) are subject to applicable USGS review, approval, and release requirements, which are available on the USGS Fundamental Science Practices website (<https://www2.usgs.gov/fsp/>).

Form 9-1366
(May 2018)

U.S. Department of the Interior
U.S. Geological Survey
Joint Funding Agreement
FOR
Water Resource Investigations

Customer #: 6000001712
Agreement #: 19WNOR000171200
Project #: YF00D7U
TIN #: 93-6002703

9. Billing for this agreement will be rendered annually. Invoices not paid within 60 days from the billing date will bear Interest, Penalties, and Administrative cost at the annual rate pursuant the Debt Collection Act of 1982, (codified at 31 U.S.C. § 3717) established by the U.S. Treasury.

USGS Technical Point of Contact

Name: Keith Overton
Supv. Hydrologist Data Chief
Address: 2130 SW 5th Avenue
Portland, OR 97201
Telephone: (503) 251-3246
Fax: (503) 251-3470
Email: koverton@usgs.gov

Customer Technical Point of Contact

Name: Gary Milliman
City Manager
Address: 898 Elk Drive
Brookings, OR 97415
Telephone: (541) 469-1101
Fax: (541) 469-3650
Email: gmilliman@brookings.or.us

USGS Billing Point of Contact

Name: Andrew Kerslake
Financial Specialist
Address: 2130 SW 5th Avenue
Portland, OR 97201
Telephone: (503) 251-3253
Fax:
Email: kerslake@usgs.gov

Customer Billing Point of Contact

Name: Gary Milliman
City Manager
Address: 898 Elk Drive
Brookings, OR 97415
Telephone: (541) 469-1101
Fax: (541) 469-3650
Email: gmilliman@brookings.or.us

U.S. Geological Survey
United States
Department of Interior

City of Brookings

Signature

JAMES CRAMMOND

By _____ Date: 2018.05.31 - 07'00'

Name: James D. Crammond
Title: Center Director

Signatures

By _____ Date: _____

Name:
Title:

By _____ Date: _____

Name:
Title:

By _____ Date: _____

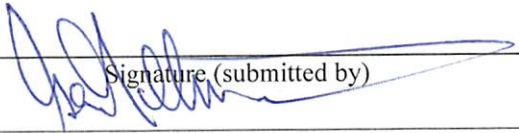
Name:
Title:

CITY OF BROOKINGS

COUNCIL AGENDA REPORT

Meeting Date: June 11, 2018

Originating Dept: City Manager



Signature (submitted by)

City Manager Approval

Subject: Lone Ranch Infrastructure Financing Agreement Amendment

Financial Impact:

Use of \$628,000 in System Development Charge revenue for construction of a sewer lift station to serve lands north of Longacre Road and utilizing some \$262,000 in grant funds to pay for Lone Ranch allocation of sewer system improvement costs south of Moore Street.

Reviewed by Finance & Human Resources Director: 

Background/Discussion:

This matter was discussed at the City Council Workshops of May 7 and June 4, 2018.

The City entered into an infrastructure financing agreement with U.S. Borax Corporation in 2009. This agreement established a method whereby Borax would pay for completing the extension of water and sewer facilities needed to support the Lone Ranch development and receive reimbursement for a portion of the cost from the City as System Development Charges (SDCs) were collected.

More recently, City management has met with Borax representatives to discuss plans for bringing the property to market and getting housing construction underway. Borax has completed the first phase of a timber harvest, has updated infrastructure cost estimates, and has made some decisions on making segments of the land available to housing developers through sales reimbursement agreements.

The major hurdle for implementing the project is the completion of the sewer line along Highway 101 to serve the Lone Ranch development, including a large lift station and some 5,300 lineal feet of sewer main. These sewer improvements are also needed to serve the College and several other private properties along the way. The City has received inquiries concerning additional annexations along Highway 101 between Harris Beach State Park and the College, which could also result in the development of new housing units.

The City is preparing a loan and grant application to the U.S. Department of Agriculture Rural Development (USDA-RD) program to fund sewer system improvement system wide, including improvements south of Moore Street that would ultimately be needed to serve the build-out of the Lone Ranch project. Under the current agreement Borax would be responsible for 23 per cent of the cost of these improvements, which includes a sewer main realignment through the South Coast Lumber Company mill site in order to eliminate the Mill Beach lift station. The City is preparing an application in the \$8-10.0 million range and anticipates receiving up to \$2.0

million in grant funding. The estimated cost of the south of Moore Street improvements is \$1.135 million.

While the City has spent most of the proceeds from SDCs for Wastewater Treatment Plant debt service over the past 15 years, the basic concept behind SDCs is to fund system expansion to accommodate new development. As of this writing, the City has accumulated \$680,000 in wastewater SDCs that are not currently programmed for projects.

The estimated cost of the new pump station near Taylor Creek/Longacre Road is \$628,000, and the estimated cost of the 5,300 lineal feet of eight-inch force main needed to complete the connection between Lone Ranch and the City system is \$703,000. Borax estimates that the sewer improvement costs, coupled with the off-site improvements needed within the development (i.e. water, sewer, streets, and drainage) would result in a burden of about \$40,000 per housing unit if the initial development phase included about 60 units. This is seen as a major obstacle to attracting a housing developer.

Subsequent to the May 7 Council Workshop, staff met with representatives of U.S. Borax to discuss methods of increasing the number of affordable housing units to which they would be willing to commit. Through that exchange Borax is now proposing to donate land to the City of Brookings for the development of affordable housing. The City would then have the ability to select an affordable housing developer and re-convey the land to them under a development agreement. This, staff is proposing to amend the existing infrastructure financing agreement to provide as follows:

1. Borax would not be required to pay for 23 per cent of the sewer system improvements south of Moore Street (approximately \$262,000) as provided in the current agreement if the City obtains at least \$1.5 million in grant funding from USDA-RD.
2. The City would pay for the cost of the Taylor Creek lift station using SDC revenue on the conditions that:
 - a. Borax pays for the construction of the 5,300-lineal foot eight-inch sewer gravity line from the lift station to the current sewer line connecting to the City sewer system.

AND ONE OF THE FOLLOWING:

- b. Borax sells at least one of the housing neighborhoods to a private housing developer acceptable to the City, with that housing developer agreeing to begin housing construction within 12 months, complete a minimum of 15 units within 18 months and a minimum of 40 units within 36 months. Also, at least 20 per cent of the 50 housing units must be available to low and moderate income households.

OR:

- c. Borax donates the property located in one of its neighborhoods to a non-profit housing development agency acceptable to the City. In this case, the housing agency must provide a plan acceptable to the City for financing and constructing a minimum of 40 below market housing units within 18 months.

The goal of the above proposed changes in the agreement are to provide an incentive to housing developers to begin development of housing, including affordable housing, within the Lone Ranch project; make sewer service available to other property owners along north Highway 101; and provide sewer service to the community college.

Under the current agreement, the City would reimburse Borax for 83 per cent of the cost of the Taylor Street lift station from the proceeds of System Development Charges (SDC) collected from new users of the sewer line north of Carpenterville Road. The current SDC is \$11,101.92 per unit. The SDC schedule is based upon the Wastewater Facilities Master Plan, which includes all of the improvements needed to serve the Lone Ranch development. Under the terms of the proposed agreement, Lone Ranch would receive no share of the SDCs for this segment of the improvements. The City would recover its \$703,000 investment in the lift station through the collection of SDC's on 63 new housing units.

At the June 4 Council Workshop, Councilor Triglia read a prepared statement asking that a number of issues be addressed in advance of Council action on the this matter.

The date by which the developer must submit a final plat map was extended to February 1, 2022, in 2015. There are no compliance issues.

Staff contacted the water specialists conducting the Chetco Bar Fire Water System Response and Protection Plan concerning possible impacts on the quantity of water available to the City. Ronan Igloria, PE, with GSI Water Solutions and Glen Leverich, Senior Geomorphologist/Geologist with Stillwater Sciences, reviewed this matter and provided email responses. Key comments were:

- Damage to the vegetative cover has the potential to reduce infiltration and exacerbate more rapid runoff, thus leaving less water in the system later during the summer.
- No changes in annual runoff in the Chetco River were detected following the Silver or Biscuit fires.
- Recent wildfire events do not appear to have led to measurable change in runoff or flashiness as observed at the U.S. Geological Service gaging station.
- Monitoring for 3-5 years is needed to determine if there is an impact to the City's water supply.

The project has been reviewed, with development permits and extensions approved several times over the last 10 years. The Master Plan was approved and adopted and found in compliance with all the Statewide Goals. There has been no change in the plan other than time extensions, none of which requires a revisiting of the goals and guidelines. That issue has been legally adjudicated and not subject to further appeal. The infrastructure financing agreement is an implementation measure and does not trigger reopening the development review process.

As the referenced Dyer report says "*...current water service provided to Lone Ranch Development is and will continue to be adequate for the initial phases of development.*" The current water line was paid for and built by Borax and then given to the City. The "on site wells" versus "City domestic water system" issue is addressed in several attached documents, including the Land Use Board of Appeals Final Order in 2009. The Chetco River has been the sole source of water supply for the City for several decades, at least since the Ferry Creek Reservoir was taken out of service in 1980. In reviewing the historical documents, staff found the initial Lone Ranch Master Plan Utilities Report prepared by Otak Engineering April 15, 2004. That report...which was not the adopted plan...anticipated that the initial development would be served by on-site wells and further states that "*As growth continues and demand increases, a*

connection to the City water system will be constructed in order to supplement the water supply."

The Detailed Development Plan for the Lone Ranch Plan area approved by the City in 2011 provides: *"The subject property shall be served by the City domestic water supply system."* Ultimately, any on-site well development on the Lone Ranch property would need to be incorporated into the City water system as the City Charter provides, in Chapter XI, Section 42, that:

"The right to furnish the inhabitants of said City with water shall be forever vested in the City of Brookings, and no franchise, right or privilege shall hereafter be granted to or contract made with any person or corporation by said City to furnish or supply the said City or its inhabitants with water, without the authorization of the legal voters of said City."

According to Borax owner's representative Burton Weast, Borax still plans to construct the water reservoir and deed the well site referenced in the 2004 plan to the City, but not as a part of the initial development phase. The specific timing of when the on-site source and reservoir would be developed can be addressed as development progresses through the City approval process.

In any event, water service is already available to the site and is not a topic of the infrastructure agreement amendment.

As a side note, City water production/use has actually declined since 2004.

Attachment(s):

- a. Current Lone Ranch Infrastructure Agreement.
- b. Proposed First Amendment to Agreement.
- c. Lone Ranch Infrastructure Review Report.
- d. Lone Ranch development plan.
- e. May 7 Council Workshop Report.
- f. Notes from Councilor Triglia
- g. Land Use Board of Appeals Final Order February 24, 2009.
- h. Draft Executive Summary for Water System Response and Protection Plan.
- i. Lone Ranch Master Plan application May 2004/November 2006 Revision; Part J
- j. Response to comments on proposed findings regarding water service; Timothy Ramis, Attorney at Law representing U.S. Borax, August 6, 2008.
- k. Brookings Planning Commission Final Order and Findings of Fact February 1, 2011 (41-page staff report available upon request).
- l. Brookings Planning Commission Final Order and Findings of Fact November 17, 2015
- m. Email on possible impact on City water quantity by Chetco Bar Fire; Ronan Igloria, PE, GSI Water Solutions.
- n. Email on possible impact on City water quantity by Glen Leverich, Senior Geomorphologist/Geologist with Stillwater Sciences.
- o. Statewide Planning Goal 5.
- p. Statewide Planning goal 6.
- q. Statewide Planning Goal 16.
- r. Water production/use chart.

LONE RANCH INFRASTRUCTURE FINANCING AGREEMENT

This Infrastructure Financing Agreement ("Agreement") is entered into by and between the City of Brookings ("City"), a municipal corporation of the State of Oregon, and U.S. Borax, Inc., a Delaware corporation ("Borax").

RECITALS

WHEREAS, Borax currently owns an approximately 550-acre property located in Curry County, Oregon, known as the Lone Ranch Property. The City has annexed the Lone Ranch Property and the City has approved Borax's Master Plan Development for the Lone Ranch Project, which includes the planning of a residential community that balances commercial, educational and housing possibilities while preserving open space.

WHEREAS, the City and Borax recognize that the development of the Lone Ranch Project cannot occur without adequate public water and sewer infrastructure and that the City needs to make improvements to its existing system. The City and The Lone Ranch Project will require improvements to the existing water and sewer infrastructure as well as the addition of new infrastructure. The City and Borax intend to share the cost and develop a plan for the construction of the required infrastructure improvements.

WHEREAS, the infrastructure improvements will be built as needed, in increments based on the demand for development of the Lone Ranch Project, the needs of the City and the consent of Borax.

NOW, THEREFORE, it is hereby agreed:

1. Purpose. This Agreement is not intended to be a development agreement as defined in ORS 94.504. This Agreement only addresses financial issues relating to the construction of certain public infrastructure facilities. It is not intended to set forth the full range of development responsibilities for the development of the Lone Ranch Project.
2. Infrastructure improvements. Water system improvements shall be constructed as designated by the attached Schedule A. Sanitary sewer improvements shall be constructed as designated by the attached Schedule B. For the purposes of this Agreement, "infrastructure improvements" shall mean water and sewer system facilities needed in whole or in part to serve the Lone Ranch Project.
3. Consent to proceed. When infrastructure improvements as defined herein are installed at the initial expense of Borax, such improvements shall be constructed only with the consent of Borax.
4. Cost allocation. The City and Borax shall share the actual cost of the required infrastructure improvements as follows:

A. SANITARY SEWER SYSTEM

North of Carpenterville Rd: City - 0%. Borax - 83%, Other – 17%

South of Carpenterville Rd & North of Moore St: City- 50%. Borax- 50%

South of Moore St: City – 77%, Borax – 23%

B. WATER SYSTEM

North of Carpenterville Rd.: City - 0%, Borax - 83%, Other - 17%

South of Carpenterville Rd.: City - 50%; Borax - 50%

“Other” means parcels of property located outside of the boundaries of the Lone Ranch Project, which have a potential to benefit from infrastructure improvements installed pursuant to this agreement.

In the event that the assessment adopted by the City Council method does not include property ownerships other than Borax, the shares allocated to "other" will be allocated to Borax.

Borax will not be responsible for any costs for the infrastructure improvements until said improvements are needed to serve buildings and uses developed on the site. Borax is not responsible for improvements needed to serve development on the community college site, as identified in Phase I of the attached Schedule A and Schedule B.

5. Borax agrees to pay for the entire cost of the infrastructure improvements and be reimbursed by the City for its proportional share of said cost at such time as system development charge fees are received from development occurring within the Lone Ranch Project.

In December, 2005, City paid \$667,248.60 from System Development Charge (SDC) Fees for the construction of the sewer line replacement and upsizing between Crissey Circle and Parkview Drive (within the Moore Street to Carpenterville Road segment). Said payment represented 100 per cent of the actual construction cost. Said payment exceeds the City's cost sharing obligation for this segment of improvements and no reimbursement for sewer system improvements shall be paid to Borax until such time as the City has first received \$333,624.30 in sewer SDC fees from development occurring on the Lone Ranch site.

6. The total costs of constructing the required infrastructure improvements are unknown at this time but will be based upon the actual cost of construction.
7. Authority. Each party hereto represents that it has all requisite power, authority, and authorization to execute and act in accordance with this Agreement and that the person executing this Agreement on such party's behalf has the legal power, right, and actual authority to bind such party.
8. Effective Date. This Agreement shall be effective upon signature of all the parties.
9. Assignment. This Agreement may be assigned by Borax.
10. Counterparts. This Agreement may be executed in two or more counterparts, each of which shall be deemed to be an original, and such counterparts shall together constitute one and the same instrument.
11. Controlling Law and Venue. This Agreement shall be deemed to have been entered into

in the State of Oregon and shall be construed and interpreted in accordance with the laws of Oregon. Any litigation or proceeding arising out of or connected with this Agreement shall be heard and decided in Oregon Circuit Court for the County of Curry.

12. **Integration.** This Agreement constitutes the entire Agreement between the parties with respect to the subject matter herein contained and all prior negotiations, discussions, writings and agreements between the parties with respect to the subject matter herein contained are superseded and of no further force and effect.
13. **Captions.** The captions contained in this Agreement were inserted for convenience of reference only and shall be disregarded in construing or interpreting any of its provisions.
14. **Severability.** If any clause, section or provision of this Agreement shall be declared unconstitutional or invalid for any reason or cause, the remaining portion of this Agreement shall be in full force and effect and be valid as if such invalid portion thereof had not been incorporated herein.
15. **Arbitration/Mediation.** Any dispute or claim that arises out of or that relates to this Agreement, or to the interpretation or breach thereof, shall be resolved by arbitration. The parties acknowledge that mediation usually helps parties to settle their dispute themselves. Therefore, any party may propose mediation whenever appropriate through one of the above named organizations or any other mediation process or mediator as the parties may agree upon.
16. **Attorney's Fees.** In the event suit or action is brought, or an arbitration proceeding is initiated, to enforce or interpret any of the provisions of this Agreement, or that is based thereon, the prevailing party shall be entitled to reasonable attorney's fees in connection therewith.

Signed by the parties hereto on the dates indicated below.

CITY OF BROOKINGS:

City Manager

Date

Approved as to Form:

City Attorney

Date

U.S. BORAX INC.

Vice President, Operations

Date

Attachments:

Schedule A - Water System Improvements

Schedule B - Sanitary Sewer Improvements

FIRST AMENDMENT TO LONE RANCH INFRASTRUCTURE FINANCING AGREEMENT

This amendment ("this Amendment") to the Lone Ranch Infrastructure Financing Agreement approved by the City Council of the City of Brookings on May 11, 2009 ("Agreement") is hereby entered into by and between the City of Brookings (the "City"), an Oregon municipal corporation, and U.S. Borax, Inc. ("Borax"), a Delaware corporation.

NOW THEREFORE, the parties hereto agree as follows:

A. Amendment. Section 5 is amended in its entirety to read as follows (new language underlined):

5. Except as provided below, Borax agrees to pay for the entire cost of the infrastructure improvements and be reimbursed by the City for its proportional share of said cost at such time as system development charge fees are received from development occurring within the Lone Ranch Project.

In December, 2005, the City paid \$667,248.60 from System Development Charge (SDC) Fees for the construction of the sewer line replacement and upsizing between Crissy Circle and Parkview Drive (within the Moore Street to Carpenterville Road segment). Said payment represented 100 per cent of the actual construction cost. Said payment exceeds the City's cost sharing obligation for this segment of improvements and no reimbursement for sewer system improvements shall be paid to Borax until such time as the City has first received \$333,624.30 in sewer SDC fees from development occurring on the Lone Ranch site.

The City has applied for loan and grant funding from the U.S. Department of Agriculture Rural Development program for sewer collection system improvements including those referenced in 4(A) "South of Moore Street" (inclusive of WWFP Priority 1, Project 6; WWFP Priority 1, Project 2; and WWFP Priority 1, Project 3). In the event these funds are approved with at least \$1.5 million in grant funding, Borax will not be required to pay any portion of the cost for said improvements.

The City agrees to utilize System Development Charge (SDC) funds or such other funds as the City may determine, to pay for and construct the segment listed in 4(A) above "North of Carpenterville Road" (further defined as WWFP Priority 1, Project 4; the Taylor Creek Pump Station) contingent upon the following:

- A. The completion of construction by Borax, and acceptance of improvements by City, of the sewer collection system improvements referenced in 4(A) "South of Carpenterville Road and North of Moore Street."
- B. The donation of real property located within Neighborhoods "A", "D", "E", "F" or "N" to the City of Brookings for use in the development of affordable housing. Said real property shall be of sufficient size to accommodate the construction of at least 60 housing units with the appraised value of said property to be at least \$1.0 million. City

and Borax shall enter into a separate agreement with a specific description of the subject property.

OR

The donation of a parcel of real property generally consisting of that property shown as "Neighborhood A" in the Master Plan of Development.

- C. Borax shall not receive SDC reimbursement for any housing units developed on property donated to the City.
- D. The City agrees and obligates any future purchaser of the subject property to provide Borax or its designee with the elevations of any proposed structure for design review to insure that any structure is consistent with the design theme submitted with the approved Detailed Development Plan II. Borax agrees that such approval shall not be unreasonably withheld.

The Wastewater Facilities Plan ("WWFP") referenced herein is the Wastewater Facilities Plan prepared by the They Dyer Partnership dated February 2016. The Projects referenced herein are described in the Lone Ranch infrastructure Review dated August 2015.

- B. **Other Terms and Conditions.** All other terms and conditions of the original Agreement remain in full force and effect.
- C. **Authority.** Each party hereto represents that it has all requisite power, authority, and authorization to execute this and act in accordance with this Amendment and that the person executing this Amendment on such party's behalf has the legal power, right and actual authority to bid such party.

Executed at City of Brookings, County of Curry, Stated of Oregon.

CITY OF BROOKINGS

U.S. BORAX, INC.

Dated: _____

Dated: _____

By: _____
City Manager Gary Milliman

By: _____
Name:
Title:

ATTEST:

City Recorder Teri Davis

CITY OF BROOKINGS
CURRY COUNTY, OREGON

LONE RANCH INFRASTRUCTURE REVIEW REPORT

AUGUST 2015

PROJECT NO. 145.64



Expires: 12/31/15



**The Dyer Partnership
Engineers & Planners, Inc.**

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Purpose

Lone Ranch is to the north of the main development of Brookings, Oregon along Highway 101. The City limits were extended to incorporate this area. The purpose of this report is to evaluate the necessary water and sewer infrastructure improvements required for phased development of Lone Ranch. This report seeks to clarify the timing and cost effectiveness of improvements required as an alternative to constructing water and sewer improvements sized in previous reports for full or ultimate “build out” development.

Background

The planning, to date, conducted by both the City and by Borax Lone Ranch formed the foundation of proposed improvements and sizing for ultimate build out of the Lone Ranch Development. The City and the Borax Corporation have negotiated cost sharing arrangements to pay for these improvements. To date the Lone Ranch developers have installed several elements of the improvements believed at the time to be necessary. This arrangement will require large investments by the City to complete the remaining improvements. This original planning anticipated significant capacity extensions of water and sewer systems to this service area as well as a new sewage pump station at Taylor Creek. In addition, the planning anticipates upsizing of the existing sewer collection system through the western part of Brookings to accommodate the additional flows. This planning was conducted during a time when it appeared that growth in Brookings was going to remain high. Considering that the Lone Ranch Development now appears likely to take place over a longer period of time and at a much more modest pace than originally anticipated, the City would like to consider what water and sewer improvements are actually necessary, in what sequence, and in what time frame to accommodate more limited and phased development.

Tasks

The current Lone Ranch phased growth planning was reviewed and compared with the original planning determining capacity of existing and proposed water lines, sewer lines, and pump stations necessary to provide service to Lone Ranch and other development to the North of the City. We have surveyed invert elevations of existing sewer lines in order to determine slope and associated flow capacity. As flows from Lone Ranch Development increase, we have indicated recommended improvements, triggered by required capacity.

Water

During this study, it becomes apparent that the current water service provided to Lone Ranch Development is and will continue to be adequate for initial phases of development. The 16” and 12” water lines in place will provide adequate flow rates at a residual pressure of approximately 50 psi at Highway 101. Storage and service to higher elevations within the development will be addressed by and the responsibility of Lone Ranch. No additional water infrastructure work by the City is required to provide water service to Lone Ranch.

Sewer Force Main and Pumping

It became apparent during the initial portion of this study that sewer service to Lone Ranch will require initial construction of the Taylor Creek Pump Station and that the installation of an 8" force main has already dictated the minimum sizing of those pumps. This establishes the required minimum capacity of gravity sewer lines downstream through Brookings to the wastewater treatment plant. For this reason, pump size at Taylor Creek will be the key element in determining the required gravity sewer system improvements through town and when and if modifications to Mill Beach Pump Station are required.

Sewer Force Main Design Criteria

Oregon Department of Environmental Quality (DEQ) guidelines state 3 feet per second is the minimum velocity necessary to achieve scour velocity for force mains. Other DEQ publications for the design of pump stations recommend 3.5 feet per second as a minimum. The size of the force main size necessary to achieve at least 3 feet per second of velocity is therefore a factor in selecting pump size. Minimum pump rates prevent deposition of solids in the force main. Deposition potentially causes blockage. In addition, most references recommend a limit of the economical pumping velocity of force mains to 5.5 feet per second. Listed below is a table showing the recommended pump flow rate ranges for common force main sizes.

Table 1
Recommended Capacity Ranges for Force Main Sizes

Force Main Diameter Inches	Min. Flow Rate - 3.0 ft./sec.	Max. Flow Rate - 5.5 ft./sec
12	1058	1940
10	735	1346
8	470	862
6	264	485
4	118	215

Downstream gravity sewer piping and subsequent sewage pump stations must accommodate this instantaneous flow rate in addition to current and future flow from other Brookings customers along the route.

Along Highway 101, a non-utilized 8" force main is already constructed from Lone Ranch to Carpenterville Road. A proposed 8" force main extension from the end of the existing aforementioned 8" force main to discharge into the existing 24-inch gravity sewer at Parkview is proposed. This sizing dictates that pumps at the proposed Taylor Creek Pump Station provide flow optimally, in the 470 to 862 gallons per minute (GPM) range regardless of what the average daily flow rate into the new Taylor Creek Pump Station is. For proper sizing, based on an 8" force main, sewage will accumulate in the proposed pump station wet well until full and then be pumped out within this flow rate range. This of course presents a significant instantaneous flow to be accommodated by downstream facilities. Downstream systems must have adequate capacity to accommodate this additional flow, the minimum which would be 470 GPM. Ideally, future pump rates through the 8" force main segments would not routinely be greater than 862 GPM.

Original Gravity Sewer Planning

Listed on the following page in Table 2, is information regarding the flow route from the Lone Ranch Development to the Brookings Waste Water Treatment Plant which has been assumed would be required based on previous planning. Segments of gravity sewer line, both existing and proposed, are indicated. These improvements were sized for build out.

Table 2
Previous Proposed Sewer System Improvements

#	Segments	From	To	Length Ft.
1	Exist. 10" Gravity Sewer by LR	RRC	LR Area	2400
2	Exist. 12" Gravity Sewer by LR	LR Area	Long Acre Lp	580
3	Taylor Creek PS	Long Acre Loop	N/A	N/A
4	Exist. 8" Force Main by LR	Long Acre Loop	Carpenterville	3960
5	Prop. 8" Force Main by City & LR	Carpenterville	Parkview Dr.	5360
6	Existing 24" Gravity Main	Parkview Dr.	Creasy Circle	2240
7	Prop. 24" Gravity Rep. Exist. 10"	Creasy Circle	N. of Moore St	1220
8	Exist. 21" Gravity Mains	N. of Moore St	Hub	730
9	Exist. 18" Gravity Main	Hub	Rowland	581
10	Prop. 27" Gravity Rep. Exist. 9"	Rowland	Mill Beach	1790
11	Prop. 27" Gravity Main Rep. FM	Mill Beach	Railroad Av.	1490
12	Prop. 30" Gravity Main	Railroad Ave.	WWTP Ent.	1750
13	Prop. 39" Gravity Main	WWTP Ent.	Headworks	500

Sewer Service Demand Criteria

Conveyance and pumping facilities must be sized to accommodate peak instantaneous demands, even though these rates may occur for only a brief portion of the day in terms of gallons per minute. Treatment capacity on the other hand is generally sized for maximum day demands in terms of gallons per day (GPD). Sewage demand for each 50 equivalent dwelling unit (EDU) increment will be assumed based on peaking factors appropriate for wastewater contribution. Factors range from four to ten times average flows depending on the number of customers considered. Average per capital demand as provided by the Wastewater Facilities Plan (WWFP) is 88 GPD with an infiltration estimate of 14 GPD per capita for a total of 102 GPD. Therefore, total average daily flow per EDU can be estimated as 224.4 GPD. For a 50 EDU increment, this would be 11,220 GPD of wastewater. Note that these values only include a small allowance for inflow and infiltration (I/I) which assumes a new and tight sewage collection system from Lone Ranch and for any new construction. Peak sewage flow rates are higher in other portions of Brookings due to inflow contributions and an older collection system.

We have used sewage flow values derived from recent studies. OTAK, used typical values associated with this type of study. Both are valid estimates but we prefer to present the analysis using the values we believe correspond closer with other Brookings planning studies. For example, EDUs in Brookings consist of fewer persons per EDU than OTAK assumed. In addition, peak factors vary depending on the number of services being considered. For

wastewater, the OTAK study used one universal peaking hour factor based on three times the average day flow pumped in a 14-hour period. This produces a net peak hour factor of 5.14. For EDUs from 0 to 100, Dyer uses a peaking factor of 8, for the next 101 to 1000 EDUs. We use an additive peaking factor of 6, and for greater than 1000 EDUs, we use an additive peak factor of 5. This reflects the attenuation or “averaging” of flow regarding larger numbers of customers. The difference in values used is shown in the following table.

Table 3
OTAK vs Dyer Study Wastewater Basic Parameters

Parameter	Flow Units	OTAK	Dyer
Ave./Capita	GPD	100.0	102.0
Capita/EDU	GPD	2.5	2.2
Ave./EDU	GPD	250.0	224.4
Peak Inst. 0-100 EDUs	GPD	1,285.7	1,795.2
Peak Inst. 0-100 EDUs	GPM	0.893	1.247
Peak Inst. 101-1000 EDUs	GPD	1,285.7	1346.4
Peak Inst. 101-1000 EDUs	GPM	0.893	0.935
Peak Inst. >1000 EDUs	GPD	1,285.7	897.6
Peak Inst. >1000 EDUs	GPM	0.893	0.779

OTAK peak wastewater values of EDUs per Lone Ranch service areas are based on 0.893 GPM/EDU. For this study, peak wastewater flow values will be based on 1.247 GPM per the first 100 EDUs, 0.935 GPM for the next additional EDUs numbering between 101 to 1000, and 0.779 for the next EDUs greater than 1000. In addition, based on the difference in assumptions between the OTAK study and this study, the number of EDUs projected differs. Listed below in Table 4 are the EDU values projected to occur in each neighborhood based on our study assumptions.

Table 4
OTAK vs Dyer Study Wastewater EDUs by Neighborhood

Neighborhood	OTAK ERU	Dyer EDU
B (Community College)	N/A	25
D, E, and F (Phase II DDP)	163	146
B (Commercial Sites)	N/A	12
A, C, G thru O (Future Phases)	837	751
Rainbow Rock Condominiums	77	69
Rainbow Rock Trailer Park	50	45
Total		1,048

We estimate that Lone Ranch Development could add approximately 1050 EDUs at full development. This is a flow rate of approximately 1,003 gallons per minute at peak flow. The predicted flow contribution Lone Ranch Development as EDUs are added is shown in Table 5.

Table 5
Lone Ranch Contribution in GPM by Developed EDUs

Lone R. EDUs	Peak GPM	Lone R. EDUs	Peak GPM	Lone R. EDUs	Peak GPM
50	62	450	452	850	826
100	125	500	499	900	873
150	171	550	545	950	919
200	218	600	592	1000	962
250	265	650	639	1050	1,003
300	312	700	686		
350	358	750	732		
400	405	800	779		

As previously noted, the recommended economical upper flow rate through an 8" force main is 862 GPM. This upper flow limit for an 8" force main from the Taylor Creek Pump Station will be reached with approximately 900 Lone Ranch EDUs. According to the projections of 1050 ultimate EDUs in Table 5, a maximum peak flow rate of 1,003 GPM is calculated. This would exceed the recommended 8" flow rate but is feasible, if not ideal. Flow at this rate will have a velocity of 6.41 feet per second and produce a dynamic head loss of 16.16 feet per 1000' of pipe (C = 140). This compares with head loss of 12.16 feet per 1,000' of pipe for a flow of 862 GPM with a velocity of 5.5 feet second. This requires a 33% increase in the power to overcome dynamic head loss. Power to overcome the static head portion of head loss is not affected.

Contribution of Existing Brookings Sewer Customers

To determine the required capacity of the existing and proposed new gravity sewer lines to serve the Lone Ranch Development, it is necessary to estimate flow contributed from existing and future Brookings customers along the flow path. We have assumed that peak instantaneous flow will be contributed based on area served. The criteria are four (4) EDUs per acre and the contribution rate for the range of 101-1000 contributing EDUs or 0.893 GPM per EDU. This value includes 14% I/I. The resulting value is approximately 3.6 gallons per acre. This value is increased by 10% for long term future flows to account for fill in development and increased I/I.

The capacity of gravity sewers is based on the invert elevations and resulting slopes as well as pipe size. Based on diameter and slope, the carry capacity may be determined. The existing sewer lines were surveyed westward from the wastewater treatment plant (WWTP) along Wharf to Macklyn Cove Drive to Mill Beach Road, west between Mill Beach Extension and Rowland, westward to the end of Rowland north to Crissey Circle and then north along Highway 101, ending near Parkview.

Capacity Required, Existing Capacity and Recommended Capacity Increase

The preceding considerations and factors are incorporated in Table 6 and provide information to determine which portions of the sewer system require improvement, the size of those improvements, and which existing portions are adequate. Explanation of the table is as follows.

Columns 1 and 2: Identification of the force main, gravity sewer, or pump station under considerations. The designations (T9-6 to T9-4 for example) refer to existing manholes per City's coding.

Columns 3 and 4: These columns indicate the line diameter where appropriate and the proposed upgraded or newly installed size if required for each line (force main or gravity sewer) segment.

Column 5: Line length under consideration for each segment as appropriate.

Column 6 and 7: Estimated current and future contribution of Brookings sewage flow not related to Lone Ranch added along the flow route from Lone Ranch to the wastewater treatment plant.

Column 8 and 9: Estimated flow through each line segment or pump station. Column 8 assumes a minimum flow of up to 470 GPM originating from Lone Ranch Development because this is the minimum pump size that can be installed at the Taylor Creek Pump Station for proper operation of 8" force mains. Column 9 represents the flow through each pipe and pump station segment in the future at full Lone Ranch Development and with increased projected City flows.

Column 10: This column provides current flow capacity information for each segments based on a survey conducted for this study. The flows are for the gravity lines without surcharge. In the case of pipe line elements 12, 23, and 26 it was found that these lines had negative slopes and flow cannot occur without some amount of surcharge. As noted, their flow capacity is simply listed as less than the capacity of an adjacent line segment of the same size. The negative slope segments occur in locations which clearly are undersized for even initial Lone Ranch Development and would need to be replaced with larger diameter and properly installed sewer lines. Capacities are shown as "green" if adequate and in "red" if inadequate. The 188 foot segment of 12" line (number 22) is barely adequate for initial contributions from the Lone Rock Development but will be inadequate for future flows. The short 31 foot segment of 24" line (number 26) has a slight negative slope but is anticipated to provide adequate capacity with minimum surcharge. "Orange" indicates a cautionary condition.

Column 11: This column shows flow capacity based on current segments where deemed adequate to provide service or the flow capacity of replacement increased size elements where needed to convey expected flows. Where pipe line sizes are increased, the flow capacity is based on the replacement pipe size at minimum slope. If it is determined during design that these replacement elements can be installed at a greater slope, the flow capacity will be greater than shown.

Column 12: Brief note providing explanation/clarification of each element.

TABLE 6

Calculation of Capacity Required, Existing Capacity and Recommended Capacity Increase

COL 1	COL 2	COL 3	COL 4	COL 5	Area Contribution		Flow Through		COL 9	COL 10	COL 11	COL 12
Seg. No.	Line Segment	Current Dia. In.	Proposed Dia. In.	Length Feet	Current Brookings GPM	Future Brookings GPM	Min. Total GPM	Max. Total GPM	Current Est. GPM	Proposed Future Est. GPM	Notes	
1	Exist. 10" Grav. Sew. LR	10	No Change	2,400	0	0	0	450	493	493	@ min. slope - actual unk.	
2	Exist. 12" Grav. Sew. LR	12	No Change	580	0	0	0	1,003	705	1,003	@ min. slope - actual unk.	
3	Taylor Creek Pump Sta.	NA	NA	NA	0	0	470	1,003	NA	1,003	Req'd before LR can be served	
4	Exist. 8" FM LR	8	No Change	3,960	0	0	470	1,003	862	1,003	Higher than optimum	
5	Prop. 8" FM City & LR	NA	8	5,360	0	30	470	1,033	NA	1,003	Higher than optimum	
6	R9-7 to S9-6	24	No Change	781	120	132	590	1,165	13,301	13,301	currently adequate for future	
7	S9-6 to S9-1	24	No Change	344	120	132	710	1,297	6,216	6,216	currently adequate for future	
8	S9-1 to T9-6	24	No Change	400	120	132	830	1,429	5,605	5,605	currently adequate for future	
9	T9-6 to T9-4	24	No Change	450	120	132	950	1,561	6,684	6,684	currently adequate for future	
10	T9-4 to T9-1	24	No Change	306	120	132	1,070	1,693	9,603	9,603	currently adequate for future	
11	T9-1 to U-9	24	No Change	125	120	132	1,190	1,825	11,242	11,242	currently adequate for future	
12	U9 to U10-8	10	21	375	4	20	1,194	1,845	<579	2,159	@ min. slope - future	
13	U10-8 to V10-12	10	21	875	4	20	1,197	1,865	579	2,159	@ min. slope - future	
14	V10-12 to V10-8	21	No Change	213	18	20	1,215	1,885	4,270	4,270	currently adequate for future	
15	V10-8 to V10-4	21	No Change	238	18	20	1,233	1,905	4,130	4,130	currently adequate for future	
16	V10-4 to V10-1	21	No Change	125	18	20	1,251	1,924	3,816	3,816	currently adequate for future	
17	V10-1 to W10-15	18	No Change	250	18	20	1,269	1,944	3,801	3,801	currently adequate for future	
18	W10-15 to W10-16	18	No Change	81	18	20	1,287	1,964	3,608	3,608	currently adequate for future	
19	W10-16 to W10-12	18	No Change	356	18	20	1,305	1,984	5,871	5,871	currently adequate for future	
20	W10-12 to W10-11	9	21	456	18	20	1,323	2,004	605	2,159	@ min. slope - future	
21	W10-11 to W10-10	9	21	219	18	20	1,341	2,023	602	2,159	@ min. slope - future	
22	W10-10 to W10-4	12	24	188	18	20	1,359	2,043	1,361	2,820	@ min. slope - future	
23	W10-4 to W10-3	12	24	156	18	20	1,377	2,063	<1361	2,820	@ min. slope - future	
24	W10-3 to W10-2	12	24	38	18	20	1,395	2,083	282	2,820	@ min. slope - future	
25	W10-2 to W11-4	12	24	875	18	20	1,413	2,103	893	2,820	@ min. slope - future	
26	W11-4 to W11-2	24	No Change	31	18	20	1,431	2,122	<4757	4,757	adequate - min. surcharge	
27	W11-2 to W11-1	24	No Change	138	46	51	1,477	2,173	4,757	4,757	currently adequate for future	
28	Mill Beach PS	NA	NA	NA	0	0	1,477	2,173	2,775	0	To be removed from service	
29	New Grav. MB to WWTP	NA	24	2,240	0	150	1,321	2,323	NA	2,820	To replace Mill Beach PS	
					1,007	1,320	1,321	2,323				

Capital Cost Estimates

Tables 7 through 11 provide cost estimates for the recommended improvements necessary to provide service to Lone Ranch Development. Table 12 provides a summary of those costs for all recommended projects. Total recommended project costs are approximately \$2,908,515.

TABLE 7

COST ESTIMATE - New Sewer Improvements Segment 3					
WWFP New Priority I Project 4					
New Taylor Creek Pump Station					
No.	Item	Quantity	Unit	Unit Price (\$)	Total Price (\$)
1	Temp. Facilities and Control	1	LS	\$13,100	\$ 13,100
2	Mobilization & Demob.	1	LS	\$22,000	\$ 22,000
3	12" Dia. Gravity Sewer CI C BKF	20	LF	\$180	\$ 3,600
4	8" Dia. Force Main CI C BKF	40	LF	\$165	\$ 6,600
5	New Pump Station	1	LS	\$400,000	\$ 400,000
6	Manholes 8'-12'	2	EA	\$4,500	\$ 9,000
7	AC Pavement C&R	20	LF	\$45	\$ 900
8	Foundation Rock	5	CY	\$50	\$ 250
9	Remove & Dispose Existing Pipe	50	LF	\$20	\$ 1,000
10	Traffic Control	8	HR	\$45	\$ 360
11	Service Connection Replace.	0	EA	\$2,000	\$ -
12	Misc. Costs	1	LS	\$15,000	\$ 15,000
				Construction	\$ 471,810
				Contingency	\$ 47,200
				Engineering	\$ 85,000
				Additional Consultant	\$ 16,700
				Admin. / Legal / Easements	\$ 7,100
				TOTAL PROJECT COST	\$ 627,810

TABLE 8

COST ESTIMATE - New Sewer Improvements Segment 5					
WWFP New Priority I Project 5					
Hwy 101, Ext. Ex. 8" FM @ Carpenterville Rd-Park View Dr.					
No.	Item	Quantity	Unit	Unit Price (\$)	Total Price (\$)
1	Temp. Facilities and Control	1	LS	\$9,400	\$ 9,400
2	Mobilization & Demob.	1	LS	\$16,000	\$ 16,000
3	8" Dia. Forcemain CI C BKF	5360	LF	\$55	\$ 294,800
4	8" Gate Valves	4	EA	\$2,000	\$ 8,000
5	AC Pavement C&R	5360	LF	\$45	\$ 241,200
6	Foundation Rock	70	CY	\$50	\$ 3,500
7	Traffic Control	96	HR	\$45	\$ 4,320
8	ARV	4	EA	\$2,000	\$ 8,000
9	Misc. Costs	1	LS	\$15,000	\$ 15,000
Construction					\$ 600,220
Contingency					\$ 34,000
Engineering					\$ 61,000
Additional Consultant					\$ 3,400
Admin. / Legal / Easements					\$ 5,000
TOTAL PROJECT COST					\$ 703,620

TABLE 9

COST ESTIMATE - New Sewer Improvements Segments 12 & 13					
WWFP Priority I Project 3					
Crissy Circle to Moore Street - Replace 10" line					
No.	Item	Quantity	Unit	Unit Price (\$)	Total Price (\$)
1	Temp. Facilities and Control	1	LS	\$9,400	\$ 9,400
2	Mobilization & Demob.	1	LS	\$16,000	\$ 16,000
3	24" Dia. Gravity Sewer CI C BKF	450	LF	\$180	\$ 81,000
4	24" Dia. Gravity Sewer CI B BKF	770	LF	\$165	\$ 127,050
4	Manholes 8'-12'	5	EA	\$4,500	\$ 22,500
5	AC Pavement C&R	450	LF	\$45	\$ 20,250
6	Foundation Rock	50	CY	\$50	\$ 2,500
7	Remove & Dispose Existing Pipe	1220	LF	\$20	\$ 24,400
8	Traffic Control	96	HR	\$45	\$ 4,320
9	Service Connection Replace.	8	EA	\$2,000	\$ 16,000
10	Misc. Costs	1	LS	\$15,000	\$ 15,000
Construction					\$ 338,420
Contingency					\$ 34,000
Engineering					\$ 61,000
Additional Consultant					\$ 3,400
Admin. / Legal / Easements					\$ 5,000
TOTAL PROJECT COST					\$ 441,820

TABLE 10

COST ESTIMATE - New Sewer Improvements Segments 20-25					
WWFP Priority I Project 2					
Rowland, West end of Rowland Lane to Mill Beach Road - Replace 9" & 12" line					
No.	Item	Quantity	Unit	Unit Price (\$)	Total Price (\$)
1	Temp. Facilities and Control	1	LS	\$15,300	\$ 15,300
2	Mobilization & Demob.	1	LS	\$30,000	\$ 30,000
3	24" Dia. Gravity Sewer CI C BKF	1255	LF	\$120	\$ 150,600
4	21" Dia. Gravity Sewer CL C BKF	675	LF	\$120	\$ 81,000
5	Manholes 8'-12'	10	EA	\$4,500	\$ 45,000
6	AC Pavement C&R	1930	LF	\$45	\$ 86,850
7	Foundation Rock	50	CY	\$50	\$ 2,500
8	Remove & Dispose Existing Pipe	1930	LF	\$20	\$ 38,600
9	Traffic Control	288	HR	\$45	\$ 12,960
10	Service Connection Replace.	36	EA	\$2,000	\$ 72,000
11	Misc. Costs	1	LS	\$20,000	\$ 20,000
				Construction	\$ 554,810
				Contingency	\$ 55,500
				Engineering	\$ 99,900
				Additional Consultant	\$ 5,500
				Admin. / Legal / Easements	\$ 8,300
				TOTAL PROJECT COST	\$ 724,010

TABLE 11

COST ESTIMATE - New Sewer Improvements Segment 29					
WWFP Priority I Project 6					
24" GRAVITY LINE TO WWTP for MILL BEACH PS ELIMINATION					
No.	Item	Quantity	Unit	Unit Price (\$)	Total Price (\$)
1	Temp. Controls, Mob., Demob.	1	LS	\$25,000	\$ 25,000
2	24" Gravity Sewer & Trench 6'	2240	LF	\$95	\$ 212,800
3	Install 4" FM through 8" aband. FM	840	LF	\$35	\$ 29,400
4	Asphalt Surf. Cut & Replace	150	LF	\$35	\$ 5,250
5	Manholes	6	LF	\$5,000	\$ 30,000
6	Clear and Grub	1	LS	\$2,500	\$ 2,500
7	Demolition of Existing Pump Station	1	LS	\$15,000	\$ 15,000
8	Connection to existing MH	2	EA	\$800	\$ 1,600
9	Testing, clean up	1	LS	\$1,200	\$ 1,200
				Construction	\$ 297,750
				Contingency	\$ 29,775
				Engineering	\$ 62,230
				Additional Consultant (Geotech & Elec.)	\$ 17,000
				Admin. / Legal / Easements/ Permits	\$ 4,500
				TOTAL PROJECT COST	\$ 411,255

TABLE 12

COST ESTIMATE - Summary All Required Lone Ranch Projects	
All Projects Construction	\$ 2,263,010
All Projects Contingency	\$ 200,475
All Projects Engineering	\$ 369,130
All Projects Additional Consultant	\$ 46,000
All Projects Admin. / Legal / Easements/ Permits	\$ 29,900
ALL PROJECTS TOTAL COST	\$ 2,908,515

Operation and Maintenance Cost Estimates

Slightly lower Operation and Maintenance costs are anticipated for those segments of the gravity sewer system which are replaced. No attempt to estimate these cost differences have been made. However Tables 13 and 14 provide information regarding estimated additional operation and maintenance and periodic parts/repair expenses anticipated for the new Taylor Creek Pump Station and its new additional 8" force main. Offsetting these additional costs are the savings resulting from elimination of the Mill Beach Pump Station and its force main after replacement with a new 24" gravity sewer line. The costs saving for the Mill Beach Pump Station replacement are shown in Table 15. Table 16 provides a summary of the annual O&M costs, the periodic parts and repair costs over a period of 20 years and the present worth values of these costs, both additive and deductive.

It is estimated that construction of all improvements recommended will result in a net routine annual Operation and Maintenance savings of approximately \$11,400 per year. The present worth savings value of the annual O&M costs as well as periodic parts and repair costs is calculated as approximately \$290,600 for a 20 year period.

TABLE 13
TAYLOR CREEK PUMP STATION
ANNUAL O&M & PRESENT WORTH OF O&M

Item	Description	Unit	Qty	Unit Cost	Annual Cost	PW
1	Training Labor - Annual	HRS	8	\$ 35	\$ 280	
2	Testing Labor - Annual	HRS	4	\$ 35	\$ 140	
4	Operational Labor - Annual	HRS	78	\$ 35	\$ 2,730	
5	Maintenance/Repair Labor - Annual	HRS	32	\$ 35	\$ 1,120	
7	Elec. Power - Annual	KWH	43,800	\$ 0.09	\$ 3,942	
OPERATIONS AND MAINTENANCE COST TOTAL					\$ 8,212	\$ 139,609
PERIODIC EXPENSES/PARTS PRESENT WORTH						
Item	Description	Unit	Qty	Unit Cost	Periodic Cost	PW
1	Repair Parts @ 5 Yrs	LS	1	\$ 3,000	\$ 3,000	\$2,771
2	Repair Parts @ 10 Yrs	LS	1	\$ 5,000	\$ 5,000	\$4,266
3	Repair Parts @ 15 Yrs	LS	1	\$ 75,000	\$ 75,000	\$59,109
	Salvage Values @ 20 Years					
4	None	LS	(1)	\$ -	\$ -	\$0
PERIODIC EXPENSES/PARTS TOTAL						\$66,146
TOTAL PW						\$ 205,755

TABLE 14
HWY 101, EXT. EX. 8"FM at CARPENTERVILLE RD TO PARK VIEW DR.
ANNUAL O&M & PRESENT WORTH OF O&M

Item	Description	Unit	Qty	Unit Cost	Annual Cost	PW
1	Training Labor - Annual	HRS	0	\$ 35	\$ -	
2	Testing Labor - Annual	HRS	2	\$ 35	\$ 70	
4	Operational Labor - Annual	HRS		\$ 35	\$ -	
5	Maintenance/Repair Labor - Annual	HRS	6	\$ 35	\$ 210	
7	Elec. Power - Annual	KWH		\$ 0.09	\$ -	
OPERATIONS AND MAINTENANCE COST TOTAL					\$ 280	\$ 4,760
PERIODIC EXPENSES/PARTS PRESENT WORTH						
Item	Description	Unit	Qty	Unit Cost	Periodic Cost	PW
1	Repair Parts @ 5 Yrs	LS	1		\$ -	\$0
2	Repair Parts @ 10 Yrs	LS	1	\$ 500	\$ 500	\$427
3	Repair Parts @ 15 Yrs	LS	1		\$ -	\$0
	Salvage Values @ 20 Years					
4	None	LS	(1)	\$ -	\$ -	\$0
PERIODIC EXPENSES/PARTS TOTAL						\$427
TOTAL PW						\$ 5,187

TABLE 15
ELIMINATION OF MILL BEACH PUMP STATION
ANNUAL O&M & PRESENT WORTH OF O&M (Savings)

Item	Description	Unit	Qty	Unit Cost	Annual Cost	PW
1	Training Labor - Annual	HRS	6	\$ 35	\$ 210	
2	Testing Labor - Annual	HRS	12	\$ 35	\$ 420	
3	Vehicle Operation Miles - Annual	MILE	500	\$ 1.50	\$ 750.00	
4	Operational Labor - Annual	HRS	160	\$ 35	\$ 5,600	
5	Maintenance/Repair Labor - Annual	HRS	140	\$ 35	\$ 4,900	
6	Parts - Annual	LS	1	\$ 3,500	\$ 3,500	
7	Elec. Power - Annual	KWH	50,000	\$ 0.09	\$ 4,500	
OPERATIONS AND MAINTENANCE COST TOTAL					\$ (19,880)	\$ (385,346)
PERIODIC EXPENSES/PARTS PRESENT WORTH (savings)						
Item	Description	Unit	Qty	Unit Cost	Periodic Cost	PW
1	Major Pump Replacement @ 15 yrs.	LS	1	\$ 100,000	\$ 100,000	\$ 59,689
2	Pump Rehabilitation @ 10 yrs	LS	1	\$ 50,000	\$ 50,000	\$ 35,446
3	Control/Electrical @ 5 yrs	LS	1	\$ 25,000	\$ 25,000	\$ 21,049
Salvage Values @ 20 Years						
4	None	LS	1	\$ -	\$ -	\$ -
PERIODIC EXPENSES/PARTS TOTAL						\$ (116,184)
TOTAL PW						\$ (501,531)

TABLE 16
TOTAL ANNUAL O&M & PRESENT WORTH OF O&M

Description	Annual Cost	PW
OPERATIONS AND MAINTENANCE COST TOTAL	\$ (11,388)	\$ (240,978)
PERIODIC EXPENSES/PARTS TOTAL PW		\$ (49,611)
TOTAL	\$ (11,388)	\$ (290,589)

Conclusion

Existing water service mains will provide adequate service to the Lone Ranch area initial development. Lone Ranch will need to construct a booster pump station and water storage tank in order to service higher elevations away from Highway 101 and provide them with fire protection.

Immediately apparent from the results shown in Table 6 is that the initial minimum sewage improvements necessary to provide any service to Lone Ranch will accommodate between 450 to 500 Lone Ranch EDUs. Furthermore, to provide initial sewage service to Lone Ranch, the Taylor Creek Pump Station must be constructed with a minimum capacity of 470 GPM, the 8" diameter force main must be completed to discharge into the existing 24" diameter gravity sewer near Parkview, the 10" sewer line between Creasy Circle and north of Moore St. and the 9" and 12" sewer between Rowland and the Mill Beach Pump Station must be replaced with larger diameter gravity lines. The 10" and 9" lines replaced with at least 21" gravity sewer and the 12" lines with 24" sewer.

The minimum sizes of replacement sewer which will accommodate projected total flows are in several cases, less than previously anticipated. Significantly, our study indicates that the gravity sewer route and pipe sizes previously proposed to run from Mill Beach Pump Station to the WWTP can be achieved with a smaller 24" diameter gravity line (compared to previous size estimates) following a different, shorter, shallower, and more direct path. The construction of this sewer line will allow Mill Beach Pump Station to be removed from service, saving the City considerable expense.

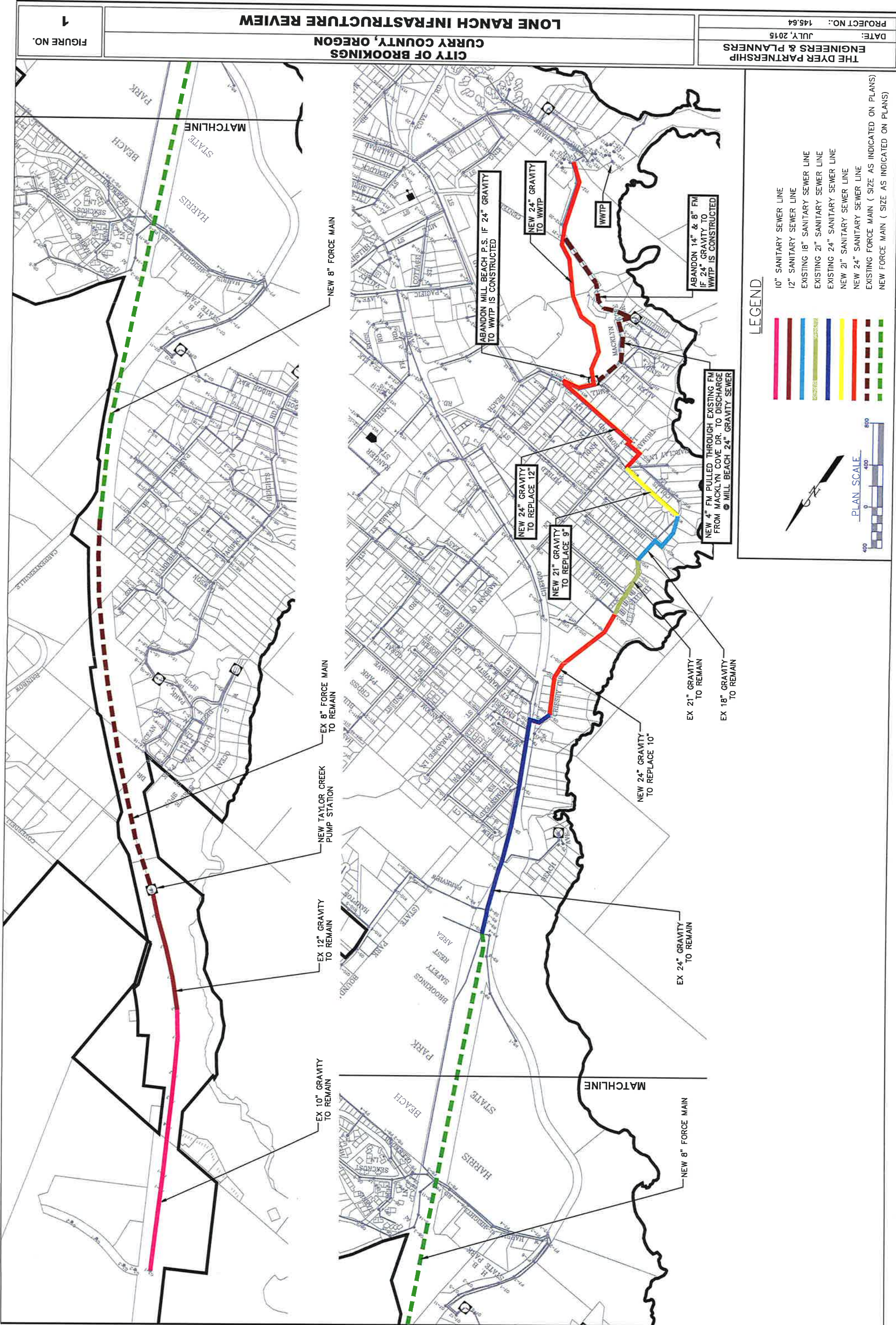
Note that Macklyn Cove lift station currently pumps into the 8" or 14" force main from Mill Beach Pump Station to the wastewater treatment plant (WWTP). If the recommended 24" gravity line is installed from Mill Beach to the WWTP allowing abandonment of the existing 8" and 14" force main from Mill Beach to the WWTP, the existing 4" force main from Macklyn Cove would need an extension pulled through a portion of the abandoned force main from Macklyn Cove to Mill Beach where it would discharge into the new gravity sewer. This would be significantly less expensive than installing a new force main section by conventional trenching and would generally avoid street trenching and repair. Using the exiting 8" force main as the force main itself would not be suitable because, as discussed previously, the minimum flow velocity could not be achieved. This work is included in the Table 11 cost estimate for the new 24" gravity line from Mill Beach to the WWTP.

The Mill Beach Pump Station has a design capacity of 2,775 GPM which is greater than the estimated required capacity. Therefore, it is not necessary to replace this station immediately to provide Lone Ranch with sewage service. However, the replacement of the station with a 24" gravity sewer to the wastewater water treatment plant is highly recommended at the earliest opportunity to save significant energy and future repair/maintenance costs.

The recommended new and replacement sewer system elements as well as those elements recommended to remain are shown in Figure 1 at the end of this report. It is recommended that any sewer line segments replaced be done so with sewer sized to accommodate all anticipated future growth as shown in this report.

In the case of the new Taylor Creek Pump Station, it is recommended that the pump station be sized to accommodate maximum future flows of 1003 GPM but that the pumps are initially sized for the minimum required flow rate of 470 GPM with room in the station for future expansion of larger pumps sized for maximum future flow rates when required by development.

Furthermore, it is recommended that as design is initiated for each undersized line segment to be replaced, that consideration be given to selection of a different route where beneficial and practical, particularly in the Moore, Hub, and Rowland area so that sewer lines are more accessible for City maintenance.



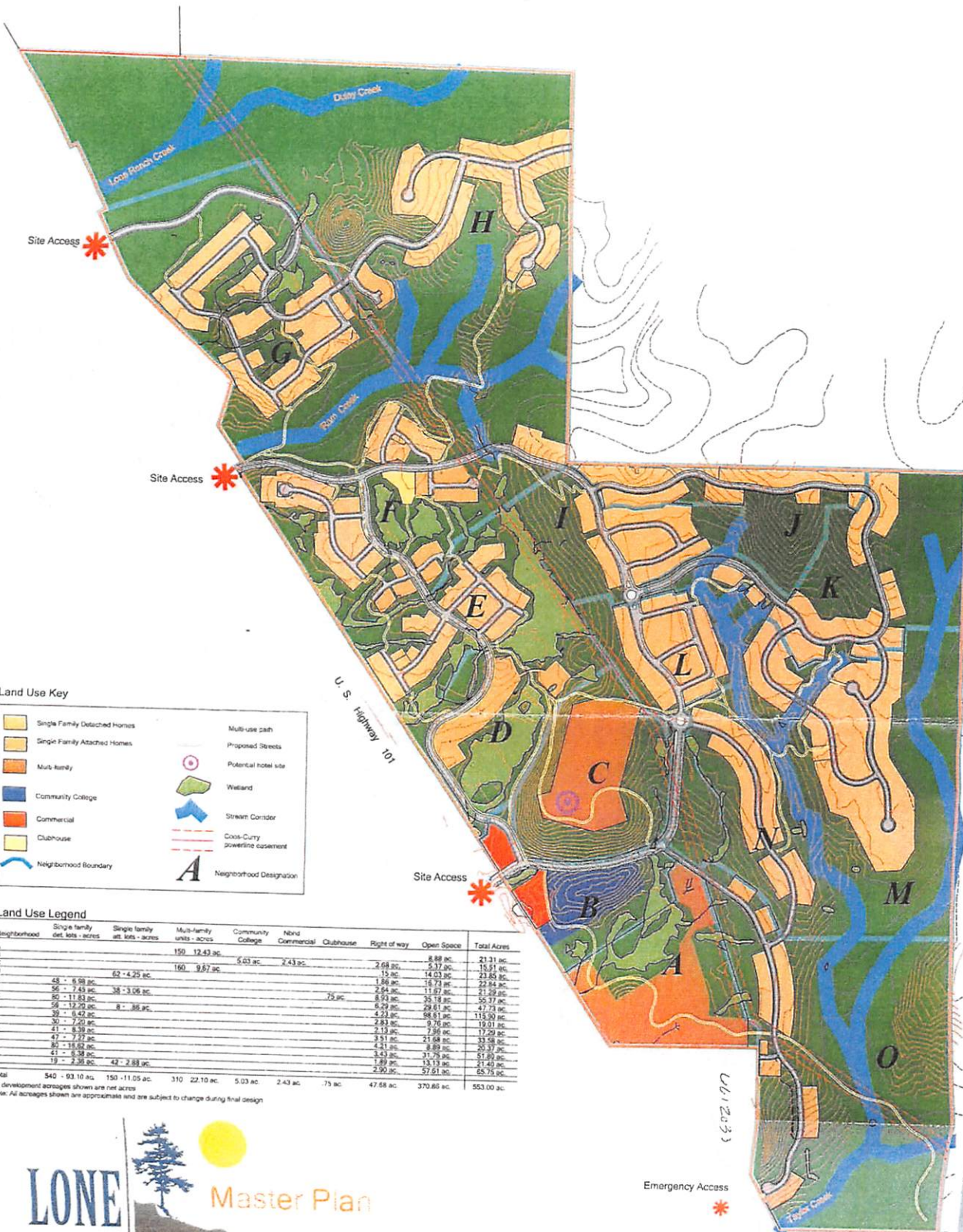
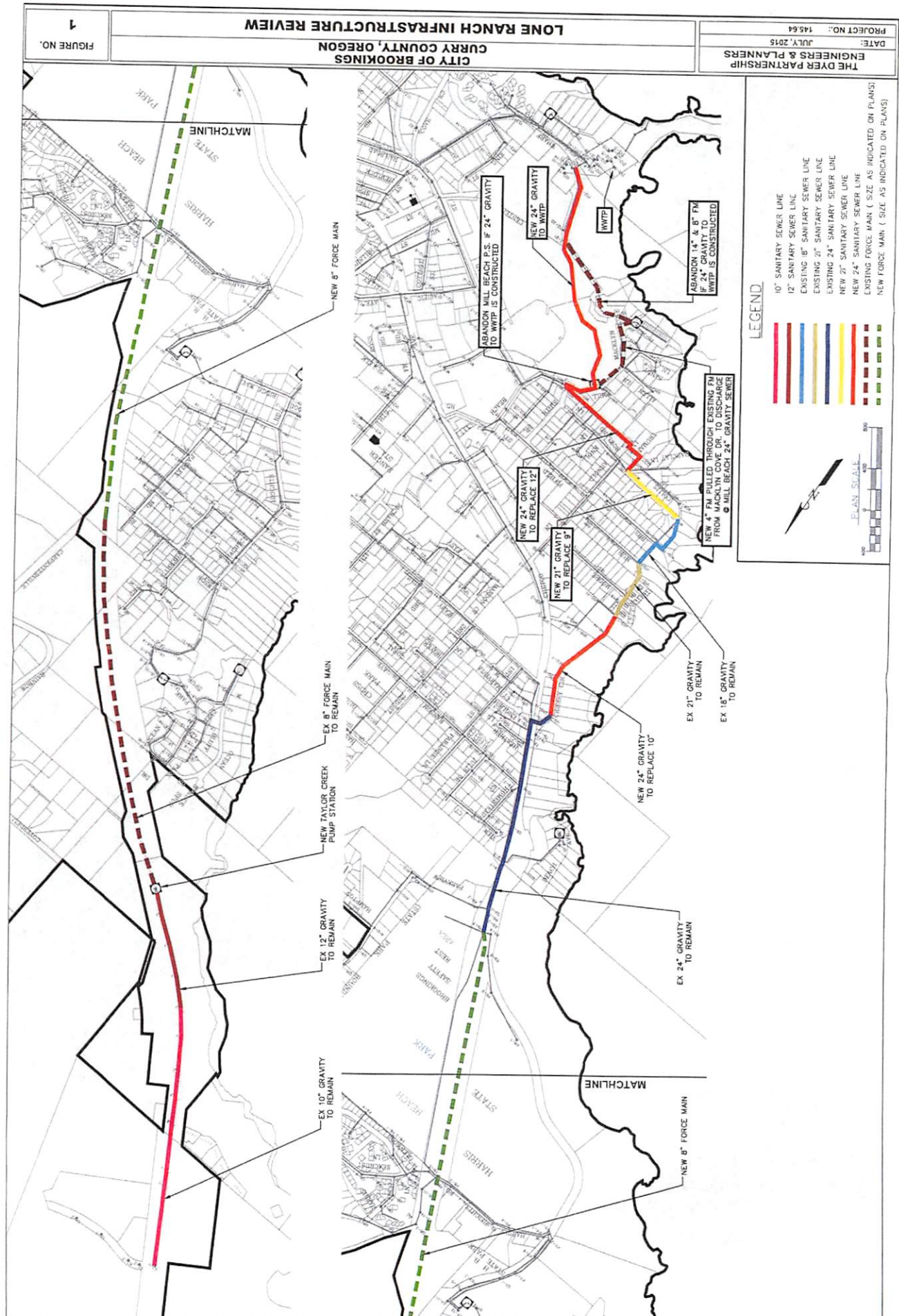


Exhibit 1



CITY OF BROOKINGS

Council WORKSHOP Report

Meeting Date: May 7, 2018

Originating Dept: City Manager




Signature (submitted by)

City Manager Approval

Subject: Lone Ranch Infrastructure Financing Agreement Amendment

Financial Impact:

Use of \$628,000 in System Development Charge revenue for construction of a sewer lift station to serve lands north of Longacre Road and utilizing some \$262,000 in grant funds to pay for Lone Ranch allocation of sewer system improvement costs south of Moore Street.

Reviewed by Finance & Human Resources Director: 

Background/Discussion:

The City entered into an infrastructure financing agreement with U.S. Borax Corporation in 2009. This agreement established a method whereby Borax would pay for completing the extension of water and sewer facilities needed to support the Lone Ranch development and receive reimbursement for a portion of the cost from the City as System Development Charges (SDCs) were collected.

More recently, City management has met with Borax representatives to discuss plans for bringing the property to market and getting housing construction underway. Borax has completed the first phase of a timber harvest, has updated infrastructure cost estimates, and has made some decisions on making segments of the land available to housing developers through sales reimbursement agreements.

The major hurdle for implementing the project is the completion of the sewer line along Highway 101 to serve the Lone Ranch development, including a large lift station and some 5,300 lineal feet of sewer main. These sewer improvements are also needed to serve the College and several other private properties along the way. The City has received inquiries concerning additional annexations along Highway 101 between Harris Beach State Park and the College, which could also result in the development of new housing units.

The City is preparing a loan and grant application to the U.S. Department of Agriculture Rural Development (USDA-RD) program to fund sewer system improvement system wide, including improvements south of Moore Street that would ultimately be needed to serve the build-out of the Lone Ranch project. Under the current agreement Borax would be responsible for 23 per cent of the cost of these improvements, which includes a sewer main realignment through the South Coast Lumber Company mill site in order to eliminate the Mill Beach lift station. The City is preparing an application in the \$8-10.0 million range and anticipates receiving up to \$2.0

million in grant funding. The estimated cost of the south of Moore Street improvements is \$1.135 million.

While the City has spent most of the proceeds from SDCs for Wastewater Treatment Plant debt service over the past 15 years, the basic concept behind SDCs is to fund system expansion to accommodate new development. As of this writing, the City has accumulated \$680,000 in wastewater SDCs that are not currently programmed for projects.

The estimated cost of the new pump station near Taylor Creek/Longacre Road is \$628,000, and the estimated cost of the 5,300 lineal feet of eight-inch force main needed to complete the connection between Lone Ranch and the City system is \$703,000. Borax estimates that the sewer improvement costs, coupled with the off-site improvements needed within the development (i.e. water, sewer, streets, drainage) would result in a burden of about \$40,000 per housing unit if the initial development phase included about 60 units. This is seen as a major obstacle to attracting a housing developer.

Staff is proposing to amend the existing infrastructure financing agreement to provide as follows:

1. Borax would not be required to pay for 23 per cent of the sewer system improvements south of Moore Street (approximately \$262,000) as provided in the current agreement if the City obtains at least \$1.5 million in grant funding from USDA-RD.
2. The City would pay for the cost of the Taylor Creek lift station using SDC revenue on the conditions that:
 - a. Borax pays for the construction of the 5,300-lineal foot eight-inch sewer gravity line from the lift station to the current sewer line connecting to the City sewer system.AND ONE OF THE FOLLOWING:
 - b. Borax sells at least one of the housing neighborhoods to a private housing developer acceptable to the City, with that housing developer agreeing to begin housing construction within 12 months, complete a minimum of 15 units within 18 months and a minimum of 40 units within 36 months. Also, at least 20 per cent of the 50 housing units must be available to low and moderate income households.OR:
 - c. Borax donates the property located in one of its neighborhoods to a non-profit housing development agency acceptable to the City. In this case, the housing agency must provide a plan acceptable to the City for financing and constructing a minimum of 40 below market housing units within 18 months.

The goal of the above proposed changes in the agreement are to provide an incentive to housing developers to begin development of housing, including affordable housing, within the Lone Ranch project; make sewer service available to other property owners along north Highway 101; and provide sewer service to the community college.

Under the current agreement, the City would reimburse Borax for 83 per cent of the cost of the Taylor Street lift station from the proceeds of System Development Charges (SDC) collected from new users of the sewer line north of Carpenterville Road. The current SDC is \$11,101.92 per unit. The SDC schedule is based upon the Wastewater Facilities Master Plan, which includes all of the improvements needed to serve the Lone Ranch development. Under the terms of the

proposed agreement, Lone Ranch would receive no share of the SDCs for this segment of the improvements. The City would recover its \$703,000 investment in the lift station through the collection of SDC's on 63 new housing units.

Terms of the amended agreement are still under negotiation, and staff is requesting review and comment by the City Council at this time.

Attachment(s):

- a. Current Lone Ranch Infrastructure Agreement.
- b. Proposed additions (draft)
- c. Lone Ranch Infrastructure Review Report
- d. Lone Ranch development plan.

First off, while reviewing all Curry Coastal Pilot articles from 2004 until present discussing the Lone Ranch Development, I discovered that US Borax **assured** the City that no water from the Chetco River would be needed as there were sufficient water resources available on their property to support the development. So, somewhere in the past around 2004???, decisions were made by US Borax and the City of Brookings to allow the use of Chetco River water with little or possibly no action taken by either the City or US Borax to address the effects of this additional water usage on the Chetco River's water flow, especially during the summer and additionally by last year's significant damage to the Chetco Watershed by the Chetco Bar Fire.

Additionally, in the attached Dyer Partnership Report dated August 2015, it states:

Water ←

During this study, it becomes apparent that the current water service provided to Lone Ranch Development is and will continue to be adequate for initial phases of development. The 16" and 12" water lines in place will provide adequate flow rates at a residual pressure of approximately 50 psi at Highway 101. Storage and service to higher elevations within the development will be addressed by and the responsibility of Lone Ranch. No additional water infrastructure work by the City is required to provide water service to Lone Ranch.

I would like to ask City Staff before the June 11 City Council Meeting to present documents to the City Council in the Meeting Packet which demonstrate that the City and/or US Borax have filed all of the necessary legal documents to satisfy Oregon Statewide Goals 5, 6 and 16 in light of the previous decision to switch from Borax's use of their own water sources to proposed use of the City water from the Chetco River for serving the Lone Ranch Development. Please also include additional thoughts on the impact of the Chetco Bar Fire with respect to supplying water to Lone Ranch in the CAR.

Secondly, although it seems fairly obvious from both the Dyer report and the Council Agenda Report that sewer capacity increase would now be necessary (including the Taylor Creek pump station and an entire mile of new sewer main), this much change to the wastewater system will affect the entire City system, requiring improvements elsewhere as noted in the Dyer report. These additional costs will be passed on to further add to the tax burden of Brookings' residents for a project built by a corporation with far greater financial capacity than the community.

Finally, why is the City discussing the use of \$600,000⁺ in wastewater SDC's (which could instead be used to pay off additional Wastewater Treatment Plant debt) to attract development to Borax? The idea seems to be that the cost of infrastructure per new home is so high (\$40,000 in a 60 unit development) that no one will commit. That, in itself, should be a signal NOT to apply for grants to make development possible in an expensive and distant area at the public's expense. In an attempt to make this proposed Agreement sound reasonable, the city is trying to make the case that this project is an affordable housing project, which - I feel - it is NOT.

In brief, I do not feel that the taxpaying residents of Brookings should be forced to subsidize development by a major Corporation. Dozens of individual City Councilors and 5 different Mayors (Hagbom, Sherman, Anderson, Hedenskog and Pieper) over the past 14 years or so have bent over backwards to accommodate unusually long extensions of the Borax Master Plan of Development. Infrastructure costs money and these costs should, in my opinion, be borne by Borax and not by City residents who may see increased costs in their water bills should this Lone Ranch Infrastructure Financing Agreement be approved by the City Council at the June 11 Meeting.

Dennis Triglia
6/14/18 Council
Workshop

1 BEFORE THE LAND USE BOARD OF APPEALS

2 OF THE STATE OF OREGON

3 OREGON SHORES CONSERVATION COALITION

4 and CATHERINE WILEY,

5 *Petitioners,*

6 vs.

7 CITY OF BROOKINGS,

8 *Respondent,*

9 and

10 U.S. BORAX, INC.,

11 *Intervenor-Respondent.*

12 LUBA No. 2008-172

13 FINAL OPINION

14 AND ORDER

15 Appeal from City of Brookings.

16 Courtney Johnson, Portland, filed the petition for review and argued on behalf of
17 petitioners. With her on the brief were Christopher Winter, Ralph O. Bloemers and CRAG
18 Law Center.

19 John B. Trew, Coquille, filed a response brief and represented respondent. With him
20 on the brief was Trew & Cyphers LLP.

21 Timothy V. Ramis, Portland, filed a response brief and argued on behalf of
22 intervenor-respondent. With him on the brief were Damien R. Hall and Jordan Schrader
23 Ramis PC.

24 RYAN, Board Member; BASSHAM, Board Chair; HOLSTUN, Board Member,
25 participated in the decision.

26 AFFIRMED

27 02/24/2009

28 You are entitled to judicial review of this Order. Judicial review is governed by the
29 provisions of ORS 197.850.

NATURE OF THE DECISION

Petitioners appeal a decision by the city approving an extension of time to implement a previously approved Master Plan of Development.

MOTION TO INTERVENE

U.S. Borax, Inc., the applicant below, moves to intervene on the side of the respondent in the appeal. There is no opposition to the motion and it is granted.

FACTS

In August, 2005, the city approved intervenor's application for a Master Plan of Development (MPoD) on intervenor's 553-acre property located on the east side of Highway 101, across from Samuel Boardman State Park. The development, known as "Lone Ranch," consists of single family housing, attached housing, a commercial area, and a college campus site. Under Brookings Land Development Code (BLDC) 17.70.120, intervenor was required to submit a Detailed Development Plan or secure first phase development approval within four years of final approval, unless the city granted an extension to those time frames.

In April, 2008, intervenor applied for an extension of the Lone Ranch MPoD. The planning commission denied the requested extension, and intervenor appealed the decision to the city council. The city council approved the extension. This appeal followed.

FIRST ASSIGNMENT OF ERROR

In the first assignment of error, petitioners argue that the city committed a procedural error that prejudiced petitioners' substantial rights. ORS 197.835(9). At the close of the July 16, 2008 city council hearing on the requested extension, the city council left the record open for additional submissions, described in the minutes as follows:

"Mayor Anderson closed the public comment portion of the public hearing * * * and presented the following timeline and process to be used for submitting testimony * * * regarding this matter:

1 “1. From Thursday, July 17, 2008 to no later than 4:30 p.m., Wednesday, July
2 23, 2008, anyone who has participated in this hearing proceeding is allowed to
3 submit additional written testimony and/or evidence. No additional testimony
4 will be accepted after this time.

5 “2. From Thursday, July 24, 2008, to no later than 4:30 p.m., Wednesday, July
6 30, 2008 anyone who has participated in this hearing may provide written
7 rebuttal only to testimony and/or evidence submitted during the prior seven
8 days. No new evidence will be accepted after this time.

9 “3. From Thursday, July 31, 2008, to no later than 4:30 p.m., Wednesday,
10 August 6, 2008 the applicant will be allowed to submit written argument to
11 the testimony and/or evidence submitted during the first two seven day
12 periods. No new evidence may be submitted during this period.” Record 140
13 (emphases in original).

14 Petitioners argue that the city erred in accepting a letter on July 31, 2008 from a Department
15 of Land Conservation and Development (DLCD) representative. Record 65. Petitioners
16 argue that the city erred in accepting that letter because the letter was accepted after the
17 deadline set out for rebuttal of testimony or evidence submitted during the previous seven
18 day open record period. Petitioners also argue the DLCD representative had not previously
19 participated in the hearing and the city left the record open only to persons who had
20 previously participated in the hearing. Petitioners argue that the city’s acceptance of the
21 letter after July 30, 2008 prejudiced their substantial rights because the city relied on the
22 DLCD representative’s opinion set forth in the letter in its findings, and petitioners did not
23 have the opportunity to respond to the letter.

24 Intervenor responds that an unsigned but identical version of the letter was accepted
25 into the record on July 30, 2008, within the rebuttal period time frame set out by the city.
26 Record 63-64. We agree with intervenor that the letter was properly accepted by the city
27 during the second open record period described above, and that the city did not err in
28 accepting the letter during that time frame. The fact that the city accepted a signed but
29 otherwise identical version of the same letter one day later does not change the fact that the
30 letter was properly submitted into the record within the required time frame.

1 The letter was submitted by the planning director as an attachment to a letter to the
2 city council and planning commission from the planning director. We do not see that it was
3 error for the city to accept the letter even though the letter was from a person who had not
4 previously participated in the hearing, because the letter was submitted by the planning
5 director as an attachment to a report to the city council and planning commission, and the
6 planning director had previously participated in the hearing.¹ We do not understand
7 petitioners to allege that the letter contained new evidence that petitioners were entitled to
8 rebut. *See Rice v. City of Monmouth*, 53 Or LUBA 55, 60 (2006), *aff'd* 211 Or App 250,
9 154 P3d 786 (2007) (there is no unlimited right to rebuttal). Neither do we understand
10 petitioners to argue that the city's acceptance of the letter violated ORS 197.763, or any other
11 applicable statute, code, or ordinance provision. *See Wetherell v. Douglas County*, __ Or
12 LUBA __ (LUBA No. 2007-133, February 12, 2008, slip op 5-9) (discussing relationship
13 between ORS 197.763(6)(a), (b) and (c)). Accordingly, petitioners' first assignment of error
14 provides no basis for reversal or remand of the decision.

15 The first assignment of error is denied.

16 **SECOND ASSIGNMENT OF ERROR**

17 BLDC 17.70.120 provides:

18 “If the applicant has not submitted a [Detailed Development Plan (DDP)] for
19 the planned development or the first phase within four years from the date of
20 approval, the MPoD shall expire. *Where the planning commission finds that*
21 *conditions have not changed, the commission may, at its discretion, extend the*
22 *period for two additional years* per extension, subject to applicable hearing
23 and notice requirements. If after the approval of the first DDP, construction
24 has not been started or at any time construction has lapsed for a period of
25 three years, the MPoD will expire.” (Emphasis added.)

26 The city interpreted the phrase “conditions have not changed” to mean:

¹ Because we deny the first assignment of error, we need not address whether the city could properly limit persons who were entitled to submit testimony during the open record period to those who had previously participated in the hearing.

1 “This is the criterion to be used in deciding to approve or deny the requested
2 extension of time. There is a range of testimony in the record regarding the
3 interpretation of what constitutes a ‘change in conditions.’ Some have
4 suggested that it refers only to changes in the physical conditions of the
5 subject property (such as landslides or loss of legal access.) Others argue that
6 virtually any change requires denial of the application. After considering the
7 testimony and comments as well as the staff reports, the City Council
8 interprets the phrase ‘conditions have not changed’ to mean that if there are
9 facts that have changed that were relied upon in the findings supporting the
10 initial approval, and those changed facts would lead to a different conclusion,
11 then there has been a change in conditions.” Record 8.

12 We understand the city to have found that under BLDC 17.70.120, conditions have
13 “changed” if the changed condition is such that the city would have denied the MPoD, rather
14 than approved the MPoD, if the changed condition had been present when the MPoD was
15 originally approved. To overturn the city council’s code interpretation, petitioners must
16 demonstrate that the city’s interpretation of the phrase “conditions have not changed” is
17 inconsistent with the express language, purpose or policy of the provision. ORS 197.829(1).
18 LUBA reviews that interpretation under a somewhat deferential standard of review. *Clark v.*
19 *Jackson County*, 313 Or 508, 836 P2d 710 (1992); *Church v. Grant County*, 187 Or App 518,
20 69 P3d 759 (2003).

21 Petitioners argue first that the city council’s interpretation of the word “conditions” in
22 BLDC 17.70.120 as referring to “facts that have changed that were relied upon in the
23 findings supporting the initial approval” is inconsistent with the express language of the
24 provision, which uses only the word “conditions” with no limitation such as the one adopted
25 by the city. Petitioners also argue that the city’s interpretation contradicts the purpose and
26 policy of the provision, which, according to petitioners is to set a time frame for action on a
27 MPoD except in unusual circumstances.

28 Intervenor responds that the city’s interpretation of the relevant phrase gives meaning
29 to the entire provision found at BLDC 17.70.120 and is consistent with the purpose of the
30 provision, to allow an extension of an approval without the necessity of expending resources

1 and time subjecting the already approved development to the same process a second time,
2 when the circumstances that led to the initial approval remain the same.

3 BLDC 17.70.120 allows an extension of an initial MPoD approval in certain
4 circumstances. Given the complexity of planning and developing a master planned
5 development such as Lone Ranch and the resources required to be expended by the city and
6 the applicant in order to secure approval of such a development, it makes sense that the city
7 would allow an approval of such a development to be extended for an additional two years if
8 no facts on which the city relied in granting the initial approval have changed. Petitioners
9 have not demonstrated that the city's interpretation of the phrase "conditions have not
10 changed" is inconsistent with the express language, purpose or policy of BLDC 17.70.120.
11 ORS 197.829(1).

12 The second assignment of error is denied.

13 **THIRD ASSIGNMENT OF ERROR**

14 In their third assignment of error, and in sub-assignments of error, petitioners argue
15 that the city's findings in support of its determination that conditions have not changed are
16 inadequate and are not supported by substantial evidence in the record.

17 **A. Lone Ranch Water Supply**

18 One of the review criteria for the initial approval of the MPoD required the city to
19 find that adequate facilities and infrastructure, including water, are available to serve the
20 proposed development, and that existing water supplies for adjacent properties will not be
21 negatively affected at each phase of development.² In their second subassignment of error,

² BLDC 17.70.070 provides in relevant part:

"The planning commission shall approve an application for MPoD upon finding that the following approval criteria are met:

" * * * * *

1 petitioners argue that the city's findings in support of the extension are inadequate because as
2 originally approved development was to be served by on-site wells and the development now
3 will be served by city water. Petitioners argue that the evidence in the record shows that the
4 city's water supply is inadequate to serve the development, and that a new law enacted in
5 2008 limits the ability of the city to secure new water rights to meet increased demand.
6 Thus, petitioners argue, conditions have changed since the initial approval.

7 The city found that the approved MPoD is required to be served by city water, not on-
8 site wells. Record 8-9. The city also considered and rejected petitioners' argument that a
9 new law that limits the ability of the city to secure new water rights to meet the demand for
10 water necessarily means that conditions have changed, under the city's interpretation of
11 BLDC 17.70.120. The city concluded that the evidence in the record supports the city's
12 determination that the city has sufficient water to supply the development. Petitioners do not
13 explain why the city's findings are inadequate regarding its conclusion that conditions have
14 not changed with respect to the water supply. In addition, there is substantial evidence in the
15 record to support the city's conclusion that it can supply water to the development.
16 Accordingly, this subassignment of error is denied.

17 **B. Adjacent Water Supply**

18 In initially approving the MPoD, the city imposed a condition of approval (condition
19 23) that requires that prior to construction of any phase of the MPoD, the applicant must
20 show that an adjacent water supply, the Rainbow Rock Condominiums water source, will not
21 be negatively affected.³ In their first subassignment of error, petitioners argue that evidence

"C. The proposed MPoD will demonstrate that adequate utilities and infrastructure are available or can reasonably be made available at each phase. The proposed MPoD will further demonstrate that existing utility services and water supplies for adjacent properties will not be negatively affected at each phase[.]"

³ Condition 23 states:

1 in the record shows that the water supply of the Rainbow Rock Condominiums has been
2 negatively affected by pre-development activities on the property. Specifically, petitioners
3 argue that an access road constructed for geotechnical testing in 2004 deposited silt in the
4 Rainbow Rock inlet pond and that led to increased turbidity of the water supply. Record
5 663-64.

6 The city found that condition 23 remains enforceable against the applicant and that
7 the condition continues to be sufficient to ensure protection of the Rainbow Rock water
8 supply. The city concluded that, under their interpretation of BLDC 17.70.120, there has
9 been no change in the facts that the city relied on in the initial approval to find that BLDC
10 17.70.070(C) was met. Record 8-9. The record indicates that the construction activities that
11 affected the Rainbow Rock water supply occurred prior to the MPoD being approved in
12 August, 2005. Record 663-64. In fact, it seems likely those activities and their effects could
13 have contributed to the city's decision to impose condition 23. Petitioners do not explain
14 how construction activities that occurred prior to the initial approval of the MPoD are a
15 "change in conditions" under the city's interpretation of BLDC 17.70.120. Moreover, even
16 if a portion of those activities occurred after the initial MPoD approval, we do not see that a
17 single incident that affected the Rainbow Rock water supply requires a different conclusion
18 than the one reached by the city about the efficacy of condition 23.⁴

19 Petitioners also point out that since the MPoD was approved in 2005, the Rainbow
20 Rock water supply has been designated by the Oregon Department of Environmental Quality

"Prior to construction of any phase that may adversely affect the quality or quantity of water available through the existing Rainbow Rock Service Association (RRSA) surface water supply system, the applicant shall demonstrate how the water and water supply system will not be negatively affected. Each DDP shall evaluate the impact of development on the existing RRSA surface water system, unless RRSA has previously discontinued use of the system." Record 568.

⁴ We might reach a different conclusion if petitioners had identified additional instances of negative effects on the water supply that occurred after the initial approval of the MPoD.

1 (DEQ) as a public water system. Petitioners argue that DEQ's recognition of the Rainbow
2 Rock water supply is a "change in conditions." However, petitioners do not explain why the
3 designation as a public water supply has any bearing on the facts that led to the city's initial
4 approval of the MPoD and the imposition of condition 23. Condition 23 appears to
5 recognize that the Rainbow Rock water supply deserves special additional safeguards,
6 independent of whether it is now a public water supply.

7 Petitioners do not point to any facts that have changed that the city relied on in its
8 initial approval to determine that the relevant approval criterion was met. Accordingly, this
9 subassignment of error is denied.

10 **C. Infrastructure Costs**

11 In their third subassignment of error, petitioners argue that the city's findings that
12 conditions have not changed are inadequate and are not supported by substantial evidence in
13 the record because there is no evidence that intervenor has paid for any of its share of
14 infrastructure costs. Petitioners also argue that the fact that a cost-sharing agreement
15 between intervenor and the city is in draft form is a "change in conditions," and that the
16 existence of a lease agreement with the development's electricity supplier under which the
17 electricity supplier agreed to pay the costs to construct and connect electrical lines to the
18 property is a "change in conditions," within the meaning of BLDC 17.70.120.

19 We disagree with petitioners that there is no evidence in the record to support the
20 city's findings regarding the amount of intervenor's contribution to infrastructure costs.
21 Intervenor points to testimony from intervenor's representatives and city planning staff
22 regarding intervenor's contribution. That evidence is substantial evidence to support the
23 city's conclusion there has been no change of conditions regarding intervenor's share of
24 infrastructure costs. Moreover, petitioners do not explain why, under the city's interpretation
25 of the relevant approval criterion, the fact that the cost-sharing agreement is in draft form or

1 the existence of the lease with the electric cooperative that has been in place since 1977
2 constitutes a change in the facts that would call the initial approval decision into question.⁵

3 In responding to the argument below, the city found:

4 "There is testimony * * * that there is evidence in the record that the City has
5 borne an unexpected portion of the cost for the creation of infrastructure
6 necessary to serve the Lone Ranch site. [The testimony] states that this
7 unexpected financial burden of the City constitutes a change in conditions.

8 "The City Council finds that during the original approval of the MPoD,
9 [intervenor] committed to pay for its share of the costs of infrastructure and
10 that [intervenor] remains bound to that commitment. The City Council finds
11 that there is evidence that [intervenor] has acted in accordance with this
12 commitment as [intervenor] has contributed two million dollars on
13 infrastructure to date. Moreover, when the City informed [intervenor] of its
14 share of costs for the extension of a section of the water and sewer mains to
15 the property which it had paid for, [intervenor] has agreed to pay its share.
16 City staff and [intervenor] have also negotiated a draft agreement designating
17 each [party's] proportionate share. These facts support our finding that there
18 has been no change in conditions regarding this issue." Record 11.

19 Petitioners do not explain why the above-quoted findings are inadequate to explain why
20 conditions have not changed, under the city's interpretation of BLDC 17.70.120. This
21 subassignment of error is denied.

22 **D. Review Criteria for the MPoD**

23 In response to the argument below that the MPoD had been amended in certain
24 respects, in the final part of its decision, the city adopted "catch-all" findings that addressed
25 the review criteria for MPoDs "to demonstrate that conditions used to approve the Lone

⁵ In response to the argument below, the city found:

"Concerns have been raised that under the lease that allows the Co-op's electrical lines, the Co-op is required to provide electrical infrastructure at its expense and that this is a major change in costs. The City Council finds that the lease has been in place for decades and no aspect of the findings supporting the MPoD required any particular cost split for electrical infrastructure, this matter was not part of the approval. Therefore, we find no change in conditions." Record 12.

1 Ranch Master Plan have not changed.” Record 14. Petitioners argue that those findings are
2 conclusory and inadequate because they offer no legal analysis.

3 The city listed each review criterion that it had found was satisfied when the initial
4 MPoD was approved, noted that the Lone Ranch MPoD was found to be consistent with that
5 criterion when it was approved, that no change to the plan was being requested, and that the
6 city was only considering a request for a two-year extension of the initial approval. Record
7 14-15. The city then found that “conditions have not changed.” *Id.*

8 The city’s findings rely on its interpretation of the phrase “conditions have not
9 changed” in BLDC 17.70.120. As we explained above under the second assignment of error,
10 the city’s interpretation of that provision is not inconsistent with the express language,
11 purpose or policy of the provision. Although the city probably did not need to adopt the
12 findings that appear at Record 14-15, other findings adopted by the city explain why it
13 determined that conditions have not changed, under its interpretation of BLDC 17.70.120.
14 Accordingly, the fourth subassignment of error provides no basis for reversal or remand of
15 the decision.

16 The city’s decision is affirmed.



Technical Memorandum

To: Gary Milliman, City of Brookings

From: Ronan Igloria, PE; Rodrigo Prugue

CC: Glen Leverich, RG, Stillwater Sciences; Pete Kreft, PE, Andrew Nishihara, PE, Stantec

Date: May 9, 2018

Re: Findings and Recommendations for Water System Response and Protection Plan
Following the Chetco Bar Fire - DRAFT

This technical memorandum (TM) documents findings and recommendations from the assessment of potential impacts to the City of Brookings' (City) water system following the Chetco Bar Fire in the summer of 2017.

1. Introduction

The City's source of water comes from the Chetco River watershed, a mostly forested area largely located on U.S. Forest Service (USFS) and U.S. Bureau of Land Management (BLM) lands. The City's raw water is collected through a subsurface intake system (also known as a "Ranney collector" and referred to as such in this document) located near the lower end of the Chetco River watershed at the confluence of the North Fork and mainstem of the Chetco River. Although this water is classified as a groundwater source by the Oregon Health Authority (OHA), the City has the option to treat the water at its conventional filtration water treatment plant (WTP), or deliver it directly after disinfection (by chlorination) to its 8,000 residents. The City has used the WTP when high river flows can result in slightly elevated turbidity water pumped from the Ranney Collector.

In July through October 2017, the Chetco Bar Fire burned nearly 192,000 acres. Approximately 153,000 of these acres are within the City's source watershed that is upstream of the Ranney collector. The USFS completed assessments of the burn area in the fall of 2017, and identified major impacts with the potential for immediate and long-term increases in runoff flows, erosion, and water quality risks.

Figure 1 (prepared by Stillwater Sciences) shows the extent of the Chetco Bar Fire and the watershed area upstream of the City's Ranney collector.

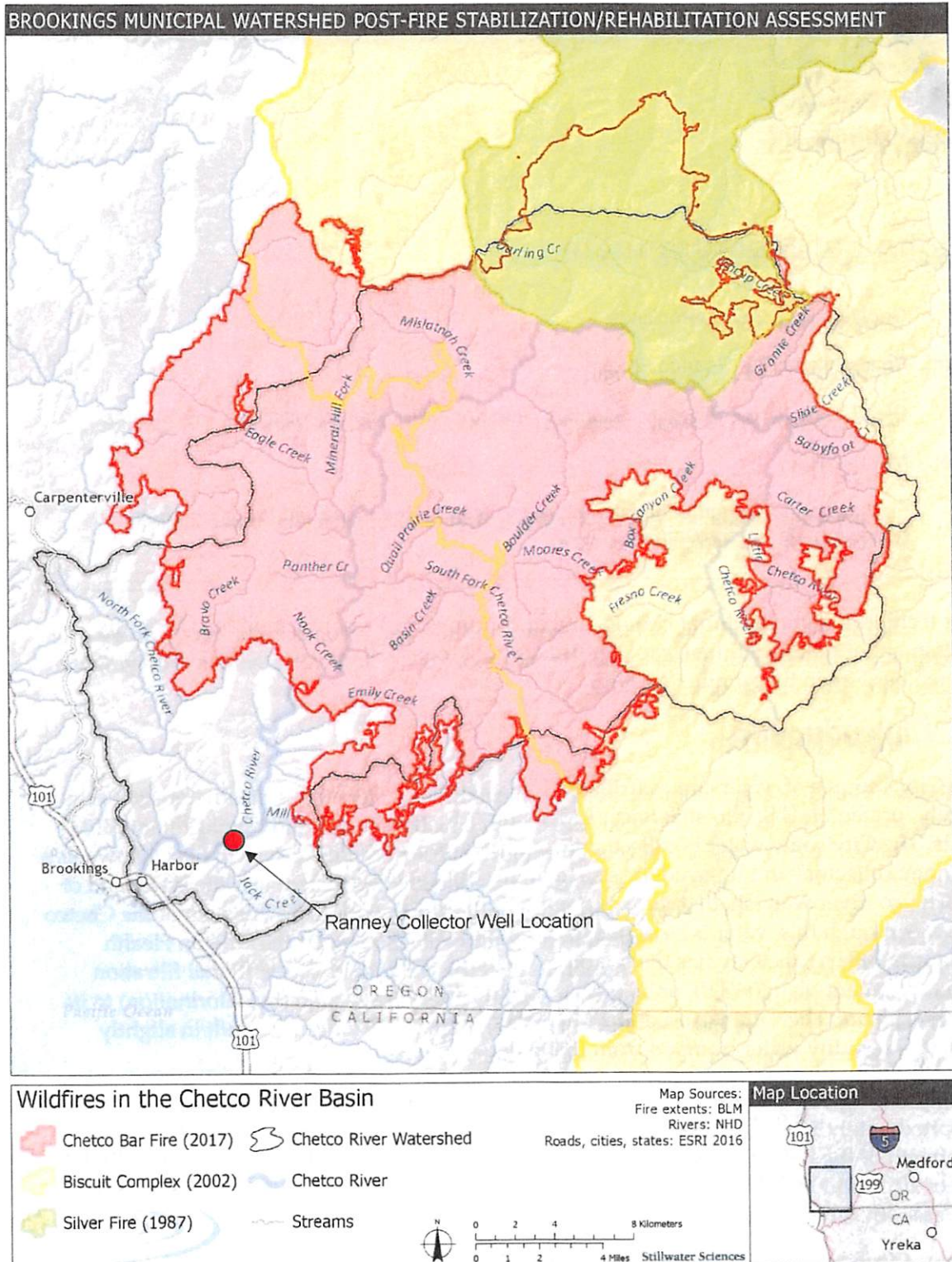


Figure 1. Extent of Chetco Bar Fire and Location of City of Brookings Ranney Collector Well (source data from BLM 2017; analysis by Stillwater Sciences).

The City's goals with this project are to understand the potential near-term and longer-term impacts of the fire on raw water quality, and the ability of the Ranney collector and WTP to provide safe and reliable drinking water.

To support these goals, the City applied for and received an OHA Drinking Water Source Protection Emergency grant, and used the funding to support in part a contract with GSI Water Solutions, Inc. (GSI), and project team partners Stantec and Stillwater Sciences, Inc. (Stillwater) to complete three primary tasks:

- Assess water quality in the City's source water and potential treatment issues. Develop a sampling and analysis plan (SAP), and collect baseline source water quality data to assess any changes to key parameters compared to historical data. Use information to evaluate potential treatment performance issues relative to operation of the City's WTP.
- Assess flow and channel conditions and potential geomorphic impacts to the City's Ranney collector. Review current Ranney collector configuration and flow/channel conditions, and perform a field survey of site and channel conditions. Use information to assess the potential for vertical and/or lateral channel scouring and/or deposition that may affect Ranney collector performance.
- Develop recommendations for a water system response and protection plan. To address long-term impacts, recommend near-term and long-term planning-level actions for source protection and watershed management.

2. Overview of Fire Impacts

The USFS completed a Burn Area Emergency Response (BAER) report for the watershed following the Chetco Bar Fire (USFS 2017a, b). The report noted that the intensity of the burn can cause physical changes to the drainage characteristics of the soils, reducing infiltration and increasing runoff from the watershed. Part of the watershed is extremely vulnerable to erosion in areas where vegetation has been denuded by the Chetco and other recent fires (e.g., Biscuit Complex Fire in 2002), thereby possibly creating a high potential for runoff to carry significantly greater quantities of silt and ash during heavy rain events. Additionally, increased runoff increases the risks of potential lateral and vertical channel scour from higher peak-flow events.

The USFS report also noted the potential risks from possible water quality impacts of the fire, including an increased risk of turbidity, dissolved organic compounds, nutrients, and metals in water entering the Ranney collector. Further, large quantities of aerial fire retardant (Phos-chek) were used to combat the fire, which could also affect water quality in runoff. It can be inferred from these general findings that any increased sediment-laden runoff could potentially reduce the filtering capacity of the City's Ranney collector and expose it to impacted water quality in the surface water. Because of the combined potential for channel scour exposing the Ranney collector, and potential for increased turbidity and poorer water quality, it could be difficult for the City to adequately treat the water. The USFS report also noted the risk of elevated levels of disinfection by-products (DBPs) as a result of chlorinating water that has higher levels of dissolved organics.

3. Project Water Quality Monitoring

Attachment A includes the SAP which was developed for this project¹. The SAP was developed to collect early post-fire baseline water quality information and identify possible trends. Information also was used to conduct the assessments presented in this TM, including recommendations for additional monitoring and planning to mitigate potential impacts to the drinking water supply. Data collected from the SAP were not intended for quantitative analysis or analytical modeling and were not designed to meet any regulatory requirements.

Table 1 lists the analytical parameters included in the sampling. Analytes were selected to balance the data quality objectives and overall analytical costs.

The SAP originally planned for three sampling/monitoring events between early January and late April 2018 (within the period of the contract). The intent was to capture at least one relatively dry and one wet event, and one additional sample to help determine any trends. However, given weather patterns during this period and logistical/scheduling issues, only two sampling events were completed. The two events were a dry event (January 30, 2018) and a wet event (March 23, 2018), and provide a baseline for future follow-on monitoring.

A sample was collected from three locations as described in the SAP: (1) mainstem Chetco River upstream of the Ranney collector, (2) North Fork Chetco River upstream of the confluence with the mainstem; and from the Ranney collector pumping wetwell. Disinfection of the Ranney collector was stopped and water was allowed to dechlorinate before collecting the grab sample during the dry event. Due to operational issues encountered during the dry sampling event, city staff requested that the chlorination system not be shut off during the second sampling event. As a result, microbial parameters were not collected from the Ranney collector wet event. Grab samples for each event were collected by GSI staff with support from City staff from the same general location along the bank of the mainstem and North Fork and in the Ranney collector.

¹ The SAP was routed on January 18, 2018, for courtesy review and comment to OHA, Oregon Department of Environmental Quality (DEQ), and USFS staff involved in either the initial burn assessment or initial Chetco Bar Fire sampling by DEQ on the south coast. No comments were received from the agencies before the first scheduled sampling event.

Table 1. List of Analytical Parameters Included in Sampling and Analysis Plan

Analytical Parameter	Data Objectives and Comments
1. General a. Turbidity b. Total suspended solids c. Total settleable solids d. pH e. TOC (DOC) / UV254 f. Total hardness and total alkalinity g. TDS/conductivity h. Temperature i. TON j. Color (true and total)	Changes in these general water quality parameters between the Chetco River and the Ranney collector/WTP to assess whether any immediate actions will be required to mitigate for negative impacts from wildfire runoff. For example: <ul style="list-style-type: none"> • Increase in organics (TOC) could lead to increases in coagulant doses, depressed pH, and increases in disinfection by-products • Increase in turbidity could lead to WTP operational changes and/or extended operations, as well as higher sludge production
2. Typical Ions a. Na (sodium) b. Ca (calcium) c. Mg (magnesium) d. K (potassium) e. Cl (chloride) f. SO ₄ (sulfate/sulfur) g. F (Fluoride)	Increased presence of different ions could impact aesthetic qualities of the drinking water including taste and color.
3. Nutrients a. Phosphorus (total, dissolved, vs. phosphates) b. Nitrogen (total, dissolved, nitrates/nitrites, ammonia)	Increase in nutrients could promote biological activity in the source water (e.g., algal blooms) and result in water quality and aesthetic changes. Ammonia could impact disinfection practices (chlorine dose and residual).
4. Metals a. Fe (iron) b. Mn (manganese) c. Sr (strontium) d. Al (aluminum) e. Ba (barium) f. Hg (mercury)	Additional EPA-regulated metals could be tested in Chetco River samples to establish a baseline. Iron and manganese would have the most impacts to aesthetics in the WTP, although chlorine injection in the Ranney collector can oxidize these constituents and remove them in the filter process at the WTP.
5. Microbials a. <i>Cryptosporidium</i> b. <i>E.coli/coliform</i> c. <i>Giardia</i>	Increase in microbial runoff could affect changes to regulatory requirements for disinfection. The increase in run-off could lead to increases in microbial activity in the river.

Notes:

EPA = U.S. Environmental Protection Agency, TDS = total dissolved solids, TOC = total organic carbon, TON = threshold odor number, WTP = water treatment plant.

Cyanide was also included in the SAP analyte list as a surrogate for presence of chemicals that may have been used in the watershed in the past, and because DEQ had analyzed for it in their September 2017 sampling at the Chetco River. However, it was not detected above reporting limits in the samples collected under this project, and is not recommended for inclusion in future monitoring.

3.1 Water Quality Monitoring Results

The first sampling event, conducted on January 30, 2018, is considered the dry event; however, based on historical weather data, some light precipitation occurred in the early hours of that day (ending approximately 4 a.m.). The second sampling event, conducted on March 23, 2018, is considered the wet event because of the relatively steady rain throughout

the day. Based on 15-minute flow measurements reported for U.S. Geological Survey (USGS) gage 14400000 on the mainstem Chetco River, the peak flow on the day of the wet event (9,420 cubic feet per second [cfs]) was significantly greater than during the dry event (5,460 cfs). However, it should be pointed out that it is unlikely that a positive correlation exists between flow magnitude and contaminant concentrations when sampling on two different times during the winter. This is because flow conditions prior to the sampling event has an effect on the rainfall-runoff response. That is, while the peak instantaneous flows were greater on the “wet” event on March 23 compared to the “dry” event on January 30, the annual peak event to date of 17,100 cfs occurred on January 24, soon before the January 30 sampling date. That large event would have had an effect on runoff and water quality conditions on the sampling day. It can also be said that conditions exhibited during the later sampling event in March would have been influenced by all rainfall-runoff accumulated to date since the fire.

General conditions during the sampling events are summarized in Table 2.

Table 2. General Conditions During Sampling Events

Condition	Event 1 (Dry) January 30, 2018	Event 2 (Wet) March 23, 2018
Mean temperature* (°F)	41 to 54 °F	41 to 46 °F
Total measured precipitation for the day*	0.24 inch	1.13 inches
Peak flow measured at Chetco River (measured from gauge: 14400000)	5,460 cfs	9,420 cfs

Notes:

* Weather conditions based on data from Weather Underground (KBOK location near Brookings, Oregon).

*F = degrees Fahrenheit

cfs = cubic feet per second

The complete laboratory reports for each sampling event and location are compiled under a separate cover for delivery to the City. Table 3A presents a summary of the results that are described below, Table 3B presents the physical parameters measured in the field during both sampling events.

At this time, it is difficult to conclude from the limited number of sampling events that the Chetco Bar Fire has impacted surface water quality measurably. However, in general, monitoring results do not indicate a significant difference between water quality in the North Fork and mainstem. The wet event samples generally had higher concentrations than the dry event samples. The exception is that for typical ions (see Table 3A), concentrations between dry and wet events were similar (even slightly lower for wet). It is unclear why concentrations in samples from the Ranney collector were similar to or, in many cases, greater when compared to North Fork and mainstem sample concentrations. A key exception is that all microbial tests from the mainstem and North Fork samples had positive hits (with the exception of *Cryptosporidium* and *Giardia* for North Fork samples), while the sample from the Ranney collector resulted in no detections.

For the dry event, aluminum concentrations exceeded the secondary maximum contaminant level (SMCL) in both the mainstem and North Fork samples; however, aluminum was not detected in the Ranney collector sample. Iron concentrations exceeded the maximum

contaminant level (MCL) in the Ranney collector sample², but iron was not detected in the mainstem or North Fork samples. In both cases, the concentrations of dissolved form were much lower than the total concentrations, indicating that a majority of the metals were in particulate form. The detection of iron in the Ranney collector sample may be an anomaly resulting from appurtenances within the caisson. It is likely that the City would have received some complaints or anecdotal stories about staining or other iron-related impacts if iron were naturally occurring and/or if iron concentration levels were consistently present year-round. It should be noted that raw water samples were being compared to MCL/SMCL concentrations, rather than finished water samples.

Based on the results of the two rounds of sampling from this project, there are no significant or conclusive indications that the Chetco Bar Fire has impacted water quality to-date. The exception would be the high detections of aluminum from North Fork and the main stem of the Chetco River, but the Ranney collector appears to be filtering the raw water effectively. The high iron concentrations from the January sampling event may have been an anomaly or sampling issue, since the March sample had concentration below the reporting limit despite having higher concentrations in the two surface water samples. Additional sampling should be collected to confirm any trends, especially for iron. In any case, chlorine injection in the Ranney collector can oxidize iron and remove them in the filter process at the WTP.

3.2 Comparison of Results to Historical Water Quality

Readily-available historical water quality data were reviewed to compare against the post-fire water quality data collected as part of this project. These historical data included:

- **Raw water data collected by the City as part of its water system operations.** Historical raw water quality data were limited to those obtained by Stantec in its review of WTP operations. The City provided historical raw water data on alkalinity and conductivity³.
- **Recent data from the DEQ Statewide Source Water Toxics Monitoring Program report (collected in 2013).** Samples were collected from the Chetco River below Jack Creek, which is about 1 mile downstream of the City's Ranney collector.
- **Recent surface water sample collected by DEQ in south coast watersheds in response to the Chetco Bar Fire (September 2017).** The sample was collected from the Chetco River approximately 220 feet southwest from the City's Ranney collector.

These historical data are included in **Attachment B** for reference. In general, the concentrations of alkalinity and conductivity measured recently were within historical ranges of City data. Several of the typical ion (e.g. calcium, sodium, sulfate) concentrations from the DEQ data in 2013 were also similar. The most recent DEQ samples collected immediately after the fire showed similar general water quality parameters, except that pH was higher (8.3) than measurements in this project (7.5). The reason for the difference is unclear. Nutrient concentrations were similarly not detected.

² Non-detect (ND) for dissolved iron and manganese would seem to indicate that they were oxidized by chlorine. Analysis for chlorine in the Ranney collector sample indicated that it was not present during the sampling. The City's WTP operator purged the water in the caisson before sampling during the dry event.

³ The City referred the project team to OHA website for information on distribution system (finished water) monitoring results: (<https://yourwater.oregon.gov/chemlatest.php?pwsno=00149>).

Table Four
Existing Intersection Performances

Intersection	Level of Service (LOS)
<i>Signalized</i>	
Hwy 101/Chetco Avenue/5 th Street	C
<i>Unsignalized</i>	
Hwy 101/Carpenterville Road	A/D
Hwy 101/Rainbow Rock Residential Driveway	A/B
Hwy 101/Samuel H. Boardman State Park access	A/B

J. Utilities

Water

The City of Brookings primary water source is the Chetco River. At this time there is no public water service to the site. The nearest connection point to City water service is less than one mile south of the site, where Carpenterville Road and Highway 101 intersect. At the time the property was annexed, it was demonstrated that water service could be obtained through the development of on-site wells and storage improvements to provide potable water and fire suppression. The City's Public Facility Plan, prepared by WH Pacific, Inc. in 1999 and the Water System Master Plan for the City of Brookings prepared in 2000, both assumed annexation and future development of the Lone Ranch site.

Sanitary Sewer System

At the time that the Lone Ranch site was annexed, it was found that the existing sewer treatment plant has adequate capacity to accommodate future development of the Lone Ranch site. Currently the City of Brookings' existing sanitary sewer service ends at a point less than one mile south of the site, at the intersection of Carpenterville Road and Highway 101. The sewer lines from this connection to the treatment plant navigate through gravity and pressure lines. The City's Public Facilities Plan identifies older lines that have infiltration and inflow problems due to age and settlement.

In November, HGR, Inc., consulting civil engineers for the City, prepared a report called "Water and Wastewater Facilities plan to serve the Borax Development and Surrounding Areas." The report addresses how the downstream lines can be improved. The City, State and developer will finance these improvements through a joint process.

Storm Water System

The on-site creeks and tributaries currently drain to culverts that cross under Highway 101 and discharge eventually to the Pacific Ocean. There are currently no storm drains or facilities on the Lone Ranch property. The City's Public Facility Plan includes the development of the Lone Ranch property.

Response and Findings:

There is testimony in the record from Pat Sherman (letters dated July 23, 2008; July 15, 2008; June 3, 2008 and May 28, 2008), Peter and Diana Chasar (letters dated July 22, 2008; July 14, 2008 and May 30, 2008) and CRAG (letter July 11, 2008) stating that the source of water supply has changed from on-site wells to City water. The City Council finds this to be factually incorrect.

The City Council finds that the water supply has not changed for the MPoD. The MPoD recognized that the water system would be part of the City's water system (Condition of Approval number 15). That is still a requirement and therefore nothing has changed.

It is true that during the hearing process on the MPoD proposal the method of providing water to the project was refined. Since the MPoD decision, however, there has been no change. As explained by the applicant's consultant, OTAK, in a letter dated June 2, 2008, the application for the MPoD provided several alternatives to serve the site. There were three options to provide water service put forth so that all alternatives could be analyzed. One of the identified options was to connect to the City's water system. It would therefore be incorrect to find that the MPoD was bound to use wells as the water source. The application recognized that there could be well water, City water or a combination of both to serve the project. The City ultimately determined that the project should be served by City water and the applicant did not object. Nothing has changed which alters that aspect of the MPoD decision.

We do not find that the record supports the contrary claims presented by Ms. Sherman. During the MPoD hearings process the City's consultant, HGE, Inc. reviewed all of the technical information, and provided a letter dated July 6, 2004 to the Community Development Director stating, "in general, Master Plan recommendations appear sound, and are provided in a manner that will benefit the development, the environment, and surrounding properties, and should not be a detriment to any public facilities. Coordination and cost sharing with the City of Brookings in developing off-site public infrastructure which benefits existing and future residents of the City appears to be fair and equitable for all parties."

Evidence that the applicant agreed to use City water is provided in letters dated September 21 and 24, 2004 entered into the record by the attorney for Borax, Tim Ramis, where he states the applicant understands the water system will be part of the City's water system. This was more than a month before the City Council made their decision on October 25, 2004 to approve the MPoD and almost a year before all the appeals had run their course and the City Council approved the remanded application on August 22, 2005.

The record demonstrates that the City provided water was one of the alternatives considered and that is the option chosen by the City Council. This has not changed.

Comment 2: *The City lacks the capacity to provide water services to the MPoD.*

Response and Findings:

There is testimony in the record from Pat Sherman (letters dated July 23, 2008; July 15, 2008; June 3, 2008 and May 28, 2008), Peter and Diana Chasar (letters dated July 22, 2008; July

14, 2008 and May 30, 2008) and CRAG (letter July 11, 2008) stating that the source of water supply has changed from on-site wells to City water and that the City lacks the capacity to provide water service to the MPoD.

The City Council finds, based on the expert testimony that the City has adequate water to provide water services to the MPoD. OTAK hired two independent consultants to evaluate the output of the on-site wells which were part of the original technical report for the MPoD. The testing was in compliance with the State of Oregon requirements to determine their output. There is no new technical evidence that there is a change in the capacity of the wells.

Additionally, the City conducted a thorough review and update to the City's Water System Master Plan. This update considered water service to all City residents and the Urban Growth Area north of the Chetco River, including the MPoD area. Given the improvements listed in this update, including increased storage capacity, which is also a component of the MPoD, the update concludes the City has the ability to serve these areas. The update was reviewed and approved by the City Council after several workshops and hearings in November 2007. There is evidence in the record provided by OTAK in its July 10, 2008 letter that the City can adequately supply water to the MPoD. We therefore conclude that conditions have not changed.

Comment 3: *Municipal water rights were modified by HB 3038 and this change limits the ability of the City to secure water rights.*

Response and Findings:

There is testimony in the record from Pat Sherman (letters dated July 23, 2008; July 15, 2008; June 3, 2008 and May 28, 2008), Peter and Diana Chasar (letters dated July 22, 2008; July 14, 2008 and May 30, 2008) and CRAG (letter July 11, 2008) stating that the adoption of HB 3038 modified municipal water rights and that this change in law will limit the ability of the City to secure water rights need to meet demands. The applicant provided testimony from its consultant OTAK (letters dated July 10, 2008 and June 2, 2008) as well as a memorandum dated July 10, 2008, from Richard Allen. CRAG has presented testimony that the Richard Allen memorandum is unpersuasive, stating that the memorandum fails to recognize that HB 3038 imposed additional restrictions on municipal water rights. CRAG states that HB 3038 extends the statutory five year time limit for use of municipal water rights to a period of twenty years, but also imposed an additional restriction that conditions municipal water rights on the protection of sensitive, threatened and endangered species if the development of water rights will lead to the extinction of a species. Finally, CRAG concludes, "HB 3038 therefore newly restricts the City's water rights if they will impact these species."

The City Council finds that the City's water rights have not changed since the MPoD was approved and that the adoption of HB 3038 is not a change in the facts relied upon in the MPoD approval. The City Council cites the memorandum by Richard Allen, a qualified expert on Oregon water rights, which addresses the issue and disagrees with other commentor's interpretation on the effect of HB 3038. In addition, the League of Oregon Cities released a press release explaining the HB 3038 was an improvement for cities. Moreover, the City Council relies on the agenda report stating that the Oregon Department of Fish and Wildlife has

BEFORE THE PLANNING COMMISSION
CITY OF BROOKINGS, COUNTY OF CURRY
STATE OF OREGON

In the matter of Planning Commission File No. DDP-1-10; a request for approval of a Detailed Development Plan in the Lone Ranch Master Plan area, U.S. Borax, Inc. Applicant; Burton Weast, Agent.)))))	Final ORDER and Findings of Fact
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ORDER approving a request for a Detailed Development Plan to create 163 residential lots, a continuation of Lone Ranch Parkway, 21 new streets, and 2 additional parcels that are only approved for grading at this time. The subject property is a 110 acre area located on the east side of Highway 101 within the approved Lone Ranch Master Plan site; Assessor's Map 40-14 & Index, Tax Lots 2400, 2401, & 2300; zoned Master Plan of Development (MPD).

WHEREAS:

1. The Planning Commission duly accepted the application filed in accordance with the 2004 Brookings Land Development Code - Section 70.140 – 70.200, Detailed Development Plans; Section 100, Hazardous Building Site Protection; Section 172, Public Facilities; Section 176, Subdivisions.
2. Such application is required to show evidence that the above referenced criteria have been met, and that the application is in conformance with the approved Lone Ranch Master Plan and the Conditions of Approval for that Plan.
3. The Brookings Planning Commission duly considered the above described application on the agenda of a public hearing on December 7, 2010; and
4. At the public meeting on said application, evidence and testimony was presented by the Applicant and recommendations were received from and presented by the Planning Director in the form of a Staff Agenda Report, dated November 24, 2010, and oral presentation of same. Oral and written testimony from the public was also presented. The hearing was continued, allowing time for additional written comment and rebuttal. On January 18, 2011, the Planning Commission deliberated; and
5. After consideration and discussion the Brookings Planning Commission, upon a motion duly seconded, approved the request for a Detailed Development Plan to construct the proposed development and directed staff to prepare a FINAL ORDER with the findings set forth therein for the approval of said application.

THEREFORE, LET IT BE HEREBY ORDERED that the application requesting an approval of Lone Ranch Detailed Development Plan Phase II on the subject parcel is approved. This approval is supported by the following findings and conclusions:

FINDINGS:

The following are findings related to the above referenced criteria.

1. The Applicant is requesting approval of Lone Ranch Detailed Development Plan Phase II in the Lone Ranch Master Plan area.
2. The Applicant's and staff's analysis and findings of fact, as found in the record, are hereby made a part of this FINAL ORDER by this reference.
3. All Conditions of Approval in the FINAL ORDER for Lone Ranch Master Plan will be complied with.
4. As shown in the above referenced findings, and with the Conditions of Approval for this Detailed Development Plan, the Applicant has met the applicable criteria.

CONCLUSIONS: The materials and findings found in the record together with the proposed Conditions of Approval, adequately meet each of the criteria necessary for the approval of this Detailed Development Plan.

CONDITIONS OF APPROVAL

The Conditions of Approval are attached to this document and are made a part thereof.

LET IT FURTHER BE OF RECORD that the Planning Commission approved the request for Lone Ranch Detailed Development Plan Phase II.

Dated this 1st day of February, 2011.



Steve Bismarck, Vice Chairperson

ATTEST:



Dianne Morris, Planning Director

CONDITIONS OF APPROVAL

Lone Ranch Master Plan – Phase II Detailed Development Plan

DDP-1-10

Feb. 1, 2011

As amended by the Planning Commission

General Conditions

1. The final plat shall be in substantial conformance with the submitted preliminary plat as approved by the Planning Commission. Substantial changes to the approved Detailed Development Plan, which includes the preliminary plat, must be reviewed in compliance with 70.210, Land Development Code.
2. Approval of this Detailed Development Plan will expire three (3) years from the date of initial approval unless the first phase final plat has been recorded in a timely manner and construction has begun. At its discretion and without a public hearing, the Commission may extend the approval one time for a period not to exceed two additional years per extension.
3. The preliminary plat is approved in seven (7) phases. The initial phase must request final approval prior to the expiration date of two (2) years from approval. However an extension may be granted by the Planning Commission prior to the expiration of approval, and not to exceed one additional year. Each subsequent phase will have an additional year to request final approval, although all seven (7) phases must be completed and request final approval prior to the expiration of five (5) years from the original date the DDP was approved.
4. Each phase of development must be complete within itself for access, water, sewer, storm drainage, and all utilities. All utilities and access shall be extended to the furthest limit of the phase to ensure connection to the next phase.
5. The subject property shall conform to the provisions of the Master Plan Development, and to all other applicable provisions of the Land Development Code. The detached single family dwellings are similar to development in the City's R-1 (Single Family Residential) zone and shall comply with the siting standards found in the R-1 zone. The clubhouse is considered an accessory use to the dwellings and is subject to the R-1 siting standards. The attached single family dwellings are similar to development in the City's R-3 (Multi-family) zone and shall comply with the siting standards found in the R-3 zone, except that the height requirement stated in LRMP Final Order limits the structures to thirty (30) feet in height. The Master Plan of Development zone provides for a 25% reduction in the setback requirements which will be used to lessen impacts to natural resources where needed.
6. Plans for utility improvements and/ or plans to meet Section 100, LDC, Hazardous Building Site Protection Hillside Development Standards shall not be commenced until the City Engineer has reviewed and approved construction plans for adequacy.
7. All costs of plans checks and inspections by the City Engineer shall be paid by the Applicant to the City.
8. Information on the construction plans shall be pursuant to the Public Works document, "General Engineering and Standard Specifications" and other requirements found elsewhere in these Conditions of Approval.

9. Prior to any construction or grading on the site, the contractor will place, in a location visible from an existing public street, a sign containing the name of the contractor and a telephone number where the contractor can be reached.
10. All development shall comply with the State and Federal regulations regarding cultural resources, specifically, ORS 358.905 to 358.961, ORS 390.235 to 390.240, and ORS 97.740 to 97.760 to the extent applicable and any other required review regarding cultural resources. Any permit required by Oregon Parks and Recreation Department, State Historic Preservation Office must be obtained prior to any disturbance on the property and a copy provided to the City.
11. Common open space must be depicted on each phase of the final plats. C, C, & Rs must state responsibility of Homeowners Association regarding this element. The C, C, & Rs also contain requirements for the protection of the Western Lilies. C, C, & Rs must be recorded and a copy provided to the City prior to final approval of the first phase. This requirement concerning C, C, & R's does not apply to the grading of Neighborhood C or the commercial area.
12. The Applicant must provide a copy of the Oregon Department of Environmental Quality (DEQ) 1200C Erosion Control permit prior to any construction on the site.
13. The landscape/ irrigation plan for the park must be completed prior to the Applicant requesting final approval for the phase containing the park. The tree planting plan within a specific phase must be completed prior to the Applicant requesting final approval of that phase.
14. The geology report dated June 30, 2010 submitted with the application has specific recommendations which must be followed. Prior to construction of the clubhouse, the reservoir site, the road accessing the reservoir, or the pump station at the northern Lone Ranch Parkway intersection, site specific materials in compliance with Section 100, Hazardous Building Site Protection must be submitted and approved by the City Engineer. In addition, prior to construction, the Applicant must have their geologist review final design plans and specifications. Written comments from that review must be provided to the City Engineer for review and approval.
15. The Applicant shall provide, pay for and install, or cause to be installed all utilities and improvements approved in this Detailed Development Plan unless otherwise stated in this Final Order.
16. The clubhouse parking lot must be constructed to meet City parking standards and contain at least 13 spaces, one of which must meet ADA requirements.
17. The Applicant shall support any future Federal, State, or local efforts to reestablish the ability for fish passage under Highway 101 for Lone Ranch Creek, Ram Creek, and Taylor Creek. "Support" means that the Applicant shall not oppose such efforts.

Street Conditions

18. Highway 101 improvements must be constructed in accordance with plans approved by the Or. Dept. of Transportation (ODOT). Hwy. improvements must be constructed to rural design and speed standards, or posted speed standards acceptable to rolling terrain. It is understood the Lone Ranch trip generation was calculated and approved using the 6th edition of ODOT standards, however construction standards must use current ODOT standards in effect at the time of DDP approval.

19. A copy of the Road Approach Permit issued by the Oregon Department of Transportation (ODOT) approving the access points for Lone Ranch Parkway at its intersections with Highway 101 must be submitted to the City prior to each intersections construction.
20. The Applicant shall provide proof to the City of an ODOT miscellaneous permit for any work within the Highway right-of-way prior to City issuance of development permits.
21. Prior to City issuance of development permits, the Applicant shall regulate 50 year peak flows at the culverts to pre-construction conditions. Hydraulic mitigation shall be submitted to ODOT District 7 for approval.
22. The Applicant shall install a north bound right turn lane at the site's south road approach prior to recording of the first residential phase final plat.
23. Due to conflicts with some street names, the following shall be changed on the final plats:
Change Palmer Butte Drive to Iron Mountain Drive.
Change McVay Rock Drive to Lookout Rock Drive.
Change Mack Arch Court to Sisters Rock Court.
Change Sundown Mountain Drive to Rocky Point Drive.
24. The public streets on the subject property shall be dedicated to the City of Brookings on the plat. The private streets must be designated and ownership and maintenance language stated on the plat and in the recorded C, C, & Rs.
25. All streets and multi-use paths must be constructed as proposed and approved in the DDP application. The multi-use paths will be constructed of materials suitable for biking.
26. Prior to any construction or grading for the street the Applicant shall submit four (4) copies of street construction plans for review and approval by the City Engineer. The Applicant shall provide a geologic report related to the construction of the street, if required by the City Engineer.
27. "STOP" signs shall be placed at both Lone Ranch Parkway intersections with Highway 101. The siting of the sign shall be in compliance with ODOT requirements.
28. Street lights shall be placed pursuant to the provisions of the Pubic Works document, "General Engineering Requirements and Standard Specifications" and ODOT requirements.
29. All street name signs shall be placed pursuant to the provisions of the Pubic Works document, "General Engineering Requirements and Standard Specifications", unless otherwise approved by the City Engineer. Street name signs at the intersections with Hwy. 101 must meet ODOT requirements.

Sanitary Sewer

30. Sanitary sewer installation shall comply with the standards of the State of Oregon Department of Environmental Quality and Public Works "General Engineering Requirements and Standard Specifications" document.
31. Prior to construction of the proposed sanitary sewer system, the Applicant shall submit four (4) copies of construction plans for review and approval by the City Engineer. The Applicant shall provide a geologic report related to the construction of the sanitary sewer system, if required by the City Engineer

32. The location of all sewer laterals shall be appropriately marked in a permanent manner.

Storm Drain Conditions

33. Prior to construction of the proposed storm drainage system, the Applicant shall submit four (4) copies of construction plans for review and approval by the City Engineer. Plans considering all drainage from the subject property, including roof drains, shall be prepared by an engineer, licensed in the State of Oregon, to address on-site and off-site impacts in a manner that protects down stream properties. The Applicant shall provide a geologic report related to the construction of the storm drain system, if required by the City Engineer.
34. All storm drains shall be installed pursuant to the provisions of the Public Works document, "General Engineering Requirements and Standard Specifications" and the Applicant's approved engineered plans.
35. Bio-swales on the subject property must also be maintained by the property owners. The proposed "Swale Maintenance Covenant" must include all required language as found in Condition of Approval # 29 of the Lone Ranch Master Plan Final Order. This Covenant is found in the C, C, & Rs and must be recorded and a copy provided to the City prior to final approval of the first phase.
36. A wetland delineation has been reviewed and concurred with by the Dept. of State Lands. Prior to any construction within the project area, Applicant shall obtain and submit a copy of all appropriate Federal and State permits related to the direct impact of development on the waters of the State or U.S.
37. If compliance with Condition #36 requires that the development proposal be modified, such modification will be consistent with Chapter 70, Master Plan Development District, Brookings (2004) Municipal Code and may require a new land use approval to consider the specific modification.
38. The City Engineer has reviewed the preliminary drainage plan and stated, in writing, that condition #23, protection of the Rainbow Rock Service Association surface water supply system, of the Lone Ranch Master Plan Final Order has been met. Final engineered plans must be submitted and approved by the City Engineer and then constructed in compliance with these plans.

Water System Conditions

39. The subject property shall be served by the City domestic water supply system.
40. The Applicant shall extend water mains into the public and private streets. The Applicant shall also extend service laterals to each lot.
41. All water lines, booster pumps, and reservoirs shall be installed pursuant to the provisions set forth in the OAR Chapter 33, Sections 42-200 through 42-243, by the Oregon State Health Division and the Public Works document, "General Engineering Requirements and Standard Specifications
42. Prior to construction of the proposed water system, the Applicant shall submit four (4) copies of engineered construction plans for review and approval by the City Engineer. The engineered plans must state at which phase of the development the reservoir will need to be constructed, and said reservoir shall be functional prior to that phase for which it is required. The Applicant shall provide a geologic report related to the construction of the water system, if required by the City Engineer

43. Fire hydrants shall be installed in compliance with the City requirements.
44. All dwelling units and the clubhouse must be constructed with a fire suppression sprinkler system.

Utilities

45. All utility lines, including but not limited to, electric, communication, street lighting, and cable television shall be placed underground throughout the development.
46. All utility easements shall be clearly defined as to their scope, purpose and term and clearly shown in dashed lines on the plat including the size and locations as required by the affected utilities, public agencies and service companies.
47. A continuous five (5) foot Public Utility Easement "PUE" adjacent to the right-of-ways shall be shown on the plat and provided to be utilized for water related equipment (meters, valves, etc. and other utilities (electrical pedestals, street lights, telephone and other facilities).
48. The applicant shall be responsible to coordinate final acceptance of all proposed "PUE's" with the affected utilities, public agencies and service companies prior to final plat approval.
49. The applicant shall coordinate the placement of mailboxes with the U. S. Postal Service (USPS). Mailboxes shall be placed in a manner that leaves at least 48" of unobstructed sidewalk area. A completed and signed copy of the USPS "Mode of Delivery Agreement" form must be provided prior to receiving final plat approval.

Restrictive Covenants

50. In order for retaining walls, fences, etc, to be constructed within the remaining public right-of-way in back of and abutting the sidewalks the applicant shall incorporate in the covenants a "hold harmless" clause absolving the city and/or utilities of any liability or responsibility for the replacement of such appurtenances within the right-of-way should it be necessary to remove same to make repairs to existing facilities or install new facilities therein.

Bond and Agreement

51. If the Applicant requests final plat approval or issuance of a building permit prior to completion of all required utilities and improvements, an improvement agreement and security as described in 80.080, Land Development Code (in effect on October 25, 2004) will be required. When all utilities and improvements have been installed and approved the Applicant must provide a warranty for materials and workmanship as described in 172.180 and 80.080(B), Land Development Code (in effect on October 25, 2004).

BEFORE THE PLANNING COMMISSION
CITY OF BROOKINGS, COUNTY OF CURRY
STATE OF OREGON

In the matter of Planning Commission File No. MOD-1-15/DDP-1-10; a request for modification to File DDP-1-10, a detailed Development Plan in the Lone Ranch Master Plan area, U.S. Borax, Inc. Owner/Applicant; Ed Trompke, Representative.) Final ORDER) and Findings of) Fact))
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ORDER approving a request for a modification to a Detailed Development Plan to create 163 residential lots, a continuation of Lone Ranch Parkway, 21 new streets, and 2 additional parcels that are only approved for grading at this time. The subject property is a 110 acre area located on the east side of Highway 101 within the approved Lone Ranch Master Plan site; Assessor's Map 40-14 & Index, Tax Lots 2400, 2401, & 2404; zoned Master Plan of Development (MPD).

WHEREAS:

1. The Planning Commission duly accepted the application filed in accordance with the Brookings Municipal Code (BMC) - Section 17.70.200, Effective period of a detailed development plan (DDP) and Section 17.70.210 Modification(s) of a detailed development plan (DDP).
2. Such application is required to show evidence that the above referenced criteria have been met.
3. The Brookings Planning Commission duly considered the above described application on the agenda of a public hearing on November 17, 2015; and
4. At the public meeting on said application, evidence and testimony was presented by the Applicant and recommendations were received from and presented by the Planning Manager in the form of a Staff Agenda Report, dated November 6, 2015, and oral presentation of same.
5. After consideration and discussion the Brookings Planning Commission, upon a motion duly seconded, approved the request for a modification to a Detailed Development Plan to construct the proposed development and directed staff to prepare a FINAL ORDER with the findings set forth therein for the approval of said application.

THEREFORE, LET IT BE HEREBY ORDERED that the application requesting an approval of modification to Lone Ranch Detailed Development Plan Phase II on the subject parcel is approved. This approval is supported by the following findings and conclusions:

ANALYSIS

Following is the relevant criteria and analysis.

17.70.210 Modification(s) of a detailed development plan (DDP).

This section identifies the processes by which an approved DDP may be modified. The section goes on to state that a modification may request a change to the plot/plan or the conditions of approval. The

applicant is requesting a change to a condition of approval to extend the approval period. In a modification, review shall be limited to the area proposed for modification and the impacts attributed to the proposed change.

BMC 17.70.210 *The modification request must be accompanied by:*

- A. *A revised plot plan or plat showing the proposed changes and how they compare to the originally approved project; or*
- B. *If the modification does not change the physical site plan of the project, a text explaining the desired change must be submitted.*
- C. *The applicant must provide findings for the following criteria:*
 - 1. *Address how the requested modification relates to the approved project and any impacts that will result.*
 - 2. *Address any impact to adjoining properties.*
 - 3. *Address the effect on city services and facilities.*

Analysis: The applicant is requesting modification to Condition #2 to extend the approval period for recording the final plat of the first phase of DDP-1-10 by eight (8) years. The applicant states the requested modification has no effect or impact on any substantial provisions of the approval and does not propose any changes to the plot plan or plat. To comply with BMC 17.70.210(B) the applicant has submitted a narrative of the desired change (**Attachment A**).

The applicant states the requested extension will allow sufficient time to complete provisions that have not been completed due to the continuing financial crisis and housing market decline of the last nine (9) years. The applicant has provided materials prepared by experts in the field regarding the financial crisis as well as the *Coordinated Population Forecast* prepared by Portland State University to support the request.

A draft of the proposed revision for condition # 2 follows: Text ~~stricken~~ is deleted and text that is **bold** is added.

Approval of this Detailed Development Plan will expire ~~three~~ **eleven** (~~3~~**11**) years from the date of initial approval unless the first phase final plat has been recorded in a timely manner and construction has begun. At its discretion and without a public hearing, the Commission may extend the approval ~~one time~~ for a period not to exceed two additional years per extension.

The original approval was granted for three (3) years and the eleven (11) years reflects the requested eight (8) year extension. However, if the request is approved, the new expiration date for the final plat to be recorded for the first phase will be February 1, 2022. This is due to the extensions granted in the past. The deletion of "one time" is in line with the current BMC 17.70.200 regarding the Planning Commission's authority to grant additional extensions.

BMC 17.70.210

- C. *The applicant must provide findings for the following criteria:*
 - 1. *Address how the requested modification relates to the approved project and any impacts that will result.*
 - 2. *Address any impacts to adjoining properties.*
 - 3. *Address the effect on city services and facilities.*

Analysis: (C)(1) *Address how the requested modification relates to the approved project and any impacts that will result.*

This criterion requires the applicant to identify the specific change within the project resulting from the modification and then identify how the change impacts the project. The request for additional time is procedural and does not change substantive matters such as the site plan, other conditions of approval, or the city's findings in the original approval.

DDP-1-10 expires in February, 2016. The approval includes 163 residential lots as well as 21 new streets and an extension of Lone Ranch Parkway. The applicant states in their findings that with the downturn in the housing and financial markets, this timeline is not practical and is undesirable. The requested modification allows an additional eight (8) years from the original approval period of three (3) years for the final plat for the first phase to be recorded.

The city has a very limited amount of larger vacant properties for residential development. A recent article in the local newspaper (**Attachment C**) identified a shortage of rentals in the Brookings area for new employees needed for the expansion of Curry Medical Center as well as new employees needed at Pelican Bay State Prison. This DDP will provide a variety of housing opportunities for the local workforce, retirees wanting to move to the area, and potential second home owners (vacation homes). Being within the city limits, this is where the city is expected to grow.

Allowing the project to expire will further delay needed housing opportunities and put the process back to the beginning, waiting for an unknown time in the future for development of the site. Approval of the request for additional time will allow the project to move forward as originally approved.

Analysis: (C)(2) *Address any impacts to adjoining properties.*

With the exception of the SWOCC campus to the south and the water reservoir site to the east, the area to be developed in DDP-1-10 is surrounded by vacant land that is part of the Lone Ranch Master Plan area. A large undeveloped parcel, zoned FG is adjacent to the water reservoir site located in the eastern portion of the Master Plan area. This parcel is outside the Brookings Urban Growth Boundary and is committed to resource use. Any additional time granted for development will have no impact on this parcel.

The SWOCC campus is located adjacent to the southern boundary of the DDP site. SWOCC presently is not connected to public sewer but discharges into a holding tank that must then be pumped for final disposal. They will not be able to connect to the public sewer until the infrastructure improvements set forth in DDP-1-10 are completed. Granting the requested modification will continue the current situation. Expiration of the approval will further delay connection of SWOCC to the public sewer. A multi-use path network will connect the residential uses of the DDP with the SWOCC campus. The DDP may also provide housing needed by SWOCC employees and students. The delay in time continues the current conditions for SWOCC. Expiration of the approval means SWOCC may wait longer for the construction of public trails and convenient housing as well as connection to the public sewer.

Analysis: (C)(3) *Address the effect on city services and facilities.*

Staff concurs with the applicants findings that the request for an extension of time relates solely to the time under which the applicant must record the final plat for the first phase of the development. SWOCC is currently connected to the public water system. However, due to the system being constructed of a size to service the project area, the water system is underutilized. Water systems require a minimum flow to avoid stagnant water and maintain water quality. City staff must routinely flush the water line to purge stagnant water from the system. A delay in time continues the current conditions for staff which was in effect at the time of DDP-1-10 approval. Expiration of the approval has the potential for the current situation to continue longer.

The granting of the modification for an extension of time will not change the required provisions for city services for the project from the original approval. If the modification is approved, the project will complete critical sewer connections identified in the City's facilities plan.

FINDINGS

Criterion 1-Effect of the requested modification on the DDP.

Response: The request for modification of an extension of time is procedural and does not change substantive matters such as the site plan, the conditions of approval, or the city's findings. Approval of the modification will allow the project to move forward consistent with the original DDP approval.

Criterion 2 – Effect of the requested modification on adjoining property holders.

Response: Approval of the modification for an extension of time will not create any impacts on the adjoining properties that did not exist at the time of original DDP approval.

Criterion 3 – Effect of the requested modification on City services and facilities.

Response Granting the extension will not change the required provisions for city services and will not increase staff time utilized for the project beyond the original approval. The extension will allow for sewer infrastructure to be completed.

CONCLUSIONS: The Applicant has provided findings addressing the criteria. The Applicant's findings together with Staff analysis and responses to the above criteria demonstrate the application meets the modification requirements. The original final order dated February 1, 2011 will remain in effect with the addition of this final order and the amended conditions of approval.

CONDITIONS OF APPROVAL

The Conditions of Approval are attached to this document and are made a part thereof.

LET IT FURTHER BE OF RECORD that the Planning Commission approved the request for modification of DDP-1-10, Lone Ranch Detailed Development Plan Phase II.

Dated this **17th day** of November, 2015.

Bryan Tillung, Chairperson

ATTEST:

Donna Colby-Hanks, Planning Manager

From: Ronan Igloria [mailto:rigloria@gsiws.com]
Sent: Tuesday, June 05, 2018 9:09 AM
To: Gary Milliman
Cc: jhoward@brookings.or.us; abaron@brookings.or.us; Glen Leverich
Subject: RE: Quantity

Hi Gary – I copied Glen Leverich here from Stillwater Sciences who worked on the hydrologic/geomorphologic assessment included in the TM we submitted to you.

Wildfire impacts to land cover (vegetation) and soil character can reduce infiltration. So, I think there are two parts to the “quantity” question you posed. First, the reduced infiltration could result in increased peak flows and “flashiness” of the streams (in the winter). Second, is the possible reduction in base (stream) flows (in the summer), i.e. due to reduced infiltration/storage.

Based on our review of historical data (namely the Silver and Biscuit wildfire events in the watershed), **the recent wildfire events do not appear to have led to measurable change in runoff or flashiness as observed at the USGS gage.** We also have not seen evidence of increased flashiness in observations from the Chetco Bar fire. However, we have only very limited field data to confirm these potential impacts from the Chetco Bar Fire, thus our recommendations to continue the monitoring/observations.

Theoretically, the wildfires could change the infiltration characteristics enough to further reduce the naturally low summer flows in this watershed. The significance of that impact would need to be monitored and studied (e.g. through basin modeling) over the long-term – especially in light of its relative impact compared to general climate change impacts on precipitation patterns.

Glen – if you have anything to add or clarify, please feel free to reply to all directly.

Thanks
Ronan

Hi Gary,

And, thanks, Ronan. You're right on with your assessment. The cumulative impacts to vegetative cover during the Silver, Biscuit, and Chetco Bar fires on so much of the landscape is considered by the Forest Service in their BAER reports to have the potential to reduce infiltration and exacerbate more rapid runoff, thus possibly leaving less water in the system later on during summer, which I believe is the concern you're trying to address with your residents. Based on research from other watersheds, post-fire changes in runoff patterns have the possibility of occurring at the scale of a small tributary where burn coverage is vast. However, in our examination of river flows gaged by the USGS on the lower Chetco, we didn't detect any changes to annual runoff amount that could be directly attributed to the two past wildfires (Silver and Biscuit). And, we haven't yet seen fire-related changes in the gaging records since the Chetco fire. There are several possible reasons for this, mainly that the majority of the forest biomass (trees) remained intact AND the winter storms soon following these wildfires have been moderate, thus leading to less-than-predicted decreases in infiltration, and increases in runoff and erosion.

I agree with Ronan that continued attention to the landscape and riverflows will be necessary during the next 3–5 years to assess whether runoff (and water availability) is changing in a way since the Chetco fire that could impact the city's water supply.

Hope that helps!

Glen Leverich, RG

Stillwater Sciences, Senior Geomorphologist/Geologist
office 503-267-9006 ext. 402
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Oregon's Statewide Planning Goals & Guidelines

GOAL 5: NATURAL RESOURCES, SCENIC AND HISTORIC AREAS, AND OPEN SPACES

OAR 660-015-0000(5)

(Please Note: Amendments Effective 08/30/96)

To protect natural resources and conserve scenic and historic areas and open spaces.

Local governments shall adopt programs that will protect natural resources and conserve scenic, historic, and open space resources for present and future generations. These resources promote a healthy environment and natural landscape that contributes to Oregon's livability.

The following resources shall be inventoried:

- a. Riparian corridors, including water and riparian areas and fish habitat;
- b. Wetlands;
- c. Wildlife Habitat;
- d. Federal Wild and Scenic Rivers;
- e. State Scenic Waterways;
- f. Groundwater Resources;
- g. Approved Oregon Recreation Trails;
- h. Natural Areas;
- i. Wilderness Areas;
- j. Mineral and Aggregate Resources;
- k. Energy sources;
- l. Cultural areas.

Local governments and state agencies are encouraged to maintain

current inventories of the following resources:

- a. Historic Resources;
- b. Open Space;
- c. Scenic Views and Sites.

Following procedures, standards, and definitions contained in commission rules, local governments shall determine significant sites for inventoried resources and develop programs to achieve the goal.

GUIDELINES FOR GOAL 5

A. PLANNING

1. The need for open space in the planning area should be determined, and standards developed for the amount, distribution, and type of open space.

2. Criteria should be developed and utilized to determine what uses are consistent with open space values and to evaluate the effect of converting open space lands to inconsistent uses. The maintenance and development of open space in urban areas should be encouraged.

3. Natural resources and required sites for the generation of energy (i.e. natural gas, oil, coal, hydro, geothermal, uranium, solar and others) should be conserved and protected;

reservoir sites should be identified and protected against irreversible loss.

4. Plans providing for open space, scenic and historic areas and natural resources should consider as a major determinant the carrying capacity of the air, land and water resources of the planning area. The land conservation and development actions provided for by such plans should not exceed the carrying capacity of such resources.

5. The National Register of Historic Places and the recommendations of the State Advisory Committee on Historic Preservation should be utilized in designating historic sites.

6. In conjunction with the inventory of mineral and aggregate resources, sites for removal and processing of such resources should be identified and protected.

7. As a general rule, plans should prohibit outdoor advertising signs except in commercial or industrial zones. Plans should not provide for the reclassification of land for the purpose of accommodating an outdoor advertising sign. The term "outdoor advertising sign" has the meaning set forth in ORS 377.710(23).

B. IMPLEMENTATION

1. Development should be planned and directed so as to conserve the needed amount of open space.

2. The conservation of both renewable and non-renewable natural resources and physical limitations of the land should be used as the basis for determining the quantity, quality, location, rate and type of growth in the planning area.

3. The efficient consumption of energy should be considered when utilizing natural resources.

4. Fish and wildlife areas and habitats should be protected and managed in accordance with the Oregon Wildlife Commission's fish and wildlife management plans.

5. Stream flow and water levels should be protected and managed at a level adequate for fish, wildlife, pollution abatement, recreation, aesthetics and agriculture.

6. Significant natural areas that are historically, ecologically or scientifically unique, outstanding or important, including those identified by the State Natural Area Preserves Advisory Committee, should be inventoried and evaluated. Plans should provide for the preservation of natural areas consistent with an inventory of scientific, educational, ecological, and recreational needs for significant natural areas.

7. Local, regional and state governments should be encouraged to investigate and utilize fee acquisition, easements, cluster developments, preferential assessment, development rights acquisition and similar techniques to implement this goal.

8. State and federal agencies should develop statewide natural resource, open space, scenic and historic area plans and provide technical assistance to local and regional agencies. State and federal plans should be reviewed and coordinated with local and regional plans.

9. Areas identified as having non-renewable mineral and aggregate resources should be planned for interim,

transitional and "second use" utilization
as well as for the primary use.

Oregon's Statewide Planning Goals & Guidelines

GOAL 6: AIR, WATER AND LAND RESOURCES QUALITY

OAR 660-015-0000(6)

To maintain and improve the quality of the air, water and land resources of the state.

All waste and process discharges from future development, when combined with such discharges from existing developments shall not threaten to violate, or violate applicable state or federal environmental quality statutes, rules and standards. With respect to the air, water and land resources of the applicable air sheds and river basins described or included in state environmental quality statutes, rules, standards and implementation plans, such discharges shall not (1) exceed the carrying capacity of such resources, considering long range needs; (2) degrade such resources; or (3) threaten the availability of such resources.

Waste and Process Discharges -- refers to solid waste, thermal, noise, atmospheric or water pollutants, contaminants, or products therefrom. Included here also are indirect sources of air pollution which result in emissions of air contaminants for which the state has established standards.

GUIDELINES

A. PLANNING

1. Plans should designate alternative areas suitable for use in controlling pollution including but not limited to waste water treatment plants,

solid waste disposal sites and sludge disposal sites.

2. Plans should designate areas for urban and rural residential use only where approvable sewage disposal alternatives have been clearly identified in such plans.

3. Plans should buffer and separate those land uses which create or lead to conflicting requirements and impacts upon the air, water and land resources.

4. Plans which provide for the maintenance and improvement of air, land and water resources of the planning area should consider as a major determinant the carrying capacity of the air, land and water resources of the planning area. The land conservation and development actions provided for by such plans should not exceed the carrying capacity of such resources.

5. All plans and programs affecting waste and process discharges should be coordinated within the applicable air sheds and river basins described or included in state environmental quality statutes, rules, standards and implementation plan.

6. Plans of state agencies before they are adopted should be coordinated with and reviewed by local agencies with respect to the impact of these plans on the air, water and land resources in the planning area.

7. In all air quality maintenance areas, plans should be based on applicable state rules for reducing indirect pollution and be sufficiently comprehensive to include major transportation, industrial, institutional, commercial recreational and governmental developments and facilities.

B. IMPLEMENTATION

1. Plans should take into account methods and devices for implementing this goal, including but not limited to the following:

- (1) tax incentives and disincentives,
- (2) land use controls and ordinances,
- (3) multiple-use and joint development practices,
- (4) capital facility programming,
- (5) fee and less-than-fee acquisition techniques, and
- (6) enforcement of local health and safety ordinances.

2. A management program that details the respective implementation roles and responsibilities for carrying out this goal in the planning area should be established in the comprehensive plan.

3. Programs should manage land conservation and development activities in a manner that accurately reflects the community's desires for a quality environment and a healthy economy and is consistent with state environmental quality statutes, rules, standards and implementation plans.

Oregon's Statewide Planning Goals & Guidelines

GOAL 16: ESTUARINE RESOURCES

OAR 660-015-0010(1)

To recognize and protect the unique environmental, economic, and social values of each estuary and associated wetlands; and

To protect, maintain, where appropriate develop, and where appropriate restore the long-term environmental, economic, and social values, diversity and benefits of Oregon's estuaries.

Comprehensive management programs to achieve these objectives shall be developed by appropriate local, state, and federal agencies for all estuaries.

To assure diversity among the estuaries of the State, by June 15, 1977, LCDC with the cooperation and participation of local governments, special districts, and state and federal agencies shall classify the Oregon estuaries to specify the most intensive level of development or alteration which may be allowed to occur within each estuary. After completion for all estuaries of the inventories and initial planning efforts, including identification of needs and potential conflicts among needs and goals and upon request of any coastal jurisdiction, the Commission will review the overall Oregon Estuary Classification.

Comprehensive plans and activities for each estuary shall provide for appropriate uses (including preservation) with as much diversity as is consistent with the overall Oregon Estuary Classification, as well as with the biological economic, recreational,

and aesthetic benefits of the estuary. Estuary plans and activities shall protect the estuarine ecosystem, including its natural biological productivity, habitat, diversity, unique features and water quality.

The general priorities (from highest to lowest) for management and use of estuarine resources as implemented through the management unit designation and permissible use requirements listed below shall be:

1. Uses which maintain the integrity of the estuarine ecosystem;
2. Water-dependent uses requiring estuarine location, as consistent with the overall Oregon Estuary Classification;
3. Water-related uses which do not degrade or reduce the natural estuarine resources and values;
4. Nondependent, nonrelated uses which do not alter, reduce or degrade estuarine resources and values.

INVENTORY REQUIREMENTS

Inventories shall be conducted to provide information necessary for designating estuary uses and policies. These inventories shall provide information on the nature, location, and extent of physical, biological, social, and economic resources in sufficient detail to establish a sound basis for estuarine management and to enable the identification of areas for preservation and areas of exceptional potential for development.

State and federal agencies shall assist in the inventories of estuarine resources. The Department of Land Conservation and Development, with assistance from local government, state and federal agencies, shall establish common inventory standards and techniques, so that inventory data collected by different agencies or units of government, or data between estuaries, will be comparable.

COMPREHENSIVE PLAN REQUIREMENTS

Based upon inventories, the limits imposed by the overall Oregon Estuary Classification, and needs identified in the planning process, comprehensive plans for coastal areas shall:

1. Identify each estuarine area:
2. Describe and maintain the diversity of important and unique environmental, economic and social features within the estuary;
3. Classify the estuary into management units; and
4. Establish policies and use priorities for each management unit using the standards and procedures set forth below.
5. Consider and describe in the plan the potential cumulative impacts of the alterations and development activities envisioned. Such a description may be general but shall be based on the best available information and projections.

MANAGEMENT UNITS

Diverse resources, values, and benefits shall be maintained by classifying the estuary into distinct water use management units. When classifying estuarine areas into management units, the following shall

be considered in addition to the inventories:

1. Adjacent upland characteristics and existing land uses;
2. Compatibility with adjacent uses;
3. Energy costs and benefits; and
4. The extent to which the limited water surface area of the estuary shall be committed to different surface uses.

As a minimum, the following kinds of management units shall be established:

1. **Natural** -- in all estuaries, areas shall be designated to assure the protection of significant fish and wildlife habitats, of continued biological productivity within the estuary, and of scientific, research, and educational needs. These shall be managed to preserve the natural resources in recognition of dynamic, natural, geological, and evolutionary processes. Such areas shall include, at a minimum, all major tracts of salt marsh, tideflats, and seagrass and algae beds.

Permissible uses in natural management units shall include the following:

- a. undeveloped low-intensity, water-dependent recreation;
- b. research and educational observations;
- c. navigation aids, such as beacons and buoys;
- d. protection of habitat, nutrient, fish, wildlife and aesthetic resources;
- e. passive restoration measures;
- f. dredging necessary for on-site maintenance of existing functional tidegates and associated drainage channels and bridge crossing support structures;

- g. riprap for protection of uses existing as of October 7, 1977, unique natural resources, historical and archeological values; and public facilities; and
- h. bridge crossings.

Where consistent with the resource capabilities of the area and the purposes of this management unit the following uses may be allowed:

- a. aquaculture which does not involve dredge or fill or other estuarine alteration other than incidental dredging for harvest of benthic species or removable in-water structures such as stakes or racks;
- b. communication facilities;
- c. active restoration of fish and wildlife habitat or water quality and estuarine enhancement;
- d. boat ramps for public use where no dredging or fill for navigational access is needed; and,
- e. pipelines, cables and utility crossings, including incidental dredging necessary for their installation.
- f. installation of tidegates in existing functional dikes.
- g. temporary alterations.
- h. bridge crossing support structures and dredging necessary for their installation.

A use or activity is consistent with the resource capabilities of the area when either the impacts of the use on estuarine species, habitats, biological productivity and water quality are not significant or that the resources of the area are able to assimilate the use and activity and their effects and continue to function in a manner to protect significant wildlife habitats, natural biological productivity, and values for scientific research and education.

2. Conservation -- In all estuaries, except those in the overall Oregon Estuary Classification which are classed for preservation, areas shall be designated for long-term uses of renewable resources that do not require major alteration of the estuary, except for the purpose of restoration. These areas shall be managed to conserve the natural resources and benefits. These shall include areas needed for maintenance and enhancement of biological productivity, recreational and aesthetic uses, and aquaculture. They shall include tracts of significant habitat smaller or of less biological importance than those in (1) above, and recreational or commercial oyster and clam beds not included in (1) above. Areas that are partially altered and adjacent to existing development of moderate intensity which do not possess the resource characteristics of natural or development units shall also be included in this classification.

Permissible uses in conservation management units shall be all uses listed in (1) above except temporary alterations.

Where consistent with the resource capabilities of the area and the purposes of this management unit the following uses may be allowed:

- a. High-intensity water-dependent recreation, including boat ramps, marinas and new dredging for boat ramps and marinas;
- b. Minor navigational improvements;
- c. Mining and mineral extraction, including dredging necessary for mineral extraction;
- d. Other water dependent uses requiring occupation of water surface area by means other than dredge or fill;

- e. Aquaculture requiring dredge or fill or other alteration of the estuary;
- f. Active restoration for purposes other than those listed in 1(d).
- g. Temporary alterations.

A use or activity is consistent with the resource capabilities of the area when either the impacts of the use on estuarine species, habitats, biological productivity, and water quality are not significant or that the resources of the area are able to assimilate the use and activity and their effects and continue to function in a manner which conserves long-term renewable resources, natural biologic productivity, recreational and aesthetic values and aquaculture.

3. *Development* -- in estuaries classified in the overall Oregon Estuary Classification for more intense development or alteration, areas shall be designated to provide for navigation and other identified needs for public, commercial, and industrial water-dependent uses, consistent with the level of development or alteration allowed by the overall Oregon Estuary Classification. Such areas shall include deep-water areas adjacent or in proximity to the shoreline, navigation channels, subtidal areas for in-water disposal of dredged material and areas of minimal biological significance needed for uses requiring alterations of the estuary not included in (1) and (2) above.

Permissible uses in areas managed for water-dependent activities shall be navigation and water-dependent commercial and industrial uses.

As appropriate the following uses shall also be permissible in development management units:

- a. Dredge or fill, as allowed elsewhere in the goal;
- b. Navigation and water-dependent commercial enterprises and activities;
- c. Water transport channels where dredging may be necessary;
- d. Flow-lane disposal of dredged material monitored to assure that estuarine sedimentation is consistent with the resource capabilities and purposes of affected natural and conservation management units.
- e. Water storage areas where needed for products used in or resulting from industry, commerce, and recreation;
- f. Marinas.

Where consistent with the purposes of this management unit and adjacent shorelands designated especially suited for water-dependent uses or designated for waterfront redevelopment, water-related and nondependent, nonrelated uses not requiring dredge or fill; mining and mineral extraction; and activities identified in (1) and (2) above shall also be appropriate.

In designating areas for these uses, local governments shall consider the potential for using upland sites to reduce or limit the commitment of the estuarine surface area for surface uses.

IMPLEMENTATION REQUIREMENTS

1. Unless fully addressed during the development and adoption of comprehensive plans, actions which would potentially alter the estuarine ecosystem shall be preceded by a clear presentation of the impacts of the proposed alteration. Such activities include dredging, fill, in-water structures, riprap, log storage, application of pesticides and herbicides, water intake

or withdrawal and effluent discharge, flow-lane disposal of dredged material, and other activities which could affect the estuary's physical processes or biological resources.

The impact assessment need not be lengthy or complex, but it should enable reviewers to gain a clear understanding of the impacts to be expected. It shall include information on:

- a. The type and extent of alterations expected;
- b. The type of resource(s) affected;
- c. The expected extent of impacts of the proposed alteration on water quality and other physical characteristics of the estuary, living resources, recreation and aesthetic use, navigation and other existing and potential uses of the estuary; and
- d. The methods which could be employed to avoid or minimize adverse impacts.

2. Dredging and/or filling shall be allowed only:

- a. If required for navigation or other water-dependent uses that require an estuarine location or if specifically allowed by the applicable management unit requirements of this goal; and,
- b. If a need (i.e., a substantial public benefit) is demonstrated and the use or alteration does not unreasonably interfere with public trust rights; and
- c. If no feasible alternative upland locations exist; and,
- d. If adverse impacts are minimized.

Other uses and activities which could alter the estuary shall only be allowed if the requirements in (b), (c), and (d) are met. All or portions of these requirements may be applied at the time of plan development for actions identified in the plan. Otherwise, they

shall be applied at the time of permit review.

3. State and federal agencies shall review, revise, and implement their plans, actions, and management authorities to maintain water quality and minimize man-induced sedimentation in estuaries. Local government shall recognize these authorities in managing lands rather than developing new or duplicatory management techniques or controls.

Existing programs which shall be utilized include:

- a. The Oregon Forest Practices Act and Administrative Rules, for forest lands as defined in ORS 527.610-527.730 and 527.990 and the Forest Lands Goal;
- b. The programs of the Soil and Water Conservation Commission and local districts and the Soil Conservation Service, for Agricultural Lands Goal;
- c. The nonpoint source discharge water quality program administered by the Department of Environmental Quality under Section 208 of the Federal Water Quality Act as amended in 1972 (PL92-500); and
- d. The Fill and Removal Permit Program administered by the Division of State Lands under ORS 541.605 - 541.665.

4. The State Water Policy Review Board, assisted by the staff of the Oregon Department of Water Resources, and the Oregon Department of Fish and Wildlife, the Oregon Department of Environmental Quality, the Division of State Lands, and the U.S. Geological Survey, shall consider establishing minimum fresh-water flow rates and standards so that resources and uses of the estuary, including navigation, fish and wildlife

characteristics, and recreation, will be maintained.

5. When dredge or fill activities are permitted in intertidal or tidal marsh areas, their effects shall be mitigated by creation, restoration or enhancement of another area to ensure that the integrity of the estuarine ecosystem is maintained. Comprehensive plans shall designate and protect specific sites for mitigation which generally correspond to the types and quantity of intertidal area proposed for dredging or filling, or make findings demonstrating that it is not possible to do so.

6. Local government and state and federal agencies shall develop comprehensive programs, including specific sites and procedures for disposal and stock-piling of dredged materials. These programs shall encourage the disposal of dredged material in uplands or ocean waters, and shall permit disposal in estuary waters only where such disposal will clearly be consistent with the objectives of this goal and state and federal law. Dredged material shall not be disposed in intertidal or tidal marsh estuarine areas unless part of an approved fill project.

7. Local government and state and federal agencies shall act to restrict the proliferation of individual single-purpose docks and piers by encouraging community facilities common to several uses and interests. The size and shape of a dock or pier shall be limited to that required for the intended use. Alternatives to docks and piers, such as mooring buoys, dryland storage, and launching ramps shall be investigated and considered.

8. State and federal agencies shall assist local government in identifying areas for restoration.

Restoration is appropriate in areas where activities have adversely affected some aspect of the estuarine system, and where it would contribute to a greater achievement of the objective of this goal. Appropriate sites include areas of heavy erosion or sedimentation, degraded fish and wildlife habitat, anadromous fish spawning areas, abandoned diked estuarine marsh areas, and areas where water quality restricts the use of estuarine waters for fish and shellfish harvest and production, or for human recreation.

9. State agencies with planning, permit, or review authorities affected by this goal shall review their procedures and standards to assure that the objectives and requirements of the goal are fully addressed. In estuarine areas the following authorities are of special concern:

Division of State Lands

Fill and Removal Law ORS
541.605-541.665

Mineral Resources ORS 273.551;
ORS 273.775 - 273.780

Submersible and Submerged
Lands ORS 274.005 - 274.940

Economic Development Department

Ports Planning ORS 777.835

Water Resources Department

Appropriation of Water ORS
37.010-537.990; ORS 543.010-543.620

**Department of Geology and Mineral
Industries**

Mineral Extraction ORS 520.005-
Oil and Gas Drilling ORS 520.095

Department of Forestry

Forest Practices Act ORS
527.610-527.730

Department of Energy

Regulation of Thermal Power and
Nuclear Installation ORS 469.300-
469.570

Department of Environmental Quality

Water Quality ORS
468.700-468.775

Sewage Treatment and Disposal
Systems ORS 454.010-454.755

GUIDELINES

The requirements of the
Estuarine Resources Goal should be
addressed with the same consideration
applied to previously adopted goals and
guidelines. The planning process
described in the Land Use Planning
Goal (Goal 2), including the exceptions
provisions described in Goal 2, applies
to estuarine areas and implementation
of the Estuarine Resources Goal.

Because of the strong
relationship between estuaries and
adjacent coastal shorelands, the
inventories and planning requirements
for these resources should be closely
coordinated. These inventories and
plans should also be fully coordinated
with the requirements in other state
planning goals, especially the Goals for
Open Spaces, Scenic and Historic
Areas and Natural Resources; Air,
Water, and Land Resources Quality;
Recreational Needs; Transportation;
and Economy of the State.

A. INVENTORIES

In detail appropriate to the level of
development or alteration proposed, the
inventories for estuarine features should
include:

1. Physical characteristics
 - a. Size, shape, surface area, and
contour, including water depths;
 - b. Water characteristics
including, but not limited to, salinity,
temperature, and dissolved oxygen.
Data should reflect average and
extreme values for the months of March,
June, September, and December as a
minimum; and
 - c. Substrate mapping showing
location and extent of rock, gravel, sand,
and mud.

2. Biological
characteristic--Location, Description,
and Extent of:
 - a. The common species of
benthic (living in or on bottom) flora and
fauna;
 - b. The fish and wildlife species,
including part-time residents;
 - c. The important resting, feeding,
and nesting areas for migrating and
resident shorebirds, wading birds and
wildlife;
 - d. The areas important for
recreational fishing and hunting,
including areas used for clam digging
and crabbing;
 - e. Estuarine wetlands;
 - f. Fish and shellfish spawning
areas;
 - g. Significant natural areas; and
 - h. Areas presently in commercial
aquaculture.

3. Social and economic
characteristics--Location, Description,
and Extent of:
 - a. The importance of the estuary
to the economy of the area;
 - b. Existing land uses
surrounding the estuary;
 - c. Man-made alterations of the
natural estuarine system;

- d. Water-dependent industrial and/or commercial enterprises;
- e. Public access;
- f. Historical or archaeological sites associated with the estuary; and
- g. Existing transportation systems.

1. That the short-term damage to resources is consistent with resource capabilities of the area; and

2. That the area and affected resources can be restored to their original condition.

B. HISTORIC, UNIQUE, AND SCENIC WATERFRONT COMMUNITIES

Local government comprehensive plans should encourage the maintenance and enhancement of historic, unique, and scenic waterfront communities, allowing for nonwater-dependent uses as appropriate in keeping with such communities.

C. TRANSPORTATION

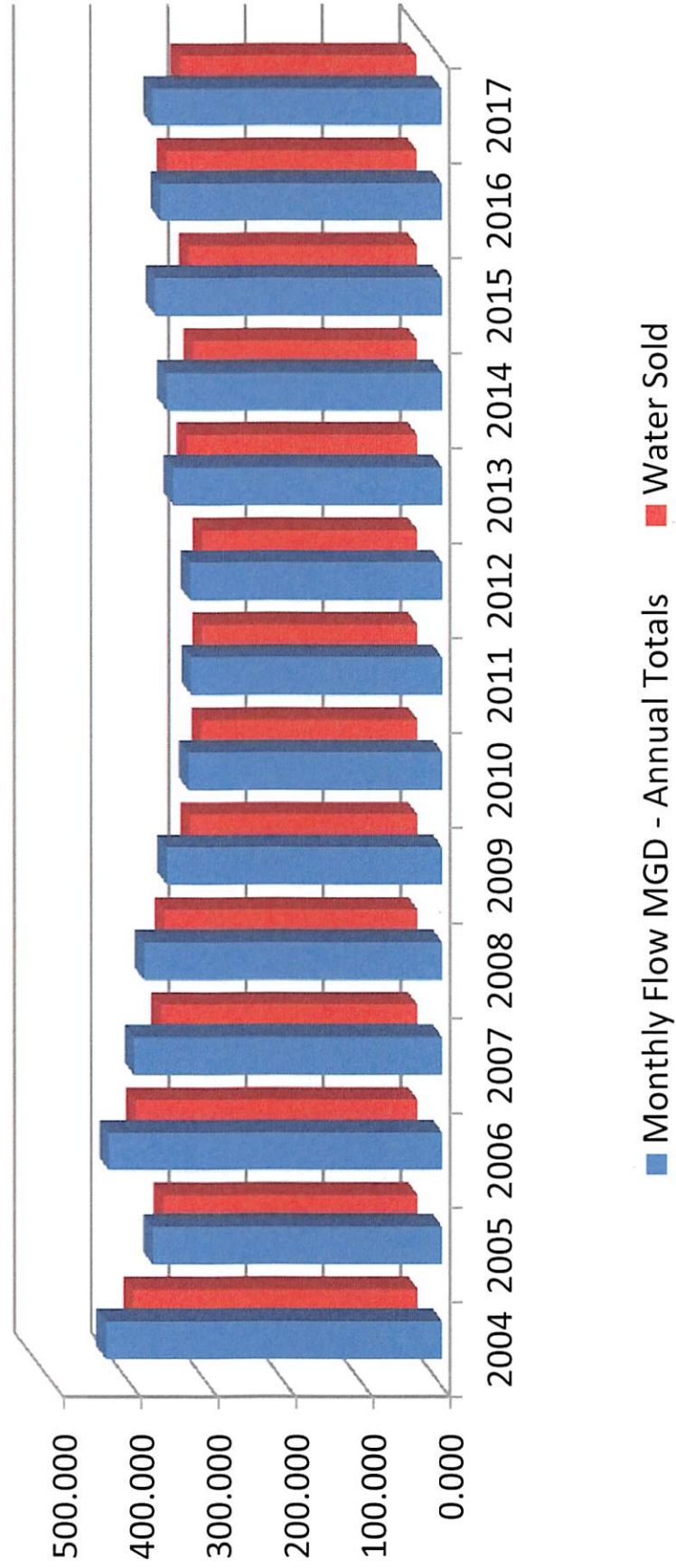
Local governments and state and federal agencies should closely coordinate and integrate navigation and port needs with shoreland and upland transportation facilities and the requirements of the Transportation Goal. The cumulative effects of such plans and facilities on the estuarine resources and values should be considered.

D. TEMPORARY ALTERATIONS

The provision for temporary alterations in the Goal is intended to allow alterations to areas and resources that the Goal otherwise requires to be preserved or conserved. This exemption is limited to alterations in support of uses permitted by the Goal; it is not intended to allow uses which are not otherwise permitted by the Goal.

Application of the resource capabilities test to temporary alterations should ensure:

2004-2017 Water Flows / Water Sold Comparison



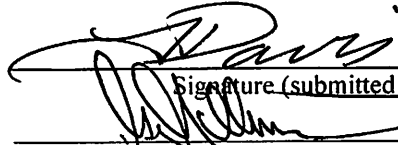
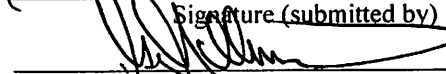
	Monthly Flow MGD - Annual Totals	Water Sold
2004	435.454	368.250
2005	374.740	329.847
2006	431.297	364.950
2007	398.588	332.339
2008	385.789	327.832
2009	356.077	294.867
2010	328.901	280.214
2011	324.636	278.858
2012	326.405	278.335
2013	347.297	298.983
2014	356.246	290.083
2015	370.413	296.610
2016	363.960	323.649
2017	373.811	306.641

CITY OF BROOKINGS

COUNCIL AGENDA REPORT

Meeting Date: June 11, 2018

Originating Dept: City Recorder


Signature (submitted by)

City Manager Approval

Subject: Council Liaisons

Recommended Motion:

Motion to amend assignments of Councilors to attend various commission, committee, and intergovernmental agency meetings and report back to the City Council on activities of those organizations when applicable to City affairs.

Financial Impact:

None

Reviewed by Finance & Human Resources Director: _____

Background/Discussion:

Last year, City Council assigned members of the Council as 'liaisons' to various Council-appointed commissions and committees. These liaisons attend commission/committee meetings, interact with members of the commissions/committee in clarifying Council policy, and periodically report back to the Council. Due to recent Council composition and staffing changes, amendments to the assignments are now needed.

Council-appointed City commissions and committees include:

- Planning Commission
- Parks and Recreation Commission
- Tourism Promotion Advisory Committee

In addition to commission/committee liaisons, City Council designated a 'liaison' representative to each of the following intergovernmental boards and commissions:

- Brookings Harbor Port District
- Brookings Harbor School District
- Curry County Board of Commissioners
- Curry County Recycling
- Harbor Sanitary District
- Household Hazardous Waste Steering Committee
- League of Oregon Cities (voting delegate)
- Sudden Oak Death Task Force

Staff has updated a list of the committees and agencies in which Council currently participates, indicating where new assignments are needed; the list includes meeting place and frequency and is attached here.

Attachment(s):

- a. Liaison spreadsheet

COUNCIL LIASIONS

Organization	Member	Liaison	Appointee	Alternate	When	Where
Brookings/Harbor School District 17C		X	B Hodges		Monthly/3rd Wed, 6pm	K-School
Curry County Commission		X	J Pieper		1st & 3rd Wed/10am	Courthouse Annex, GB
Curry County Recycling		X		T Davis	3rd Tues, 1st month of each quarter; 10 a.m. - 12 p.m.	Curry County Commissioners Hearing Room
Harbor Sanitary District	X		J Pieper	J Howard	No set dates/times	No set location
Household Hazardous Waste (HHW) Steering Committee	X			T Davis	As Needed	Coos County (can be attended via phone)
League of Oregon Cities Voting Delegate	X				Annual	NA
Parks and Recreation Commission		X	B Hodges		Bi-monthly/3rd Thurs, 7pm	Chambers
Planning Commission		X	J Pieper		Monthly/1st Tues, 7pm	Chambers
Port of Brookings Harbor		X			Monthly/3rd Tues, 7pm	Port Office
Sudden Oak Death Task Force	X		D Trigilia		As Needed	Varies/Statewide
Tourism Promotion Advisory Committee		X	B Hamilton		Monthly/3rd Thurs, 4pm	Chambers

City of Brookings

CITY COUNCIL MEETING MINUTES

City Hall Council Chambers, 898 Elk Drive, Brookings, OR 97415

Tuesday, May 29, 2018

Call to Order

Mayor Pieper called the meeting to order at 7:00 PM.

Roll Call

Council present: Mayor Jake Pieper, Councilors Bill Hamilton, Ron Hedenskog, and Dennis Triglia present; a quorum present. Councilor Hodges arrived at 7:58 p.m.

Staff present: City Manager Gary Milliman, Finance & Human Resource Director Janell Howard, City Attorney Martha Rice, Parks and Planning Manager Tony Baron, Administrative Aide Rita Ritz, and City Recorder Teri Davis.

Media Present: Jane Stebbins of Curry Pilot present

Others Present: Seventeen audience members.

Public Hearings & Resolutions

Public hearing and approval of appropriations for the 2018-19, Fiscal Year Budget

Finance & Human Resources Director Howard presented the staff report.

Mayor Pieper opened the Public Hearing regarding the City's election to receive state revenues for 2018-19 at 7:05 p.m.

With no one present to address Council on the matter, Mayor Pieper closed the Public Hearing at 7:06 p.m.

Mayor Pieper opened the Public Hearing regarding adoption of the budget and making appropriations for fiscal year 2018-19 at 7:06 p.m.

With no one present to address Council on the matter, Mayor Pieper closed the Public Hearing at 7:07 p.m.

Councilor Triglia asked if changes to the salary stipulation in the City Manager Agreement would change or negate the approved budget. He was advised they would not.

Councilor Hedenskog moved, Councilor Hamilton seconded and Council voted unanimously to adopt Resolution 18-R-1132, declaring the City's election to receive state revenues for 2018-19 fiscal year.

Councilor Hedenskog moved, Councilor Hamilton seconded and Council voted unanimously to adopt Resolution 18-R-1133, adopting the City of Brookings' budget, declaring tax levied, making appropriations for the 2018-19 fiscal year, and to categorize the levy.

Approval of Water and Sewer Rates and System Replacement Fees for Fiscal Year 2018-19

Finance & Human Resources Director Howard presented the staff report.

Councilor Triglia moved, Councilor Hamilton seconded and Council voted unanimously to adopt Resolution 18-R-1134, adopting Water rates for 2018-19.

Councilor Hedenskog moved, Councilor Hamilton seconded and Council voted unanimously to adopt Resolution 18-R-1135, adopting Sewer rates for 2018-19.

Councilor Hedenskog moved, Councilor Hamilton seconded and Council voted unanimously to adopt Resolution 18-R-1136, adopting System Replacement Fees for 2018-19.

Oral Requests and Communications from the audience

- a. Harvey Young of 98067 Hallway addressed Council in support of the Steelhead regulations change petition. Mr. Young submitted a document of explanation which was entered into record.
- b. Leonard Krug of 97002 Dodge Avenue addressed Council in opposition to the Steelhead regulations change petition.
- c. Richard Heap of 95975 N. Brookside Drive addressed Council in opposition to the Steelhead regulation change petition
- d. Dave Kuehn of 98430 N. Bank Chetco Road addressed Council with an update on the Fish Cleaning Station project at the Port.

Staff Reports

Department of Land Conservation and Development Housing Planning Funds

City Recorder Davis presented the staff report.

Councilor Hedenskog moved, Councilor Triglia seconded and Council voted unanimously to authorize the Mayor to submit a Department of Land Conservation and Development Request for Assistance to create a Housing Strategy Implementation Plan.

Contract Extension with The Dyer Partnership

City Manager Milliman presented the staff report.

Councilor Triglia moved, Councilor Hamilton seconded and Council voted unanimously to authorize City Manager to execute an as-needed technical services agreement contract extension with The Dyer Partnership.

Brookings Airport Purchase

City Manager Milliman presented the staff report.

County Counsel John HuttI addressed Council advising the matter would go before the County Board of Commissions on Wednesday, May 30. He would advise that Board of this agency's actions.

Councilor Triglia noted several typographical errors in the contract document which need to be edited prior to executing.

City Manager Milliman thanked Counselor HuttI for all his efforts in facilitating this agreement.

Councilor Hedenskog moved, Councilor Triglia seconded and Council voted unanimously to authorize the Mayor to execute three agreements involving the transfer and sale of the Brookings Airport including the "Purchase and Transfer Agreement Brookings Airport," "Brookings Airport Federal Obligations Assignment and Assumption Agreement," and the "Brookings Airport ODA COAR Grant Agreements Assignment and Assumption Agreement" and any other necessary associated documents at a cost not to exceed \$130,000.

Travel Oregon Competitive Medium Grant

City Recorder Davis presented the staff report.

Councilor Triglia moved, Councilor Hedenskog seconded and Council voted unanimously to authorize staff submittal of a Travel Oregon Competitive Medium Grant application and to allocate \$2,790 in Transient Occupancy Tax funds to fund a portion of the 25 percent required match.

Curry Transfer and Recycling Rate Increase

City Manager Milliman presented the staff report.

Councilor Hedenskog moved, Councilor Hodges seconded and Council voted unanimously to approve a new rate schedule to be effective July 1, 2018 for refuse collection and recycling services provided by Curry Transfer and Recycling, such schedule being as proposed in Exhibit A attached to the CTR letter dated May 15, 2018.

Waiver of Fees for Wild Rogue Relay

Parks and Planning Manager Baron presented the staff report.

Councilor Triglia moved, Councilor Hamilton seconded and Council voted unanimously to authorize City Manager to waive fees associated and services provided in support of the Wild Rogue Relay 2018 event.

Rock the Chetco Event Funding

City Recorder Davis presented the staff report.

Event Organizer Michael Frederick of 16883 Yellowbrick Road addressed Council with an explanation of the funding needs.

Mr. Frederick was directed to reconcile with TPAC after final budgetary tabulations are complete.

Councilor Triglia moved, Councilor Hedenskog seconded and Council voted unanimously to allocate a \$3,000 grant to the Rock the Chetco event.

City Manager Employment Agreement

Finance & Human Resources Director Howard presented the staff report.

Teresa Lawson of 820 Brookhaven Drive addressed Council in opposition to the agreement. Her provided comments were entered into record.

Berman Matteson of 747 First Street addressed Council in opposition to the agreement.

Councilor Triglia noted he had issues with four categories of the agreement, including the dual duties, salary and qualifications, the benefits package and accrual, and needed revisions to several other sections.

Councilors discussed the hiring process, associated costs of having a high-quality, professional City Manager, and how benefits in the agreement compare to those of other employees (same).

Councilor Triglia presented a salary survey he had performed, and based on that survey, recommended reducing the salary to \$108,000 to start, with an increase to \$113,000 on January 1, 2019. His salary survey was entered into record.

Council further discussed elements of the agreement.

Councilor Triglia advised he would not vote to approve the agreement at this meeting.

Councilor Hodges moved, Councilor Hedenskog seconded and Council voted 4-1, with Councilor Triglia voting 'nay', to authorize the Mayor to sign an employment agreement with Janell Howard for the City Manager position.

Consent Calendar

1. Approve Council minutes for April 9, 2018
2. Accept TPAC minutes for March 8, 2018
3. Receive Safety Committee Report for 2017
4. Receive monthly financial report for March 2018

Councilor Triglia moved, Councilor Hodges seconded and Council voted unanimously to approve the Consent Calendar.

Remarks from Mayor and Councilors

Councilor Triglia commented that his nay vote was in opposition to the agreement, not in opposition to Ms. Howard.

Councilor Triglia advised he would be attending the Sudden Oak Death conference on Wednesday and would report back to Council any significant information

City Manager Milliman reminded Councilor the Management Compensation Plan is reviewed annually; that is the time to address benefits. The City Manager agreement was devised through Legal Counsel; agreements can be revised.

Councilor Hamilton thanked the members of the community who addressed Council.

Adjournment

Councilor Hedenskog moved, Councilor Triglia seconded, and the meeting adjourned at 10:00 p.m.

Respectfully submitted:

ATTESTED:
this _____ day of _____ 2018:

Jake Pieper, Mayor

Teri Davis, City Recorder

MINUTES
BROOKINGS PARKS AND RECREATION COMMISSION
March 22, 2018

CALL TO ORDER

Chair Tom Bozack called the meeting to order at 7:00 pm followed by the Pledge of Allegiance.

ROLL CALL

Present: Commissioners Patt Brown, Holly Beyer, Jay Trost, Trace Kather, and Chair Tom Bozack

Also present: Parks/Tech Services Supervisor Tony Baron

APPROVAL OF MINUTES

Motion made by Commissioner Trost to approve the minutes of January 25, 2018; motion seconded by Commissioner Kather and Commission voted; the motion carried unanimously.

PUBLIC APPEARANCES – None

REGULAR AGENDA

- A. Election of Officers - Motion made by Chair Bozart to nominate Trace Kather as Chair; motion seconded by Commissioner Brown and Commission voted; the motion carried unanimously. Motion made by Commissioner Beyer to nominate herself as Vice Chair; motion seconded by Commissioner Brown and Commission voted; the motion carried unanimously.**
- B. Parks Capital Improvement Project List FYU 18-19 -** Tony Baron presented the 2018-19 CIP Project List and discussed the two planned projects. **Motion made by Commissioner Beyer to recommend to City Council the 2018-19 Parks Capital Improvement Plan list as determined by the Commission; motion seconded by Commissioner Brown and Commission voted; the motion carried unanimously.**
- C. Compassionate Friends Memorial Bench –** Tony Baron presented Memorial Bench information. Georgia Cockersham of the Compassionate Friends provided additional information. **Motion made by Commissioner Beyer to approve the placement of a Compassionate Friends Memorial Bench in Azalea Park; motion seconded by Commissioner Kather and Commission voted; the motion carried unanimously.**
- D. Parking Lot Lighting – Azalea Park –** Tony Baron presented the Parking Lot Lighting proposal by Natures Coastal Holiday for safety and security of the park. Natures Coastal Holiday has partnered before with the City on parks projects and would like to continue the partnership. Leslie Wilkinson provided additional information on Natures Coastal Holiday upcoming event campaigns. **Motion made by Commissioner Beyer to recommend City Council accept a donation of \$13,060 to be used to purchase and install parking lot light in Azalea Park; motion seconded by Commissioner Trost and Commission voted; the motion carried unanimously.**


INFORMATION UPDATES/DISCUSSION ITEMS

- A. Monarch Garden –** Commissioner Beyer suggested a butterfly pavillian could be an attraction for tourists and educational center.
- B. Park Master Plan Update –** Tony Baron provided a schedule for updating the the Plan. Has scheduled next workshop for May 31 in EOC. Inviting stake holders and service organizations for input and survey.

ADJOURNMENT

Next meeting scheduled for May 24, 2018. With no further business, meeting adjourned at 7:51 pm.

Respectfully submitted,



Trace Kather, Chair

(Approved at May 24, 2018 meeting)

Report Criteria:

Report type: Summary

GL Period	Check Issue Date	Check Number	Vendor Number	Payee	Check GL Account	Amount
05/18	05/03/2018	81267	5004	Blumenthal Uniforms & Equipment	10-00-2005	445.36
05/18	05/03/2018	81268	4767	Brookings Harbor Chamber of Commere	32-00-2005	2,000.00
05/18	05/03/2018	81269	5048	Brookings Harbor Medical Center	25-00-2005	150.00
05/18	05/03/2018	81270	313	Brookings Vol Firefighters	10-00-2005	2,250.00
05/18	05/03/2018	81271	715	Budge McHugh Supply	25-00-2005	1,939.25
05/18	05/03/2018	81272	5567	CAL/OR Insurance Specialists Inc	30-00-2005	683.33
05/18	05/03/2018	81273	193	Central Equipment Co, Inc	50-00-2005	4,000.00
05/18	05/03/2018	81274	5822	Chaves Consulting Inc	49-00-2005	370.20
05/18	05/03/2018	81275	3834	Clean Sweep Janitorial Service	10-00-2005	2,185.00
05/18	05/03/2018	81276	5827	Coastal Investments LLC	10-00-2005	1,130.00
05/18	05/03/2018	81277	1745	Coastal Paper & Supply, Inc	10-00-2005	271.18
05/18	05/03/2018	81278	182	Coos-Curry Electric	10-00-2005	3,779.07
05/18	05/03/2018	81279	4746	Curry County Treasurer	10-00-2005	448.00
05/18	05/03/2018	81280	5859	Curry Watersheds Partnership	25-00-2005	4,080.00
05/18	05/03/2018	81281	166	Dan's Auto & Marine Electric	20-00-2005	239.15
05/18	05/03/2018	81282	259	Da-Tone Rock Products	20-00-2005	668.16
05/18	05/03/2018	81283	317	DCBS - Fiscal Services	10-00-2005	127.37
05/18	05/03/2018	81284	1	Caroline Capitano	20-00-2005	234.35
05/18	05/03/2018	81285	1	Arturo Gonzalez	20-00-2005	208.48
05/18	05/03/2018	81286	371	Oregon DEQ	25-00-2005	1,020.00
05/18	05/03/2018	81287	3342	Fastenal	10-00-2005	529.22
05/18	05/03/2018	81288	2186	Ferguson Enterprises Inc #3011	50-00-2005	1,501.57
05/18	05/03/2018	81289	5432	First Community Credit Union	25-00-2005	812.99
05/18	05/03/2018	81290	4646	Frontier	30-00-2005	26.21
05/18	05/03/2018	81291	199	Richard Harper	10-00-2005	400.00
05/18	05/03/2018	81292	5596	Rob Johnson	10-00-2005	104.00
05/18	05/03/2018	81293	328	Les Schwab Tire Center	25-00-2005	777.68
05/18	05/03/2018	81294	4981	McLennan Excavation, Inc	20-00-2005	3,309.42
05/18	05/03/2018	81295	4269	Milliman, Gary	10-00-2005	67.50
05/18	05/03/2018	81296	4487	Net Assets Corporation	10-00-2005	220.00
05/18	05/03/2018	81297	329	New Hope Plumbing	10-00-2005	597.50
05/18	05/03/2018	81298	5486	NovoPrint USA Inc	32-00-2005	995.00
05/18	05/03/2018	81299	3581	Oil Can Henry's	10-00-2005	41.99
05/18	05/03/2018	81300	5008	Online Information Services	10-00-2005	100.36
05/18	05/03/2018	81301	5155	Oregon Department of Revenue	10-00-2005	1,932.50
05/18	05/03/2018	81302	5390	O'Reilly Automotive, Inc	10-00-2005	18.98
05/18	05/03/2018	81303	4794	Pacific Rim Copy Center	15-00-2005	185.92
05/18	05/03/2018	81304	4	James Blair	10-00-2005	70.00
05/18	05/03/2018	81305	322	Postmaster	25-00-2005	850.00
05/18	05/03/2018	81306	207	Quill Corporation	10-00-2005	324.10
05/18	05/03/2018	81307	1840	Rogue Credit Union	15-00-2005	2,497.61
05/18	05/03/2018	81308	2863	Verizon Wireless	10-00-2005	501.70
05/18	05/03/2018	81309	2122	Cardmember Service	10-00-2005	5,242.38
05/18	05/03/2018	81310	4135	Jim Watson	10-00-2005	106.00
05/18	05/03/2018	81311	5011	Xylem Water Solutions USA, INC	25-00-2005	2,080.00
05/18	05/10/2018	81312	4939	BI- Mart Corporation	10-00-2005	304.75
05/18	05/10/2018	81313	4363	Black & Rice LLP	10-00-2005	4,113.22
05/18	05/10/2018	81314	5220	CandyApple Productions	10-00-2005	375.00
05/18	05/10/2018	81315	5070	Canon Solutions America	10-00-2005	89.27
05/18	05/10/2018	81316	193	Central Equipment Co, Inc	10-00-2005	39.96
05/18	05/10/2018	81317	5861	Certified Folder Display Service Inc	32-00-2005	1,206.30
05/18	05/10/2018	81318	3015	Charter Communications	30-00-2005	495.00
05/18	05/10/2018	81319	183	Colvin Oil Company	25-00-2005	2,847.95

GL Period	Check Issue Date	Check Number	Vendor Number	Payee	Check GL Account	Amount
05/18	05/10/2018	81320	173	Curry Equipment	15-00-2005	830.79
05/18	05/10/2018	81321	185	Del Cur Supply	10-00-2005	186.32
05/18	05/10/2018	81322	1	Cliff Bennett	20-00-2005	192.25
05/18	05/10/2018	81323	1	Jason Cooke	20-00-2005	77.48
05/18	05/10/2018	81324	1	Kurt Herzog	20-00-2005	204.01
05/18	05/10/2018	81325	371	DEQ Business Office	25-00-2005	300.00
05/18	05/10/2018	81326	2186	Ferguson Enterprises Inc #3011	50-00-2005	1,927.82
05/18	05/10/2018	81327	153	Ferrellgas	20-00-2005	558.91
05/18	05/10/2018	81328	4646	Frontier	10-00-2005	604.02
05/18	05/10/2018	81329	139	Harbor Logging Supply	10-00-2005	20.00
05/18	05/10/2018	81330	4980	iSecure	10-00-2005	33.00
05/18	05/10/2018	81331	162	Kerr Hardware	15-00-2005	896.64
05/18	05/10/2018	81332	5860	Lane Council of Governments	10-00-2005	1,816.98
05/18	05/10/2018	81333	5846	Mallory Safety & Supply LLC	20-00-2005	576.65
05/18	05/10/2018	81334	4981	McLennan Excavation, Inc	52-00-2005	45,020.00
05/18	05/10/2018	81335	279	One Call Concepts, Inc	20-00-2005	35.84
05/18	05/10/2018	81336	252	Paramount Pest Control	10-00-2005	50.00
05/18	05/14/2018	81337	4	Parks/Pool Refund	10-00-2005	.00 V
05/18	05/10/2018	81338	5101	Pitney Bowes Reserve Acct	10-00-2005	500.00
05/18	05/10/2018	81339	5862	Powell Concrete Pumping	50-00-2005	607.50
05/18	05/10/2018	81340	5457	Speer Hoyt LLC	10-00-2005	3,295.38
05/18	05/14/2018	81341	5752	Washington St Univ - Conf Management	10-00-2005	.00 V
05/18	05/10/2018	81342	169	Waste Connections Inc	20-00-2005	442.90
05/18	05/17/2018	81343	4734	Aramark Uniform Services	10-00-2005	90.00
05/18	05/17/2018	81344	5108	Brad Kelly, PT	25-00-2005	180.00
05/18	05/17/2018	81345	5858	CH2M Hill OMI	25-00-2005	107,604.13
05/18	05/17/2018	81346	3015	Charter Communications	10-00-2005	224.96
05/18	05/17/2018	81347	284	Day Management Corp	30-00-2005	907.14
05/18	05/17/2018	81348	1	Matt Gertsch	20-00-2005	248.59
05/18	05/17/2018	81349	1	Medical Service Building LLC	20-00-2005	279.87
05/18	05/17/2018	81350	1	Shane Navarro	20-00-2005	203.45
05/18	05/17/2018	81351	1	Pacific Sunset Inn	20-00-2005	60.00
05/18	05/17/2018	81352	1	Pacific Sunset Inn	20-00-2005	60.00
05/18	05/17/2018	81353	371	Dept. of Environmental Quality	20-00-2005	574.00
05/18	05/17/2018	81354	2640	Dyer Partnership Inc., The	51-00-2005	29,066.73
05/18	05/17/2018	81355	5076	Employment Relations Board	10-00-2005	500.00
05/18	05/17/2018	81356	3342	Fastenal	15-00-2005	24.30
05/18	05/17/2018	81357	4646	Frontier	25-00-2005	1,145.55
05/18	05/17/2018	81358	4128	GSI Water Solutions Inc	52-00-2005	5,057.85
05/18	05/17/2018	81359	4953	Harbor Truss and Supply LLC	50-00-2005	325.00
05/18	05/17/2018	81360	4269	Gary Milliman	10-00-2005	148.99
05/18	05/17/2018	81361	283	Muffler & More	15-00-2005	82.47
05/18	05/17/2018	81362	4443	Napa Auto Parts-Golder's	10-00-2005	7.64
05/18	05/17/2018	81363	685	Neilson Research Corporation	52-00-2005	1,659.60
05/18	05/17/2018	81364	3789	Oak Street Health Care Center	25-00-2005	150.00
05/18	05/17/2018	81365	4	Desirae Dove	10-00-2005	214.00
05/18	05/17/2018	81366	4	Crystal Young-Cooke	10-00-2005	64.50
05/18	05/17/2018	81367	5849	PR Diamond Products Inc	15-00-2005	350.00
05/18	05/17/2018	81368	5768	Proficient Auto Center Inc	10-00-2005	1,044.80
05/18	05/17/2018	81369	207	Quill Corporation	10-00-2005	200.22
05/18	05/17/2018	81370	3	Cynthia O'Reilly	20-00-2005	92.00
05/18	05/17/2018	81371	5303	SHI International Corp	49-00-2005	1,095.27
05/18	05/17/2018	81372	3499	Simplot Grower Solutions	15-00-2005	1,101.30
05/18	05/17/2018	81373	5730	Spectrum Reach	32-00-2005	1,000.00
05/18	05/17/2018	81374	5448	Stover Engineering	50-00-2005	463.50
05/18	05/17/2018	81375	990	UPS	52-00-2005	21.72

GL Period	Check Issue Date	Check Number	Vendor Number	Payee	Check GL Account	Amount
05/18	05/17/2018	81376	5865	Ann Volz	25-00-2005	235.00
05/18	05/17/2018	81377	169	Waste Connections Inc	25-00-2005	600.89
05/18	05/17/2018	81378	151	Western Communications, Inc.	32-00-2005	641.82
05/18	05/17/2018	81379	5864	WRK Engineers	50-00-2005	10,720.00
05/18	05/24/2018	81380	416	Brookings Lock & Safe Inc	10-00-2005	312.00
05/18	05/24/2018	81381	5070	Canon Solutions America	10-00-2005	286.20
05/18	05/24/2018	81382	183	Colvin Oil Company	10-00-2005	2,888.98
05/18	05/24/2018	81383	1	Laura Bentley	20-00-2005	235.74
05/18	05/24/2018	81384	1	Dina Howland	20-00-2005	138.95
05/18	05/24/2018	81385	1	Steven Manion	20-00-2005	75.61
05/18	05/24/2018	81386	4981	McLennan Excavation, Inc	20-00-2005	2,400.00
05/18	05/24/2018	81387	329	New Hope Plumbing	10-00-2005	587.50
05/18	05/24/2018	81388	3159	NorthCoast Health Screening	25-00-2005	77.00
05/18	05/24/2018	81389	798	Dan Palicki	61-00-2005	1,586.99
05/18	05/24/2018	81390	4	Kristin Coons	10-00-2005	214.00
05/18	05/24/2018	81391	5768	Proficient Auto Center Inc	10-00-2005	489.43
05/18	05/24/2018	81392	3	Cliff Bennett	20-00-2005	89.00
05/18	05/24/2018	81393	3	Paul DePippo	20-00-2005	42.16
05/18	05/24/2018	81394	3	Chris & Kismet Mayo	20-00-2005	109.38
05/18	05/24/2018	81395	3	Dennis Pryce	20-00-2005	99.29
05/18	05/31/2018	81396	5767	Axon Enterprise Inc	61-00-2005	1,528.00
05/18	05/31/2018	81397	1373	Cascade Fire Equipment	10-00-2005	87.40
05/18	05/31/2018	81398	822	Coast Auto Center	10-00-2005	229.50
05/18	05/31/2018	81399	1745	Coastal Paper & Supply, Inc	10-00-2005	362.08
05/18	05/31/2018	81400	182	Coos-Curry Electric	10-00-2005	3,525.61
05/18	05/31/2018	81401	1357	Curry County Clerk	10-00-2005	450.00
05/18	05/31/2018	81402	4746	Curry County Treasurer	10-00-2005	610.75
05/18	05/31/2018	81403	1	Wilodean Longo	20-00-2005	60.38
05/18	05/31/2018	81404	1	Alexis Neketin	20-00-2005	173.74
05/18	05/31/2018	81405	1	William O'Connor	20-00-2005	28.37
05/18	05/31/2018	81406	4876	D'Sinez Signs & Graphics LLC	15-00-2005	90.00
05/18	05/31/2018	81407	5676	Ewing Irrigation Products Inc	50-00-2005	489.09
05/18	05/31/2018	81408	5125	Jordan Fanning LLC	25-00-2005	2,500.00
05/18	05/31/2018	81409	4646	Frontier	30-00-2005	193.18
05/18	05/31/2018	81410	123	Motorola	10-00-2005	4,419.42
05/18	05/31/2018	81411	5866	Beverly Nachel	25-00-2005	248.00
05/18	05/31/2018	81412	3789	Oak Street Health Care Center	25-00-2005	150.00
05/18	05/31/2018	81413	3561	Oil Can Henry's	10-00-2005	121.98
05/18	05/31/2018	81414	4899	Oregon Coast Auto Detailing	10-00-2005	325.00
05/18	05/31/2018	81415	4728	Oregon Department of Revenue	10-00-2005	2,066.25
05/18	05/31/2018	81416	4	Connie Hunter	10-00-2005	214.00
05/18	05/31/2018	81417	4	Oregon Strong	10-00-2005	64.50
05/18	05/31/2018	81418	956	Suiter's Paint & Body	61-00-2005	125.00
05/18	05/31/2018	81419	2863	Verizon Wireless	10-00-2005	497.55
05/18	05/31/2018	81420	2122	Cardmember Service	10-00-2005	7,264.56
Grand Totals:						319,071.15

Committee Vacancies

Date: June 11, 2018

Re: Vacant Volunteer Positions

Following is a list of all Commission/Committee positions and terms currently vacant:

Position	Held By	Month/ Day	Year Expires	Term/ Years
Budget #1	VACANT	2/1	2021	3
Budget #2	VACANT	2/1	2019	3
TPAC #5	VACANT	7/1	2019	3

PUBLIC COMMENT FORM

1. THE CHETCO BAR FIRE AND IMPACT ON LOCAL WATER
2. 911 ACCESS AND THE 2015 CURRY COUNTY STRATEGIC
TECHNOLOGY AND ECONOMIC DEVELOPMENT (STED) TASK
FORCE
3. WITH THE RETIREMENT OF THE POLICE CHIEF IS IT TIME TO
CONSOLIDATE WITH CURRY COUNTY?
4. AFFORDABLE HOUSING AND THE REHOME MAN

Lauren Paulson
16131 W Hoffeldt Ln#38
Brookings, OR 97405
541-412-1390
laurenjpaulson@gmail.com

A Radical Innocent

A Cranky Spoiler of Apathetic Unity

Your ReHome Man (Unofficial)

HOME BEHOLDING MAN (PRODUCTION)

A CLIP OF THE HOUSE OF COMMONS

A HOUSE OF COMMONS

HOUSE OF COMMONS (PRODUCTION)

241-415 1300

BOOKINGS OF 82402

10131 W HOUSE OF COMMONS

HOUSE OF COMMONS

4 AFFORDABLE HOUSING AND THE HOME MAN

CONSOLIDATE WITH CURRY COUNCILS

3. WITH THE RETIREMENT OF THE POLICE CHIEF IS IT TIME TO

FORCE

TECHNOLOGY AND ECONOMIC DEVELOPMENT (21ED)AVSK

3. ALL ACCESS AND THE 2012 CURRY COUNCILS SYMBIOTIC

1. THE CHETCO BAY FIRE AND IMPACT ON LOCAL WATER

HOUSE OF COMMONS (PRODUCTION)

What's it Worth?

The May ballot will pose a familiar question to voters—will they support a tax levy? This year though there's a new Sheriff in town, and things could be different.

John Ward was sworn in as the new County Sheriff this past fall. In an effort to help fund his department and the county jail, Ward requested the following be posed to voters: A proposed three year local option tax provides funding that can only be used for Sheriff's Office purposes. It will provide for Jail Operations and 24/7 Patrol Services. In addition, it will provide funding

for: Dispatch, 911, Criminal Investigations, Crime Prevention, Search & Rescue, Marine Patrol, Civil Process, Drug Enforcement/Prevention/ Education, Traffic Safety, Adult Parole/ Probation, Wild Land Fire/ Tsunami Evacuations and Emergency Services.

This measure proposes split rates. While the Sheriff's Office services benefit all residents, the taxpayers in Brookings, Gold Beach and Port Orford will pay a lower rate because cities fund police departments and patrol officers. This proposed local option tax is estimated to raise \$5,240,000 in 2015-16, \$5,400,000 in

2016-17, and \$5,560,000 in 2017-18. Tax cost's for this measure is an ESTIMATE ONLY based upon the best information available from the County Assessor at the time of the estimate.

The Board of Commissioners will annually review this tax, considering any Federal Safety Net payments received, in consultation with the Sheriff's Citizens Advisory Group for recommendations on reducing future amounts levied.

And the Survey Says...

It was the talk of the town for over a year, and the results are finally in! Two years ago the idea of a community survey was introduced to the public. The survey occurred this winter, with the results tallied this spring. Highlights and some comments include:

- * Encourage new business. Does not require funding it. Just encourage it, so they pay taxes too.
- * Address tax. Everyone who receives mail and has an address should be taxed.
- * Change council members to volunteer position instead of paying them \$68,000 a year.
- * Do what needs to be done. Lead. Educate.
- * Work together! Get over your differences!

The Curry County Citizen's survey was open for input November through December 2014.



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Unemployment is down!	4
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New Commissioner on Board

as a County Commissioner.

Huxley joined his fellow Commissioners, David Brock Smith and Susan Brown, in setting goals for 2015. His primary goals are listed as follows: website redesign, audio/video equipment for public meetings, redesign and/or create County procedures for the submission of documents that

require the Board of Commissioners' approval, and expense reporting. He also listed 911 consolidation, digitizing the county fee schedule, update the public records policy, support the recruitment of volunteers to collate the Comprehensive Plan and Zoning Codes and updates to the Commissioners' Journal.

The New Year brought a new County Commissioner to the Curry County Board of Commissioners. Thomas Huxley defeated incumbent David Itzen in the November election to serve a four year term

County Spotlight:

County Task Force Talks Fiber

In 2013 approval was given to start a task force to look at ways to take advantage of any opportunities associated with the then new fiber optic loop. That loop allowed Curry County to connect with the rest of the world and opened up possibilities for job growth. This spring the Strategic Technology and Economic Development Task Force was finalized and members began work immediately on how to use the fiber to the county's benefit. It was soon realized a call center could easily be established and employ low skill labor. Other ideas considered by the task force were the possibility of a data center, and a need to promote the county to people that can work remotely from their home. Although the group is not done meeting, their research and ideas are inspiring! Imagine the possibilities...

public resources and also met with Mr. Bill Hoblin, Major Account Executive of Charter Business Solutions in Redding, CA.

2. Investigated candidate businesses that would require fiber optic networks to function successfully in Curry County, including data / call centers and other internet-based options.
3. Obtained additional input from other successful Oregon business CEO's utilizing fiber and/or high-bandwidth networks, including Mr. Cameron Camp (IVDATACENTER) in Cave Junction and Mr. John Stadter (fcr) in Eugene.
4. Leveraged the above knowledge and data in completing the STED work group effort.

FINDINGS:

The completed Charter redundant fiber optic network LOOP can easily and economically provide Giga-Bit bandwidth capabilities for dozens of businesses to locate their facilities in near-proximity to U.S. Route 101 anywhere from the California border north to the Coos County line. For example, a one Giga-Bit fiber connection is sufficient to service more than 1,000

Executive Summary

CURRY COUNTY

STRATEGIC TECHNOLOGY AND ECONOMIC DEVELOPMENT (STED) TASK FORCE

PURPOSE:

This document summarizes results of the STED Task Force (in response to Curry County ORDER NO. 20001) to analyze advantages of the newly completed fiber optic network and to make recommendations regarding attracting businesses and promoting the County in light of that development.

METHODOLOGY:

Beginning in February 2015, The Task Force used the following processes to develop the findings, conclusions and recommendations included in this document.

1. Researched the capabilities and limitations of this fiber optic network using open public resources and also met with Mr. Bill Hoblin, Major Account Executive of Charter Business Solutions in Redding, CA.
2. Investigated candidate businesses that would require fiber optic networks, to function successfully in Curry County, including data / call centers and other internet-based options.
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The STED Task Force also reviewed and built upon the July 2007 "CURRY COUNTY TELECOMMUNICATIONS STRATEGIC PLAN" and has included a 2015 updated summary of that plan's Three Goals in Attachment 2.

A couple dozen different "internet-based" business models exist that will or could benefit from utilizing the Charter Fiber network along Highway 101, call center businesses offer wide ranging flexibility in matching County resident skill sets to potential contractors

(users) across the U.S as well as English/Spanish speaking countries around the world. Addendum A provides a short summary of key call center features and issues.

CONCLUSIONS:

To successfully attract new business to this county, perspective investors must be assured of finding:

- A large, self-motivated pool of good quality high school graduates with PC expertise that can be easily trained in the unique skills specific to their business opportunity
- A business community that works together, and a sound, well-funded, above average infrastructure of schools, healthcare facilities, housing, transportation (including air-travel) and fire/police protection to attract new professional staff

RECOMMENDATIONS TO CURRY COUNTY BOARD OF COMMISSIONERS:

- A. Motivate and reward training of high school students and adults in technology, business and computer skills (training, internships, special technology projects)
- B. Dedicate funds to marketing specifically to attract a Tier-1 Call Center and remote workers (bid and contract a site-selector consultant)
- C. Work with the hospital and other medical clinics to increase tele-med opportunities in the County
- D. Order a new task force to identify how to use the PEG funds to improve County utilization of the fiber optic network while engaging students and the public
- E. Order a new task force to research state, county, and city incentives, e.g., property tax abatements, tax credits, grants, etc., as well as all relevant helpful business resources, e.g., lists of capital investors, business lenders, online forms and applications, private sector associations and programs, etc., and provide this information to a web designer to create a Curry County business resources web page. This is very likely the most discoverable means of reaching potential businesses looking to relocate or start up in the County.



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Thursday, July 6, 2017

TO: CURRY COUNTY COMMISSIONERS

FROM: Lauren Paulson — A Cranky Spoiler of Apathetic Unity

RE: ReHome Project

=====

A historical path ahead.

It was the Jenkins Estate Advisory Board meeting. The Jenkins Estate is the summer home in Aloha where the Ainsworth Banking Family (U.S. Bank antecedents) rode their horses.

The Advisory Board was considering a restoration of the milking booth in the barn basement. The plan was to hire an architect, do a study and create a subcommittee to monitor the project. Jim (I will call him) looked at me and slightly nodded. I looked back and slightly winked. When the meeting was over, Jim backed his pick-up to the basement door and we unloaded some tools. In two hours we had the entire project done.

I propose we start this ReHome project next week with the following initial criteria:

WHO: We define who is eligible for a ReHome upgrade in this order:

- Veterans — Consult with VFW, Vietnam Vets and all others.
- Seniors over age 70
- The Disabled

We would start at each North-South Curry County border looking for those eligible Veterans first. Then Seniors. Then the Disabled.

WHAT: Dated manufactured homes have the following upgrade targets:

- **Leveling and Skirting** — All manufactured homes are askew and need leveling. All manufactured homes have skirting issues allowing access to varmints.
- **Roof** — Older homes have vinyl roofing options
Composition 20-25 year roofing is the best option
- **Floors** — Every manufactured home has floor soft spots caused by water leakage. Plywood treated flooring is a logical repair.

WHEN: Volunteers could do a sampling of eligible manufactured homes now and interview eligible contractors now.

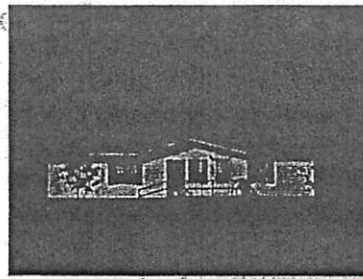
WHERE: Curry County starting in Brookings/Harbor

WHY: Curry County honors veterans. And Seniors. And the Disabled.

HOW: Commissioner Court Boice and his Merry Pranksters

We should not wait on yet another study. We should not wait to gather more data. We should identify needy veterans. I can identify ten right now. We should identify competent contractors (and honest ones). We should identify eligible Seniors for REPAIR now!!

Look What's Rollin' Into Town



Curry County saw its first new manufactured home roll into town as a result of the ReHome Oregon manufactured home replacement program. The project, an Oregon Solutions program, is now being considered as a model for statewide expansion.

One third of all households in Curry County live in manufactured housing, and half of those homes were built before 1980. Significant numbers of these homes pose grave risks to health and safety, including mold and mildew (that cause respiratory problems), tripping hazards (such as holes in the floor), accessibility problems for the disabled, and substandard insulation resulting in expensive heating bills.

In response to this challenge, Curry County has teamed up with NeighborWorks Umpqua and other partners to offer eligible participants affordable mortgages and down payment assistance when they choose to replace their dilapidated mobile home with a new, durable, energy-efficient model. Three replacement projects are currently in progress, and another three are in the pre-qualification stage. ReHome Oregon aims to replace a total of 25 homes in Curry County, and more program slots are available; interested parties should contact NeighborWorks Umpqua at 541-247-9638 or visit the program website at www.rehomeoregon.org (<http://www.rehomeoregon.org/>).

TO: BROOKINGS CITY COUNCIL

From: David E. Paoli, retired Civil Engineer, 1380 Glenwood Dr, Brookings

June 11, 2018

SUBJECT: LONE RANCH SUBDIVISION

In general, I am supportive of the Lone Ranch Development concept. I don't know if the proposed changes to the existing agreements are the very best that could be negotiated, but they may be. There are some substantial concessions the developer is willing to make, such as turning over a portion of the lots to the City for development that sounds very good to me.

The City Staff is developing a grant application in the 8 to 10 million dollar range for sewer system upgrades. Some of this funding is for the extension of the sewer service to Lone Ranch. Some of it is for the upgrading of existing sewer lines to better serve increased flow from Lone Ranch. However I believe that over half of the 8-10 million is to bring the existing old sewer system in compliance with existing federal regulations that have been out of compliance for years. That work must be done regardless of the Lone Ranch issue before the weight of the federal government falls on Brookings' neck. Yes, it is likely that water and sewer rates will go up because grants will not pay for it all.

Some people think that Lone Ranch is too far out of the city to serve low income housing needs. But I haven't heard about any other land that might be developed for 40 to 60 low income housing units. I want to point out that the Community College has been developed out there and a very substantial number of the college students are low income or next to no income. They get out there and back. Further, Lone Ranch is IN THE CITY AND HAS BEEN FOR A DECADE. That decision to make it part of the city was made years ago and the Borax Corporation spent millions of their own money to extend the City main water line out there. They will have to spend more millions to put streets, water lines, sewer lines and other improvements into the property before they get any financial return back. They are taking a substantial gamble they can make a profit. If they didn't think they could make a profit they would not be interested. If they don't make a profit who will cry for them? This is the American system of free enterprise at work.

David E. Paoli



The company's name comes from the Rio Tinto in southwestern Spain, which has flowed red since

More details

Carol Stoker, NASA - ACD03-0051-13 from
<http://www.nasa.gov/centers/ames/news/releases/2003/03>

Rio Tinto

Most Recent Public/Legal Issues

1. 4/11/18 'The Telegraph' – UK Business
"Rio Tinto under Fire from Shareholders
over Pay and Climate Change"
2. 4/12/18 www.smh.com
"Rio Tinto on the Defensive over its
Executive Salaries & Lobby Groups"
3. 4/30/18 'Asian Business News'
"Australia Broadens Legal Action
Against Mining Titan Rio Tinto"

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ALL SECTIONS

Business

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Business

Rio Tinto under fire from shareholders over pay and climate change



Rio Tinto is dual listed in London and Sydney

By Jon Yeomans

11 APRIL 2018 • 3:09PM

FTSE 100 miner Rio Tinto has been forced to defend itself over its remuneration, corporate governance and climate change policies at a testy annual general meeting in London.

Proxy adviser Glass Lewis advised shareholders to vote against Rio's pay report for 2017, in protest at the miner awarding bonuses to senior bosses in a year when it suffered two fatalities.

Rio boss Jean Sebastien Jacques told shareholders "safety and health is the number one" priority for the company, while newly appointed chairman Simon Thompson defended the miner's new pay policy, which goes to a binding vote this year, saying disagreement among shareholders prevented it from implementing a more "innovative" pay scheme.

Rio also faced down charges it was favouring one set of shareholders over another, after refusing to allow British investors a vote on a resolution demanding that it reveals payments to lobbying groups that back fossil fuels.

Shareholders in Rio's Australian company will get a vote on two extra resolutions at its AGM in Melbourne on May 2.



Rio boss Jean-Sebastien Jacques

Adam Matthews of the Church of England Pensions Board, which has £2bn funds under management, said it would vote against Rio's report and accounts in frustration at its continued funding of bodies such as the Minerals Council of Australia, which is avowedly pro-coal.

"These associations are taking positions at odds with Rio's interests and its policy on climate change, and with our interests as investors," Mr Matthews told *The Telegraph*. "It is still funding these trade associations and using company funds to do so."

Rio's rival BHP Billiton, also dual-listed in London and Sydney, had allowed shareholders in both countries to vote on resolutions regarding membership of the MCA.

Mr Thompson insisted it was necessary for the company to engage "with organisations with whom we may disagree". "There is broad-based recognition that Rio Tinto takes climate change very seriously," he said.

Last month Rio sold the last of its coal mines, becoming the first of the big mining groups to back out of the commodity altogether. The move comes as more and more institutional shareholders signal their unease about supporting the coal industry.

Brynn O'Brien, of the Australasian Centre for Corporate Responsibility, said Rio had failed to honour "the spirit of its dual listing" and address British shareholders' "well-founded concerns".

Meanwhile Glass Lewis also opposed the reappointment of senior independent director Ann Godbehere on the basis that she was on the audit committee in 2011 when the board approved the \$3.8bn purchase of a coal asset in Mozambique that later proved to be a dud.

The transaction is now the focus of a major investigation by the US Securities and Exchange Commission, one of a number of regulatory probes into Rio that have taken the shine off its otherwise impressive recent financial performance.

The results of Rio's AGMs will be published after the Melbourne meeting.

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BUSINESS COMPANIES MINING

Rio Tinto on the defensive over its executive salaries, lobby groups

By Jon Yeomans & Ruth Williams

Updated 12 April 2018 — 4:24pm, first published at 9:35am



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Rio Tinto was forced to defend its handling of workplace safety, executive pay and climate change issues at its annual general meeting in London, and faced a shareholder protest over calls for more transparency surrounding its membership of business lobby groups.

Its new chairman, Simon Thompson, who will again face shareholders at the company's Melbourne AGM in three weeks, told the London meeting it was still too early to tell what impact, if any, Rio would face from new US sanctions targeting Russian company Rusal, its junior partner in Queensland Alumina.



Baptism by fire: Simon Thompson only took on the chairman role last month.

Photo: Bloomberg

Mr Thompson, who took on the chairman role last month, acknowledged at the meeting that Rio Tinto's reputation had "been called into question" over the past two years, including by the current fraud probe underway by the US Securities and Exchange Commission into its acquisition and its subsequent write-down of Mozambique coal assets.

Rio denies any wrong-doing and is contesting the claims.

But he said the company's culture remained "strong and healthy".

Shareholder revolt

Institutional shareholder Church of England Pensions Board, which owns shares through both Rio's UK and Australian listings, revealed at the meeting that it had voted against the company's accounts to protest Rio's decision not to put a proposal for more transparency about its membership of business groups, including the Minerals Council of Australia, to the London AGM.

The resolution, which focuses on climate change and energy policies, asked the company to disclose its payments to industry groups, check whether the groups' policies were consistent with its own, and disclose the triggers that would cause it to exit such groups.

The proposal was filed in February by the CEPB, Australia's Local Government Super, Sweden's AP7 pension fund and the Australasian Centre for Corporate Responsibility, which coordinated a similar shareholder resolution at BHP's AGM late last year.

Rio Tinto declined to allow the resolution to be heard at its shareholder meeting, with CEPB's Adam Matthews telling the meeting that, by doing so, Rio had failed to "treat shareholders equally".

"These associations are taking positions at odds with Rio's interests and its policy on climate change, and with our interests as investors," Mr Matthews said. "It is still funding these trade associations and using company funds to do so."

RELATED ARTICLE



ENERGY

BHP to stick with US group despite 'material' divergence on climate

But Mr Thompson said the group behind the resolution had been free to file the resolution in the UK separately to the Australian process, and said the company had spoken to the investors about what was involved to do so.



Rio chief Jean-Sebastien Jacques faced investors at a testy AGM in London.

Photo: Bloomberg

He said the MCA provided a range of benefits to the company. "If the MCA did not exist, frankly, we'd have to invent it, because we need a body that will represent the mining industry in Australia," Mr Thompson said. "So whilst climate change is a very important and significant part of that industry association's activity, it is certainly not the only activity."

The resolution targeting BHP was put to both that company's AGMs in Melbourne and London last year. It sparked a review of BHP's lobby group memberships, which culminated in it quitting the World Coal Association and publicly reviewing its membership of the MCA, citing, in part, the mining peak body's support for interventionist policies that backed high-efficiency, low emissions (HELE) coal power over other technologies.

Last week, BHP said the MCA's new energy policy - which supports technology neutrality and affirms the need for lower emissions along with reliable and affordable energy - had addressed the big differences of opinion between itself and the peak body, and Mr Thompson told Rio's AGM that his company also supported the MCA's new policy.

Number one priority

Rio chief executive Jean Sebastien Jacques told shareholders "safety and health is the number one" priority for the company, saying the deaths of two workers - at its WA and US operations - had been deeply felt.

"In 2018, our aim is clear: no fatalities," he said.

Influential proxy adviser Glass Lewis had recommended its clients vote against Rio's remuneration report, with the miner awarding bonuses to senior executives despite the two deaths at its operations.

Mr Thompson defended Rio's new pay policy, which goes to a binding vote this year, saying disagreement among shareholders prevented it from implementing a more "innovative" pay scheme.

On the issue of US sanctions against Rusal, which owns 20 per cent of Queensland Alumina, Mr Thompson reiterated that the company was looking at "all of the relationships, both trading relationships and others, with Rusal, including the QAL asset.

"At this stage it's really too early to say what the impact of that will be, all I can assure you is we will obviously comply with the appropriate regulations on this issue."

With Telegraph, London



MINING RIO TINTO BHP BILLITON

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ASIAN BUSINESS NEWS

Australia Broadens Legal Action Against Mining Titan Rio Tinto

The company is under scrutiny at home—and in the U.S.—over a troubled Mozambique investment



A truck transported iron ore at a Rio Tinto mine in Australia's Pilbara region in 2016. The company is facing legal scrutiny in Australia—and abroad—over an investment in Mozambique. PHOTO: MATT BURGESS/XINHUA/ZUMA PRESS

By *Rhiannon Hoyle*

April 30, 2018 11:07 p.m. ET

SYDNEY—Australia's corporate regulator has widened legal action against Rio Tinto Ltd. **RIO -0.70% ▼** and two of the company's former executives, pursuing allegations the mining giant was late in writing down a troubled African investment.

Rio Tinto has come under scrutiny from officials in the U.S., U.K. and Australia over the handling of coal assets it purchased in Mozambique for about \$4 billion in 2011, but which faced substantial writedowns and were later sold at just \$50 million, a fraction of that price.

The Australian Securities and Investments Commission said Tuesday that it's lodged new allegations against Rio Tinto, its former Chief Executive Thomas Albanese, and former Chief Financial Officer Guy Elliott posing that the assets should have been impaired in the company's 2012 interim financial statements.

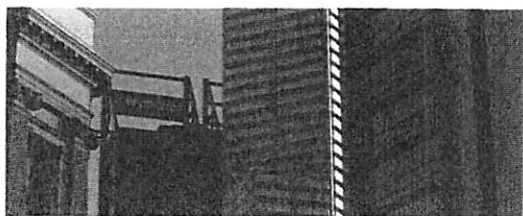
"By not doing so... ASIC alleges Rio Tinto also engaged in misleading or deceptive conduct," the regulator said.

Mr. Albanese left Rio Tinto—the world's second-largest listed miner—in 2013, as the company announced a global write-down of \$14 billion, including some \$3 billion in Mozambique.

"The charges are wholly unwarranted, and Rio Tinto intends to vigorously defend itself, and is confident that ASIC's allegations will be rejected once all the facts are considered in court," a Rio Tinto spokesman said Tuesday.

U.S. officials in October alleged that Rio Tinto had misled investors about the value of its Mozambique assets.

A Securities and Exchange Commission suit alleges the company continued to value its mining assets in Mozambique at more than \$3 billion after an internal assessment put their worth at negative \$680 million.

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Signage for Rio Tinto in the central business district in Perth, Australia. The country's regulator is widening legal action against the miner. PHOTO: BLOOMBERG NEWS

The SEC also alleges that Messrs. Albanese and Elliott didn't disclose the problems with the Mozambique assets because they had already written down the value of Rio Tinto's Alcan aluminum division and feared the market's reaction to another unsuccessful deal.

They did this despite knowing the Mozambique coal business "was a lemon," according to a recent U.S. court filing.

The allegations also led Mr. Elliott to resign from the board of Royal Dutch Shell PLC.

Both men have disputed the U.S. allegations. Neither could immediately be reached on Tuesday.

The Australian regulator had said in March that it would bring action against the miner and the executives, alleging they had misrepresented the reserves and resources of the Mozambique coal assets.

Former Rio Tinto chairman Jan du Plessis, who served from 2009 until this March, recently called the Mozambique investment "undoubtedly a low point during my tenure."

—Rachel Pannett contributed to this article.

Write to Rhiannon Hoyle at rhiannon.hoyle@wsj.com

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Rio Tinto

Earnings in U.S. MILLIONS of Dollars

	<u>2003</u>	<u>2017</u>
• Gross Sales Revenue	9,228	40,030
• Underlying Profit Before Tax	1,968	8,627
• Underlying Net Earnings	1,382	8,762
• Cash Flow from Operations	3,486	16,670
• Operating Margin	19%*	22%*

*Back up from 13% in 2015: Highest 42% in 2006.



Pilbara Iron maintains the Pilbara Rail Company to serve its Western Australia iron ore mines.^[85]

Earnings data (in US\$ millions)^[67]

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Gross sales revenue	9,228	14,530	20,742	25,440	33,518	58,065	44,036	60,323	60,537	50,967	51,171	47,664	34,829	33,781	40,030
Underlying profit before tax	1,968	3,017	7,094	9,719	9,947	15,977	7,860	20,577	13,214	9,303	10,217	9,305	4,540	5,100	8,627
Underlying net earnings	1,382	2,272	4,955	7,338	7,443	10,303	6,298	13,987	5,826	(2,990)	3,665	6,527	(866)	4,617	8,762
Cash flow from operations	3,486	4,452	8,257	10,923	12,569	20,668	13,834	23,530	27,388	16,450	20,131	18,896	12,102	11,368	16,670
Operating margin	19%	24%	37%	42%	34%	32%	17%	36%	23%	18%	20%	20%	13%	15%	22%

Public impact

Involvement with Axis powers in World War II

Rio Tinto's status as a mainly British-owned company, located in Spain and producing pyrites – an important material for military applications – created a complicated set of circumstances for the company's operation in the 1930s and 1940s. During the Spanish Civil War, the region in which Rio Tinto's mines were located came under the control of General Franco's Nationalists in 1936. However, Franco increasingly intervened in the company's operations, at times requisitioning pyrite supplies for use by Spain and its Axis allies Germany and Italy, forcing price controls on the company's production, restricting exports, and threatening nationalisation of the mines. Although company management (and indirectly, the British government) managed to counteract some of these efforts by Franco, much of the mine's pyrite production was channelled to Axis powers before and during World War II. Nonetheless, Franco's meddling caused the mine's production and profitability to fall precipitously during and after the war, leading the company to ultimately exit from its Spanish operations in 1954.^[88]

Criticisms

African Iron Ore

In 2015, Rio Tinto was criticised by the Guinean government for the many mining delays at the local Simandou mine. Cece Noramon, government official said the government was "running out of patience." and President Alpha Conde himself said that "there have been people at Simandou for 15 years, 20 years, and they've never produced a ton of iron".^[89]

In late 2016, Rio Tinto agreed to sell its stake in the Simandou iron ore mine to Chinalco and exit the deal. The deal was negotiated after the company's case against Vale and BSGR was dismissed at US District Court.^[90]

Mental Health

It has been widely reported that more can be done to improve the mental health of Fly-In-Fly-Out (FIFO) workers in the mining industry.^[91] In the Pilbara Region, Western Australia it is reported that the State is experiencing high levels of suicide and people dealing with mental health issues.^[92] As a major contributor to FIFO and residential employment in the region they have recognised mental health as an area that requires a strategy of prevention and early intervention. To assist staff the company provides numerous resources to assist in maintaining a healthful mind. In 2017 Healthier Workplace WA provided the Iron Ore product group Gold recognition for their work in this field.^{[93][94]}

Environment

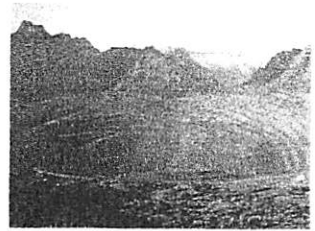
Rio Tinto Group has been widely criticised by environmentalist groups for its mining activities. Opposition to the company focuses on its mining methods due to environmental degradation, the company's coal operations for their contribution to global warming, and uranium operations for environmental and nuclear technology concerns. Perhaps the most significant environmental criticism to date has come from the government of Norway, which divested itself from Rio Tinto shares and banned further investment due to

environmental concerns. Claims of severe environmental damages related to Rio Tinto's engagement in the Grasberg mine in Indonesia led the Government Pension Fund of Norway to exclude Rio Tinto from its investment portfolio. The fund, which is said to be the world's second-largest pension fund, sold shares in the company valued at 4.85 billion kr (US\$855 million) to avoid contributing to environmental damages caused by the company.^[95]

Exclusion of a company from the Fund reflects our unwillingness to run an unacceptable risk of contributing to grossly unethical conduct. The Council on Ethics has concluded that Rio Tinto is directly involved, through its participation in the Grasberg mine in Indonesia, in the severe environmental damage caused by that mining operation.^[96]

— Kristin Halvorsen, Norwegian Minister of Finance

Rio Tinto disputes the claims of environmental damage at the Grasberg mine, and states that the company has long maintained an excellent record on environmental issues.^[97]



Rio Tinto owns a 40% stake in the Grasberg mine in Indonesia, it has been the focus of environmental concerns. (Photo by Alfindra Primaldhi)

Labour and human rights

Activist groups have also expressed concern regarding Rio Tinto's operations in Papua New Guinea, which they allege were one catalyst of the Bougainville separatist crisis.^[98] The British antipoverty charity War on Want has also criticised Rio Tinto for its complicity in the serious human rights violations which have occurred near the mines it operates in Indonesia and Papua New Guinea.^[99]

On 31 January 2010, Rio Tinto locked out nearly 600 workers from a mine in Boron, California, USA.^[100]

Rio Tinto was also accused of planning and funding the murder of RTI activist Shehla Masood in Bhopal, India. Apparently, she was protesting illegal diamond mining done by Rio Tinto in connivance with government officers. The case was, however, solved and no connection to Rio Tinto was established, though popular opinion still perceives them as the possible culprit.^{[101][102][103][104]}

Rio Tinto is not, however, universally condemned for its ethical behaviour. The company has won an award for ethical behaviour, the Worldaware Award for Sustainable Development in 1993.^[105] The award, although given by an independent committee, is sponsored by another multinational corporation (in this case, the sponsor was Tate and Lyle). Rio Tinto has, in turn, sponsored its own WorldAware award, the Rio Tinto Award for Long-term Commitment.^[106] The British charity Worldaware ceased to exist in March 2005.^[107] These awards, awarded to extractive industries which make some environmental commitments to deflect the more general criticisms of their operations, are referred to by corporate watchdog groups as "greenwashing".^{[108][109][110]}

Corruption allegations

In 2009, Chinese authorities began investigating allegations against Rio Tinto. These included bribing executives from 16 of China's biggest steel mill companies in order to get hold of secret information.^[111] On 29 March 2010 four Rio Tinto employees were found guilty of these charges and of accepting millions of dollars in bribes.^[112] They were ordered to pay hundreds of thousands of dollars in fines, and sentenced to 7–14 years in jail.^[113]

Rio Tinto has been embroiled in a number of corruption allegations over its acquisition of stakes in the Simandou iron ore mine in Guinea. The allegations center around the payment of a \$10.5 million bribe to François de Combret, a French banking consultant who was a friend and advisor of President Alpha Condé.^{[114][115]}

Rio launched an internal probe into the matter, run by an independent law firm, and on 9 November 2016 announced it would report the findings to the United States Securities and Exchange Commission (SEC), the Serious Fraud Office (United Kingdom), the Australian Securities and Investments Commission, and the U.S. Justice Department. They also declared they would cooperate with all related investigations and fired two top executives in connection with the matter, one of whom was head of energy and minerals, Alan Davies,^[116] who led the Simandou operation in 2011.^[114] He was suspended after the investigators discovered suspicious emails discussing contractual payments from that year. Davies claimed that there were no grounds for the termination of his employment.^[117]

The President denied having any knowledge of the illegal transactions, but recordings obtained by France24 prove otherwise.^[118]

Sam Walsh, the retiring CEO of the company, has had 80% of his pay withheld while the investigation continue.^[119]

Also in early November 2016, Former mining minister of Guinea, Mahmoud Thiam, claimed that the head of Rio Tinto's operation in Guinea offered him a bribe in 2010 in order to win back control of the Simandou mine, and that his offer was supported by senior members of the company.^[120]

Rio Tinto is currently facing at least 4 class action suits in the US demanding damages over the corruption allegations in Guinea. The suit states that Rio Tinto made "materially false and misleading statements" that "deceived" investors.^[121]

In July 2017 the Serious Fraud Office (SFO) announced the launch of a fraud and corruption investigation into the company's business practices in Guinea.^[122] Following the news of the investigation Rio Tinto shares in the US dropped by 1.4%.^[123] The Australian Federal Police is also investigating the allegations.^[124] Rio Tinto has announced it would cooperate fully. After the SFO investigation announcement, and amid a search for a new CEO, Rio Director John Varley was forced to resign from his role in the company.^{[125][126]}

SEC Investigation

The U.S. Securities and Exchange Commission is investigating a \$3 billion impairment charge against Rio Tinto Group regarding a coal deal they made in Mozambique. Rio acquired Riversdale Mining Ltd. - an Australian coal mining company with significant interests in Mozambique^{[127][128]} - in 2011 for \$2.9 billion in an all-cash deal. Two years later they wrote-down the value of the assets by \$3 billion. Following the impairment charge, which included an additional \$11 billion in asset write-downs, Chief Executive Officer of Rio Tinto, Tom Albanese stepped down from his post and left the company. Rio later sold the assets for \$50 million.^[114]

See also

- Diamonds as an investment

Rio Tinto: U.S. Subsidiaries

Share Class:

U.S. Borax \$0.10 Common Shares

Production:

Borates/U.S. Borax	2015- 476*
	2017- 517*

*"tonnes"

Notes to the 2017 financial statements

continued

46 Related undertakings continued

Wholly owned subsidiary undertakings

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Southern Copper Pty. Limited; Australia	AUD A shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
	AUD B shares	100		
	AUD Non cumulative redeemable preference shares	100		
	AUD Ordinary shares	100		
Swift Current Land & Cattle LLC; United States ^(c)	—	—	100	CSC, 2338 W. Royal Palm Road, Suite J, Phoenix AZ 85021
Swiss Aluminium Australia Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
	AUD Stock Unit A shares	100		
	AUD Stock Unit B shares	100		
	AUD Stock Unit C shares	100		
TBAC Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Technological Resources Pty. Limited; Australia ^(a)	AUD A Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
	AUD B Ordinary shares	100		
The Barrier Corporation (Vic.) Pty. Limited; Australia ^(a)	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
	—	—		
The Kelian Community and Forest Protection Trust; Singapore ^(c)	—	—	100	10 Collyer Quay, #10-01 Ocean Financial Centre, 049315, Singapore
The Pyrites Company, Inc.; United States	US\$1.00 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
The Roberval and Saguenay Railway Company/La Compagnie du Chemin de Fer Roberval Saguenay; Canada	CAD\$100.00 Ordinary shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
	CAD\$100.00 Preference shares 6% non-cumulative	100		
	AUD Ordinary shares	100		
The Zinc Corporation Pty Ltd; Australia	AUD Z Class ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
	—	—		
Thos. W. Ward Limited; United Kingdom	£0.25 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Three Crowns Insurance Company Limited; Bermuda	£1.00 Common shares	100	100	Canon's Court, 22 Victoria Street, Hamilton, HM 12, Bermuda
Tinto Holdings Australia Pty. Limited; Australia	AUD A shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
	AUD Ordinary shares	100		
Trans Territory Pipeline Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
U.S. Borax Inc.; United States	US\$0.10 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
	—	—		
Union Générale Industrielle Africaine; Morocco	MAD100.00 Ordinary shares	100	100	52 bld Zerkouni – 1er étage – Appartement N° 3–, Espace Erreda–Casablanca–Maroc, Maroc, Morocco
Victoria Technology Inc.; United States ^(a)	US\$1.00 Ordinary shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Waste Solutions and Recycling LLC; United States	US\$ Units shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
West Kutai Foundation Limited; Singapore ^(c)	—	—	100	10 Collyer Quay, #10-01 Ocean Financial Centre, 049315, Singapore
Wimmera Industrial Minerals Pty Limited; Australia ^(a)	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Winchester South Development Company Proprietary Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Wyoming Coal Resources Company; United States	US\$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
	—	—		
201 Logistics Center, LLC; United States ^(c)	—	—	50	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
AGM Holding Company Pte Ltd; Singapore	US\$ Ordinary shares	100	50.8	77 Robinson Road, #13-00, Robinson 77, 068896, Singapore

		2017 Production		2016 Production		2015 Production	
	Rio Tinto % share ^(a)	Total	Rio Tinto share	Total	Rio Tinto share	Total	Rio Tinto share
Bauxite ('000 tonnes)							
Gove (Australia)	100.0	11,201	11,201	9,091	9,091	7,497	7,497
Porto Trombetas (MRN) (Brazil)	12.0	14,698	1,764	16,462	1,975	16,162	1,939
Sangaredi (Guinea)	23.0 ^(e)	15,409	6,934	16,023	7,210	14,615	6,577
Weipa (Australia)	100.0	30,898	30,898	29,427	29,427	27,663	27,663
Rio Tinto total			50,796		47,703		43,677
Borates ('000 tonnes) ^(f)							
Rio Tinto Borates – Boron (US)	100.0	517	517	503	503	476	476
Coal (hard coking) ('000 tonnes)							
Rio Tinto Coal Australia							
Hail Creek Coal (Australia) ^(g)	82.0	5,247	4,303	5,950	4,879	6,218	5,099
Kestrel Coal (Australia) ^(g)	82.0	4,252	3,402	4,077	3,262	3,450	2,760
Rio Tinto total hard coking coal			7,704		8,141		7,859
Coal (semi-soft coking) ('000 tonnes)							
Rio Tinto Coal Australia							
Hunter Valley (Australia) ^(h)	—	1,529	1,034	3,720	2,540	2,966	2,373
Mount Thorley (Australia) ^(h)	—	876	700	1,420	1,127	1,398	895
Warkworth (Australia) ^(h)	—	514	286	809	436	853	380
Rio Tinto total semi-soft coking coal			2,020		4,102		3,647
Coal (thermal) ('000 tonnes)							
Rio Tinto Coal Australia							
Bengalla (Australia) ⁽ⁱ⁾	—	—	—	1,476	527	8,319	2,662
Hail Creek Coal (Australia) ^(g)	82.0	4,134	3,390	3,767	3,089	3,245	2,661
Hunter Valley (Australia) ^(h)	—	8,502	5,747	9,925	6,782	10,048	8,039
Kestrel Coal (Australia) ^(g)	80.0	843	674	846	676	637	509
Mount Thorley (Australia) ^(h)	—	2,011	1,609	2,850	2,235	2,815	1,802
Warkworth (Australia) ^(h)	—	4,521	2,512	7,225	3,945	6,663	2,965
Rio Tinto total thermal coal			13,933		17,254		18,638

See notes ► 227

Rio Tinto

2017 Directors and Key Management Remuneration

- Financial Statements Attached
- Average Number of Employees:
In U.S. - 3,429

Notes to the 2017 financial statements

continued

38 Directors' and key management remuneration continued

Aggregate compensation, representing the expense recognised under IFRS, as defined in note 1, of the Group's key management, including directors, was as follows:

	2017 US\$'000	2016 US\$'000	2015 US\$'000
Short-term employee benefits and costs	23,095	22,269	25,616
Post-employment benefits	415	3,461	1,049
Employment termination benefits	-	2,682	-
Share-based payments	8,033	15,806	17,566
	31,543	44,218	44,231

The figures shown above include employment costs which comprise social security and accident premiums in Canada, the UK and US and payroll taxes in Australia paid by the employer as a direct additional cost of hire. In total, they amount to US\$2,122,000 (2016: US\$2,295,000; 2015: US\$2,320,000) and although disclosed here, are not included in table 1 of the Remuneration Report.

More detailed information concerning the remuneration of key management is shown in the Remuneration report, including tables 1 to 3 on pages 70 to 105.

39 Auditors' remuneration

	2017 US\$m	2016 US\$m	2015 US\$m
Group Auditors' remuneration ^(a)			
Audit of the company	6.2	4.5	4.3
Audit of subsidiaries	8.1	9.0	10.1
Total audit	14.3	13.5	14.4
Audit related assurance service	1.0	0.9	0.9
Other assurance services ^(b)	2.3	0.6	0.9
Total assurance services	3.3	1.5	1.8
Tax compliance ^(c)	0.3	0.5	0.5
Tax advisory services ^(c)	0.2	0.1	0.4
Services related to corporate finance transactions not covered above			
– services in connection with bond issues/capital raising	-	-	0.2
Other non-audit services not covered above	0.7	1.8	1.1
Total non-audit services	4.5	3.9	4.0
Total Group Auditors' remuneration	18.8	17.4	18.4

Audit fees payable to other accounting firms

Audit of the financial statements of the Group's subsidiaries	2.0	2.1	1.9
Fees in respect of pension scheme audits	0.5	0.3	0.2
Total audit fees payable to other accounting firms	2.5	2.4	2.1

(a) The remuneration payable to PwC, the Group Auditors, is approved by the Audit committee. The committee sets the policy for the award of non-audit work to the auditors and approves the nature and extent of such work, and the amount of the related fees, to ensure that independence is maintained. The fees disclosed above consolidate all payments made to member firms of PwC by the Companies and their subsidiaries, together with the Group's share of the payments made by joint operations. Non-audit services arise largely from assurance and/or regulation related work.

(b) Other assurance services are mainly related to carve-out financial statements and sustainability assurance.

(c) "Taxation services" includes tax compliance and advisory services. Tax compliance involves the review of returns for corporation, income, sales and excise taxes. Tax advisory services include advice on non-recurring acquisitions and disposals, advice on transfer pricing and advice on employee global mobility.

Notes to the 2017 financial statements

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33 Principal subsidiaries

At 31 December 2017

Company and country of incorporation/ operation	Principal activities	Class of shares held	Proportion of class held (%)	Group interest (%)	Non- controlling interest (%)
Australia					
Argyle Diamonds Limited	Mining and processing of diamonds	Ordinary	100	100	-
Dampier Salt Limited	Salt and gypsum	Ordinary	68.36	68.36	31.64
Energy Resources of Australia Limited	Uranium mining	Ordinary	68.39	68.39	31.61
Hammersley Iron Pty Limited	Iron ore mining	Ordinary	100	100	-
North Mining Limited ^(a)	Iron ore mining	Ordinary	100	100	-
Queensland Coal Pty Limited ^(b)	Coal mining	Ordinary	100	100	-
Rio Tinto Aluminium (Holdings) Limited	Bauxite mining; alumina production; primary aluminium smelting	Ordinary	100	100	-
Robe River Mining Co Pty Ltd ^(a)	Iron ore mining	Class A Class B	40 76.36	60	40
Brazil					
Alcan Alumina Ltda. ^(c)	Alumina production and bauxite mining	Quota	100	100	-
Canada					
Iron Ore Company of Canada ^(d)	Iron ore mining; iron ore pellets	Common	58.72	58.72	41.28
Rio Tinto Fer et Titane Inc.	Titanium dioxide feedstock; high purity iron and steel	Common	100	100	-
		Class B preference	100	100	-
		CAD 0.01 preferred	100	100	-
Rio Tinto Alcan Inc.	Bauxite mining; alumina refining; aluminium smelting	Common	100	100	-
Diavik Diamond Mines (2012) Inc. ^(e)	Diamond mining and processing	Common	100	100	-
Guinea					
Simfer Jersey Limited ^(f)	Iron ore project	Ordinary	53	53	47
Madagascar					
QIT Madagascar Minerals SA ^(g)	Ilmenite mining	Common	80	80	15
		Investment certificates	100	100	
		Voting certificates	80	80	20
Mongolia					
Turquoise Hill Resources Ltd (including Oyu Tolgoi LLC) ^(h)	Copper and gold mining	Common	50.79	50.79	49.21
Namibia					
Rössing Uranium Limited ⁽ⁱ⁾	Uranium mining	B N\$1 C N10c	71.22 70.59	68.62	31.38
South Africa					
Richards Bay Titanium (Proprietary) Limited ^(j)	Titanium dioxide/high purity iron production	B Ordinary	100	74	26
		B preference	100		
		Parent Preference	100		
Richards Bay Mining (Proprietary) Limited ^(j)	Ilmenite, rutile and zircon mining	B Ordinary	100	74	26
		B preference	100		
		Parent Preference	100		
United States of America					
Kennecott Holdings Corporation (including Kennecott Utah Copper, Kennecott Land and Kennecott Exploration)	Copper and gold mining, smelting and refining, land development and exploration activities	Common US\$0.01	100	100	-
U.S. Borax Inc.	Mining, refining and marketing of borates	Common US\$0.10	100	100	-

This list includes only those companies that have a more significant impact on the profit or assets of the Group. Refer to note 46 for a list of related undertakings.

32 Average number of employees

	Subsidiaries and joint operations			Equity accounted units (Rio Tinto share)			Group total		
	2017	2016	2015	2017	2016	2015	2017	2016	2015
The principal locations of employment were:									
Australia and New Zealand	19,041	20,489	22,125	602	849	863	19,643	21,338	22,988
Canada	10,256	10,239	11,113	-	-	-	10,256	10,239	11,113
UK	309	487	542	-	-	-	309	487	542
Europe	1,505	1,722	2,312	-	-	-	1,505	1,722	2,312
Africa	3,461	4,875	5,651	1,269	1,270	1,271	4,730	6,145	6,922
US	3,429	3,196	3,439	-	-	-	3,429	3,196	3,439
Mongolia	2,861	2,737	2,647	-	-	-	2,861	2,737	2,647
Indonesia	1,642	2,862	2,871	-	-	-	1,642	2,862	2,871
South America	197	166	192	1,237	1,388	1,317	1,434	1,554	1,509
Other countries ^(a)	998	749	595	-	-	-	998	749	595
	43,699	47,522	51,487	3,108	3,507	3,451	46,807	51,029	54,938

(a) "Other countries" primarily includes employees in the Middle East (excluding Oman which is included in Africa), India, Singapore and other countries in Asia which are not shown separately in the table above. For the year ended 31 December 2017, the average number of employees in Singapore was 434 (2016: 262) and the average number of employees in India was 310 (2016: 280).

Employee numbers, which represent the average for the year, include 100 per cent of employees of subsidiary companies. Employee numbers for joint operations and equity accounted units are proportional to the Group's interest under contractual agreements. Average employee numbers include a part-year effect for companies acquired or disposed of during the year.

Part-time employees are included on a full-time-equivalent basis. Temporary employees are included in employee numbers.

People employed by contractors are not included.

Rio Tinto

2017 Annual Report

“Wholly Owned Subsidiary Undertakings”

14 Pages

Totals: International – 378

56f those in the U.S.A.*

*Particular Note: Daybreak Development LLC;
Daybreak Property Holdings LLC;
Daybreak Water Distribution

46 Related undertakings

In accordance with section 409 of the Companies Act 2006, disclosed below is a full list of related undertakings of the Group. Related undertakings include "subsidiaries", "associated undertakings", and "significant holdings in undertakings other than subsidiary companies". The registered office address, country of incorporation, classes of shares and the effective percentage of equity owned by the Group calculated by reference to voting rights, is disclosed as at 31 December 2017.

The definition of a subsidiary undertaking in accordance with the Companies Act 2006 is different from the definition under IFRS. As a result, the related undertakings included within this list may not be the same as the related undertakings consolidated in the Group IFRS financial statements. Unless otherwise disclosed, all undertakings with an effective equity holding of greater than 50% are considered subsidiary undertakings for the purpose of this note.

Refer to notes 33-36 for further information on accounting policies, basis of consolidation, principal subsidiaries, joint operations, joint ventures and associates.

An explanation of the dual listed companies structure of Rio Tinto plc and Rio Tinto Limited can be found on pages 250 to 251. For completeness, the effective ownership by the Group relates to effective holdings by both entities either together or individually.

Wholly owned subsidiary undertakings

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
10029734 Canada Inc.; Canada	CAD\$1.00 Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
	CAD\$1.00 Preferred shares	100		
1043802 Ontario Ltd; Canada	CAD Ordinary shares	100	100	66 Wellington Street West, Suite 4700, Toronto Dominion Bank Tower, Toronto ON M5K 1E6, Canada
1109723 B.C. Ltd.	CAD Common shares	100	100	1800 - 510 West Georgia Street, Vancouver BC V6B 0M3, Canada
46106 YUKON INC.; Canada	CAD Common shares	100	100	200-204 Lambert Street, Whitehorse YT Y1A 3T2, Canada
46117 YUKON INC.; Canada	CAD Common shares	100	100	200-204 Lambert Street, Whitehorse YT Y1A 3T2, Canada
	CAD Preferred shares	100	100	
535630 YUKON INC.; Canada	CAD Common shares	100	100	c/o Macdonald & Company, 200-204 Lambert Street, Whitehorse YT Y1A 3T2, Canada
	CAD Preferred shares	100	100	
7999674 CANADA INC.; Canada	CAD Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
9230556 CANADA INC.; Canada	CAD Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
	CAD Preferred shares	100		
9539549 CANADA INC.; Canada	US\$ Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
Alcan Alumina Ltda.; Brazil	BRL1.00 Quota shares	100	100	Avenida Engenheiro Emiliano Macieira, 1—km 18, Pedrinhas, Sao Luis, MA, 65095-603, Brazil
Alcan Asia Limited; Hong Kong	HKD Ordinary shares	100	100	Suite 2802, 28/F, Lippo Centre Tower 2, 89 Queensway, Admiralty, Hong Kong
Alcan Betriebs- und Verwaltungsgesellschaft GmbH; Germany	€51.13 Ordinary shares	100	100	Alusingenplatz 1, D-78221, Singen, Germany
Alcan Chemicals Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Alcan Composites Brasil Ltda; Brazil	BRL0.01 Ordinary shares	100	100	Avenida das Nações Unidas, 10.989, 14th floor, Suite 141, São Paulo, 04578-000, Brazil
Alcan Corporation; United States	US\$ 0.01 Ordinary shares	100	100	CSC, 211 East 7th Street, Suite 620, Austin TX 78701-3218, United States
Alcan Farms Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Alcan Finances USA LLC; United States	US\$1,000.00 Ordinary shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Alcan Gove Development Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Alcan Gove Pty Limited; Australia	AUD Class A shares	100		
	AUD Class B shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Alcan Gove Superannuation Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia

Notes to the 2017 financial statements

continued

46 Related undertakings continued

Wholly owned subsidiary undertakings

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Alcan Holdings Australia Pty Limited; Australia	AUD Class A shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
	AUD Ordinary shares	100	100	
Alcan Holdings Europe B.V.; Netherlands	€455.00 Ordinary shares	100	100	Welplaatweg 104, 3197 KS, Botlek-Rotterdam, Netherlands
Alcan Holdings Europe B.V.; Netherlands	€455.00 Ordinary shares	100	100	Welplaatweg 104, 3197 KS, Botlek-Rotterdam, Netherlands
Alcan Holdings Nederland B.V.; Netherlands	€4,555.00 Ordinary shares	100	100	Welplaatweg 104, 3197 KS, Botlek-Rotterdam, Netherlands
Alcan Holdings Switzerland AG (SA/Ltd.); Switzerland	CHF0.01 Registered shares	100	100	Herostrasse 9, P.O. Box 1954, CH-8048 Zürich, Switzerland
Alcan International Network U.S.A. Inc.; United States	US\$ Ordinary shares	100	100	CSC, 80 State Street, Albany NY 12207-2543, United States
Alcan Lebensmittelverpackungen GmbH; Germany	€51.13 Ordinary shares	100	100	Alusingenplatz 1, D-78221, Singen, Germany
Alcan Management Services (Shanghai) Co., Ltd.; China	US\$1.00 Ordinary shares	100	100	Unit E, 40F Wheelock Square, No. 1717 West Nanjing Road, Jing'an District, Shanghai, 200040, China
Alcan Management Services Canada Limited/Societe de Services de Gestion Alcan Canada Limitee; Canada	CAD Ordinary shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
Alcan Northern Territory Alumina Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Alcan Packaging Canada Limited; Canada	CAD Ordinary shares	100	100	McCarthy Tetrault LLP, c/o Joanne Pierucci, Suite 5300 Toronto Dominion Bank Tower, Toronto ON M5K 1E6, Canada
Alcan Packaging Mühlthal GmbH & Co. KG; Germany	€51.13 Ordinary shares	100	100	Alusingenplatz 1, D-78221, Singen, Germany
Alcan Primary Metal Australia Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Alcan Primary Products Company LLC; United States	US\$ Units shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Alcan Primary Products Corporation; United States	US\$0.01 Ordinary shares	100	100	CSC, 211 East 7th Street, Suite 620, Austin TX 78701-3218, United States
Alcan Realty Limited/Societe Immobiliere Alcan Limitee; Canada	CAD Ordinary shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
Alcan South Pacific Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Alcan Trading AG (SA/Ltd.); Switzerland	CHF1000 Registered shares	100	100	Herostrasse 9, P.O. Box 1954, CH-8048 Zürich, Switzerland
Aluminium Dunkerque; France	€16.00 Ordinary shares	100	100	17 Place des Reflets, La Defense 2, 92400, Courbevoie, France
Aluminium Pechiney; France	€16.00 Ordinary shares	100	100	725 rue Aristide Bergès, 38341 Voreppe Cedex, France
Aluminum Company of Canada Limited/Aluminium du Canada Limitee; Canada	CAD Ordinary shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
AML Properties Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Anglesey Aluminium Limited (Dissolved); United Kingdom ^(a)	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Anglesey Aluminium Metal Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
AP Service; France	€15.00 Ordinary shares	100	100	725 rue Aristide Bergès, 38341 Voreppe Cedex, France
Argyle Diamond Mines Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Argyle Diamonds (2013) Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Argyle Diamonds Limited; Australia ^(a)	AUD Class A shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
	AUD Class B shares	100		

Wholly owned subsidiary undertakings

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Ashton Canada Pty Limited; Australia	AUD Ordinary shares	100	100	37 Belmont Avenue, Belmont WA 6104, Australia
Ashton Mining Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Ashton Nominees Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Australian Coal Holdings Pty. Limited; Australia ^(a)	AUD A shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
	AUD Ordinary shares	100		
Australian Mining & Smelting Pty Ltd; Australia ^(a)	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Beasley River Management Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Beasley River Mining Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Borax España, S.A.; Spain	€150.00 Ordinary shares	100	100	CN 340, Km 954, 12520 NULES, Castellon, Spain
Borax Europe Limited; United Kingdom	£0.25 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Borax Francais; France	€2.75 Ordinary shares	100	100	89 Route de Bourbourg, 59210, Coudekerque-Branche, France
Borax Malaysia Sdn Bhd; Malaysia	MYR1.00 Ordinary shares	100	100	Level 7, Menara Milenium, Jalan Damanlela, Pusat Bandar Damansara, Damansara Heights 50490 Kuala Lumpur, Malaysia
Borax Rotterdam N.V.; Netherlands	€453.78 Ordinary shares	100	100	Welplaatweg 104, 3197KS, ROTTERDAM –BOTLEK, Netherlands
British Alcan Aluminium Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Canning Resources Pty Limited; Australia ^(a)	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Capricorn Diamonds Investments Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Cathjoh Holdings Pty Limited; Australia	AUD Ordinary shares	100	100	Pacific Aluminium, 123 Albert Street, Brisbane QLD 4000, Australia
Champlain Reinsurance Company Ltd.; Switzerland	CHF1.23 Registered shares	100	100	Herostrasse 9, P.O. Box 1954, CH-8048 Zürich, Switzerland
Channar Management Services Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Channar Mining Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
CIA. Inmobiliaria e Inversiones Cosmos S.A.C.; Peru	PEN1,000.00 Ordinary shares	100	100	Av. Santa Maria No. 110 Urb. Miraflores – MIRAFLORES – LIMA, Peru
Compagnie Générale D'électrolyse Du Palais; France	€0.94 Ordinary shares	100	100	17 Place des Reflets, La Defense 2, 92400, Courbevoie, France
Compania de Transmision Sierraorient S.A.C.; Peru	PEN1,000.00 Ordinary shares	100	100	Av. Santa Maria No. 110 Urb. Miraflores – MIRAFLORES – LIMA, Peru
CRA Exploration (India) Private Limited; India	INR10.00 Ordinary shares	100	100	Apartment No.100 A/5, Ground Floor, The Capital Court, Olof Palme Marg, Munirka, NEW DELHI 110067, India
CRA Investments Pty. Limited; Australia ^(a)	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
CRA Pty Ltd; Australia ^(a)	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Daybreak Development LLC; United States	US\$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Daybreak Property Holdings LLC; United States ^(c)	—	—	100	CSC, 15 West South Temple, Suite 1701, Salt Lake City UT 84101, United States
Daybreak Secondary Water Distribution Company; United States	US\$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Daybreak Water Holding LLC; United States	US\$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
DB Medical I LLC; United States	US\$ Units shares	100	100	CSC, 15 West South Temple, Suite 1701, Salt Lake City UT 84101, United States
DBVC1 LLC; United States ^(c)	—	—	100	CSC, 15 West South Temple, Suite 1701, Salt Lake City UT 84101, United States
Diavik Diamond Mines (2012) Inc.; Canada	CAD Common shares	100	100	300-5201 50th Avenue, PO Box 2498, Yellowknife NT X1A 2P8, Canada

Notes to the 2017 financial statements

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46 Related undertakings continued

Wholly owned subsidiary undertakings				
Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
East Kalimantan Coal Pte. Ltd; Singapore ^(a)	SGD1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, Singapore, 018982, Singapore
	US\$1.00 Ordinary shares	100		
	US\$1.00 Common shares	100		
Eastland Management Inc.; United States	NZD1 Ordinary shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Electric Power Generation Limited; New Zealand ^(a)	BRL Quotas shares	100	100	Tiwai Road, Southland via Intercargill, New Zealand
Empresa de Mineracao Finesa Ltda.; Brazil	US\$1.00 Class "A" ordinary shares	100	100	SIA, Trecho 2, Lotes 710/720, Brasília DF, Brazil
Falcon Insurance Ltd; Malta ^(a)	US\$1.00 Class "B" shares	100		
	US\$1.00 Class "C" shares	100		
Flambeau Mining Company; United States	US\$0.01 Common shares	100	100	No 7, 4th Floor, Block C, Skyway Offices, 179 Marina Street, Pieta, PTA 9042, Malta
Fundsprops Pty. Limited; Australia ^(a)	AUD A Class ordinary shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Gladstone Infrastructure Pty Ltd; Australia	AUD Class G Redeemable Preference shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
	AUD A Class ordinary shares	100		
	AUD A Non redeemable preference shares	100		
Gove Aluminium Ltd; Australia	AUD A Redeemable preference shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
	AUD Ordinary shares	100		
	AUD ordinary shares	100		
GPS Energy Pty Limited; Australia	AUD ordinary shares	100	100	Pacific Aluminium, 123 Albert Street, Brisbane QLD 4000, Australia
GPS Nominee Pty Limited; Australia	AUD ordinary shares	100	100	Pacific Aluminium, 123 Albert Street, Brisbane QLD 4000, Australia
GPS Power Pty. Limited; Australia	AUD ordinary shares	100	100	Pacific Aluminium, 123 Albert Street, Brisbane QLD 4000, Australia
Hail Creek Coal Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Hamersley Exploration Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Hamersley HMS Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Hamersley Holdings Limited; Australia ^(a)	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Hamersley Iron – Yandi Pty Limited; Australia ^(a)	AUD Class B shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
	AUD Class C shares	100		
	AUD Ordinary shares	100		
Hamersley Iron Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Hamersley Resources Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
	AUD Z Class ordinary shares	100		
Hamersley WA Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Henlopen Manufacturing Co., Inc.; United States	US\$100.00 Ordinary shares	100	100	CSC, 80 State Street, Albany NY 12207-2543, United States
High Purity Iron Inc.; United States	US\$1.00 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Hismelt Corporation Pty Limited; Australia ^(a)	AUD Class A shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia

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Wholly owned subsidiary undertakings

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Hunter Valley Resources Pty Ltd; Australia	AUD A Class shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
	AUD B Class shares	100		
IEA Coal Research Limited; United Kingdom	£1.00 Ordinary shares	100	100	Apsley House, Third Floor, 176 Upper Richmond Road, London, SW15 2SH, United Kingdom
IEA Environmental Projects Limited; United Kingdom	£1.00 Ordinary shares	100	100	IEAGHG, Pure Offices Cheltenham Office Park, Hatherley Lane, Cheltenham, GL51 6SH, United Kingdom
Industrias Metalicas Castello S.A.; Spain	€6.01 Ordinary shares	100	100	Calle Tuset 10, 08006, Barcelona, Catalogna, Spain
Integrity Land and Cattle LLC; United States	US\$ Units shares	100	100	CSC, 2338 W. Royal Palm Road, Suite J, Phoenix AZ 85021
Itallumina Srl; Italy ^(a)	€1.00 Quotas shares	100	100	Viale Castro Pretorio 122, 00185, Roma, Italy
Johcath Holdings Pty Limited; Australia	AUD Ordinary shares	100	100	Pacific Aluminium, 123 Albert Street, Brisbane QLD 4000, Australia
Juna Station Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Kalimantan Gold Pty Limited; Australia	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Kalteng Pty. Ltd; Australia ^(a)	AUD A Class ordinary shares	100		
	AUD1.00 Class B (Fully paid \$1.00 13/01/2003)	100		
	AUD1.00 Class B (Paid to \$0.12 02/09/2005)	100	100	37 Belmont Avenue, Belmont WA 6104, Australia
	AUD Ordinary shares	100		
Kelian Investment Limited; British Virgin Islands ^{(c)(e)}	—	—	100	Woodbourne Hall, Road Town, Tortola, British Virgin Islands
Kelian Pty. Limited; Australia ^(a)	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Kembla Coal & Coke Pty. Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Kennecott Barneys Canyon Mining Company; United States	US\$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Kennecott Exploration Company; United States	US\$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Kennecott Exploration Mexico, S.A. de C.V.; Mexico	MXN1,000.00 Ordinary shares	100	100	Felix Berenguer 125 – 4, Col.Lomas Virreyes, Distrito Federal, 11000, Mexico
Kennecott Holdings Corporation; United States	US\$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Kennecott Land Company; United States	US\$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Kennecott Land Investment Company LLC; United States ^(c)	—	—	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Kennecott Molybdenum Company; United States	US\$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Kennecott Nevada Copper Company; United States	US\$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Kennecott Ridgeway Mining Company; United States	US\$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Kennecott Royalty Company; United States	US\$100.00 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Kennecott Services Company; United States	US\$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Kennecott Uranium Company; United States	US\$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Kennecott Utah Copper LLC; United States	US\$ Units shares	100	100	CSC, 15 West South Temple, Suite 1701, Salt Lake City UT 84101, United States
Kennecott Water Distribution LLC; United States	US\$ Ordinary shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Kestrel Coal Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Kestrel Coal Sales Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Kutaibar Holdings Pty Ltd; Australia ^(a)	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia

Notes to the 2017 financial statements

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46 Related undertakings continued

Wholly owned subsidiary undertakings				
Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Lawson Mardon Flexible Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Lawson Mardon Smith Brothers Ltd.; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Metallwerke Refonda AG; Switzerland	CHF125 Bearer shares	100	100	Herostrasse 9, P.O. Box 1954, CH-8048 Zürich, Switzerland
Metals & Minerals Insurance Pte. Limited; Singapore	SGD Redeemable preference shares	100	100	2 Shenton Way, #2601, SGX Centre 1, Singapore 068804, Singapore
	SGD Ordinary shares	100		
Mineracao Tabuleiro Ltda; Brazil	BRL Quotas shares	100	100	SIA, Trecho 2, Lotes 690/720, Brasília DF, Brazil
Minera Kennecott, S.A.de C.V.; Mexico	MXN1 Series "B" shares	100	100	Florencia 57, Piso 3, Col. Juárez, Delegación Cuauhtémoc, Mexico, D.F., 06600, Mexico
Mitchell Plateau Bauxite Co. Pty. Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Mount Bruce Mining Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Mount Pleasant Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Mutamba Mineral Sands S.A.; Mozambique	MZN100.00 Ordinary shares	100	100	Avenida 24 de Julho, no. 3412, Bairro da Polana Cimento, Maputo City, Mozambique
NBH Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Nhulunbuy Corporation Limited; Australia ^(c)	—	—	100	19 Westal Street, Nhulunbuy NT 0880, Australia
Norgold Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
	Redeemable Preference	100		
North Gold (W.A.) Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
	AUD Redeemable preference shares	100		
North Insurances Pty. Ltd.; Australia	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
North IOC (Bermuda) Holdings Limited; Bermuda	US\$1.00 Ordinary shares	100	100	Clarendon House, 2 Church Street, Hamilton, HM 11, Bermuda
North IOC (Bermuda) Limited; Bermuda	US\$143.64 Class A ordinary shares	100	100	Clarendon House, 2 Church Street, Hamilton, HM 11, Bermuda
	US\$100,000.00 Preferred shares	100		
	US\$1.00 Ordinary shares	100		
North IOC Holdings Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
North Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
North Mining Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
	AUD Redeemable preference shares	100		
Pacific Aluminium (New Zealand) Limited; New Zealand	NZD1 Ordinary shares	100	100	Level 6, 109 Featherston Street, Wellington, 6011, New Zealand
Pacific Aluminium Bell Bay Sales Pty Limited; Australia	AUD Ordinary shares	100	100	Pacific Aluminium, 123 Albert Street, Brisbane QLD 4000, Australia
Pacific Aluminium Pty. Limited; Australia ^(a)	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Pacific Aluminium Services Pty Limited; Australia	AUD Ordinary shares	100	100	Pacific Aluminium, 123 Albert Street, Brisbane QLD 4000, Australia
Pacific Coast Mines, Inc.; United States	US\$1.00 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Pechiney Aviatube Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Pechiney Bâtiment; France	€15.00 Ordinary shares	100	100	725 rue Aristide Bergès, 38341 Voreppe Cedex, France

Wholly owned subsidiary undertakings

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Pechiney Bécancour, Inc.; United States	US\$1.00 Ordinary shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Pechiney Cast Plate, Inc.; United States	US\$1.00 Ordinary shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Pechiney Consolidated Australia Pty Limited; Australia	US\$1.00 Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
	US\$1.00 Preference shares	100		
Pechiney Dis Ticaret Limited Sirketi; Turkey ^(d)	TRY25.00 Ordinary shares	100	100	Karakoy Haci Mimi Mah. Vekil Harc Sok. 10 Kat 4, Beyoglu, Istanbul, Turkey
Pechiney Holdings, Inc.; United States	US\$1.00 Ordinary shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Pechiney Metals LLC; United States ^(c)	—	—	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Pechiney Plastic Packaging, Inc.; United States	US\$ Ordinary shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Pechiney Sales Corporation; United States	US\$1.00 Ordinary shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Peko Exploration Pty Ltd.; Australia	AUD Ordinary shares	100	100	37 Belmont Avenue, Belmont WA 6104, Australia
Peko-Wallsend Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Pilbara Iron Company (Services) Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Pilbara Iron Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Port d'Ehoala S.A.; Madagascar	US\$100.00 Ordinary shares	100	100	Immeuble ASSIST, Ivandry, Lot N°35, 5ème étage, 101 Antananarivo, Antananarivo, Madagascar
Project Generation Group Pty Ltd; Australia ^(a)	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
PSZ Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
PT Alcan Packaging Flexipack; Indonesia ^(d)	IDR1,000,000.00 Ordinary shares	100	100	31st Floor, Menara BTPN, Jl. Dr. Ide Anak Agung Gde Agung Lot 5.5-5.6, Mega Kuningan, Jakarta, 12950, Indonesia
PT Rio Tinto Consultants; Indonesia ^(d)	US\$1.00 Ordinary shares	100	100	31st Floor, Menara BTPN, Jl. Dr. Ide Anak Agung Gde Agung Lot 5.5-5.6, Mega Kuningan, Jakarta, 12950, Indonesia
PT Rio Tinto Exploration; Indonesia ^(d)	US\$1.00 Ordinary shares	100	100	15th Floor, Menara Anugrah, Kantor Taman E3.3, Jalan DR. Ide Anak Agung Gde Agung Lot 8.6-8.7, Jakarta, 12950, Indonesia
PT Rio Tinto Indonesia; Indonesia	US\$1.00 Ordinary shares	100	100	31st Floor, Menara BTPN, Jl. Dr. Ide Anak Agung Gde Agung Lot 5.5-5.6, Mega Kuningan, Jakarta, 12950, Indonesia
PT Rio Tinto Irja; Indonesia ^(d)	US\$1.00 Ordinary shares	100	100	31st Floor, Menara BTPN, Jl. Dr. Ide Anak Agung Gde Agung Lot 5.5-5.6, Mega Kuningan, Jakarta, 12950, Indonesia
QIT Madagascar Minerals Ltd; Bermuda	US\$1.00 Ordinary shares	100	100	Canon's Court, 22 Victoria Street, Hamilton, HM 12, Bermuda
Queensland Coal Pty. Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Química e Metalúrgica Mequitall Ltda.; Brazil	BRL Ordinary shares	100	100	Av. das Nacoes Unida, 12551 19o andar, CJ 1911, 04578-000, Sao Paulo, SP, Brazil
Ranges Management Company Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Ranges Mining Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Resolution Copper Company; United States	US\$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Richards Bay Mining Holdings (Proprietary) Limited; South Africa	ZAR1.00 A Ordinary shares	100	100	The Farm RBM, Number 16317, KwaZulu-Natal, South Africa
	ZAR1.00 B Ordinary shares	100		
Richards Bay Titanium Holdings (Proprietary) Limited; South Africa	ZAR1.00 A Ordinary shares	100	100	The Farm RBM, Number 16317, KwaZulu-Natal, South Africa
	ZAR1.00 B Ordinary shares	100		

Notes to the 2017 financial statements

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46 Related undertakings continued

Wholly owned subsidiary undertakings

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Rio de Contas Desenvolvimento Minerais Ltda; Brazil	BRL Quota shares	100	100	Rua Coronel Durval Matos, S/N. Centro, Municipio de Jaguaquara, Estado da Bahia, CEP45345-000, Brazil
Rio Santa Rita Empreendimentos e-Participacoes Ltda	BRL Quota shares	100	100	SIA, Trecho 2, Lotes 690/720, Brasília, DF, Brazil
Rio Sava Exploration DOO; Serbia ^(c)	—	—	100	Resavska 23, 11000 Beograd, Beograd, 11000, Serbia
Rio Tinto (Commercial Paper) Limited; Australia ^(a)	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto (Hong Kong) Ltd; Hong Kong	HKD Ordinary shares	100	100	Suite 2802, 28/F, Lippo Centre Tower 2, 89 Queensway, Admiralty, Hong Kong
Rio Tinto (Mauritius) Pty Limited; Mauritius ^(d)	US\$1.00 Ordinary shares	100	100	6th Floor, Tower A, 1 Cybercity, Ebene, Mauritius
Rio Tinto Advisory Services Pty Limited; Australia	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Alcan Fund Inc.; Canada	CAD Ordinary shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
Rio Tinto Alcan Inc.; Canada	CAD Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
Rio Tinto Alcan International Ltd. / Rio Tinto Alcan International Ltee; Canada	CAD Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
Rio Tinto Alcan Middle East DMCC; United Arab Emirates	AED1,000 Ordinary shares	100	100	Gold Tower, Jlt Cluster I, 8th Floor, Unit E, Dubai, PO BOX 340801, United Arab Emirates
Rio Tinto Alcan Technology Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Rio Tinto Almazpoisk LLC; Russian Federation ^{(c)(d)}	—	—	100	3, Aleksandra Lukyanova, 105066, Moscow, Russian Federation
Rio Tinto Aluminium (Bell Bay) Limited; Australia	AUD 7.5% Cumulative preference shares AUD Ordinary shares	100 100	100	Pacific Aluminium, Level 3, 500 Queen Street, Brisbane QLD 4000, Australia
Rio Tinto Aluminium (Holdings) Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Rio Tinto Aluminium Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Rio Tinto America Holdings Inc.; United States	US\$0.01 Class A common shares US\$100.00 Series A preferred stock	100 100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Rio Tinto America Inc.; United States	US\$100.00 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Rio Tinto Asia Ltd; Hong Kong	HKD Ordinary shares	100	100	Suite 2802, 28/F, Lippo Centre Tower 2, 89 Queensway, Admiralty, Hong Kong
Rio Tinto Asia Pty. Limited.; Australia ^(a)	AUD Class A shares AUD Ordinary shares	100 100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto AuM Company; United States	US\$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Rio Tinto Australian Holdings Limited; United Kingdom	£1.00 Ordinary shares US\$1.00 Ordinary shares	100 100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Bahia Holdings Limited; United Kingdom	US\$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Base Metals Pty. Limited; Australia ^(a)	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Brazilian Holdings Limited; United Kingdom	£1.00 Ordinary shares US\$1.00 Ordinary shares	100 100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Brazilian Investments Limited; United Kingdom	£1.00 Ordinary shares US\$1.00 Ordinary shares	100 100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Canada Diamond Operation Management Inc.; Canada	CAD Common shares	100	100	300-5201 50th Avenue, PO Box 2498, Yellowknife NT X1A 2P8, Canada
Rio Tinto Canada Inc; Canada	CAD Class B shares CAD Class C shares CAD Class D shares CAD Class J Shares Class K Shares	100 100 100 100 100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada

Wholly owned subsidiary undertakings

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Rio Tinto Canada Management Inc./ Rio Tinto Gestion Canada Inc.; Canada	CAD Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
	CAD Preferred shares	100		
Rio Tinto Canada Uranium Corporation; Canada	CAD Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
Rio Tinto Coal (Clermont) Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Rio Tinto Coal Australia Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Rio Tinto Coal Investments Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Rio Tinto Coal NSW Holdings Limited; Australia ^(a)	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Rio Tinto Desenvolvimento Minerais LTDA.; Brazil	BRL Quotas shares	100	100	SIG Quadra 04, Lote 175, Torre A, Salas 106 a 109, Edifício Capital Financial Center, Brasília, CEP 70610-440, Brazil
Rio Tinto Diamonds and Minerals Canada Holding Inc.; Canada	CAD Class A (dividend rights)	100		
	CAD Class B shares	100		
	CAD Class C (voting rights) shares	100	100	300-5201 50th Avenue, PO Box 2498, Yellowknife NT X1A 2P8, Canada
	CAD Class P1 preferred shares	100		
Rio Tinto Diamonds Limited; United Kingdom	US\$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Diamonds Netherlands B.V.; Netherlands	€500.00 Ordinary shares	100	100	Welpstraatweg 104, 3197 KS, Botlek-Rotterdam, The Netherlands, Netherlands
Rio Tinto Diamonds NV; Belgium	€ Ordinary shares	100	100	Hoveniersstraat 53, 2018 Antwerp, Belgium
Rio Tinto Eastern Investments B.V.; Netherlands	€13,418,899,730 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Energy America Inc.; United States	US\$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Rio Tinto Energy Limited; United Kingdom	US\$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Escondida Limited; Bermuda	US\$1.00 Ordinary shares	100	100	22 Canon's Court, Victoria Street, Hamilton, HM 12, Bermuda
Rio Tinto European Holdings Limited; United Kingdom ^(b)	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Exploration (Asia) Holdings Pte. Ltd.; Singapore	US\$1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, Singapore, 018982, Singapore
Rio Tinto Exploration (PNG) Limited; Papua New Guinea ^(a)	PGK1.00 Ordinary shares	100	100	c/o BDO Accountants, Section 15, Lot 15, Bernal Street, National Capital District, Papua New Guinea
Rio Tinto Exploration and Mining (India) Private Limited; India	INR10.00 Ordinary shares	100	100	21st Floor, DLF Building No.5, Tower A, DLF Cyber City, Phase -III, Gurgaon, Haryana, 122002, India
Rio Tinto Exploration Canada Inc.; Canada	CAD Class A shares	100		
	CAD Class B shares	100		
	CAD Class C shares	100		
	CAD Class D shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
	CAD Class E preferred shares	100		
Rio Tinto Exploration Gabon SA; Gabon ^(d)	XAF10,000 Ordinary shares	100	100	C/O NEW ACE Baker Tilly, Quartier Louis – Quaben, Libreville, B.P. :3981, Gabon
Rio Tinto Exploration India Private Limited; India	INR10.00 Ordinary shares	100	100	Apartment No.100 A/5, Ground Floor, The Capital Court, Olof Palme Marg, Munirka, NEW DELHI 110067, India
Rio Tinto Exploration Kazakhstan LLP; Kazakhstan ^(c)	—	—	100	Dostyk 310/G, Almaty, 050020, Kazakhstan
Rio Tinto Exploration Pty Limited; Australia ^(a)	AUD Class B shares	100		
	AUD Class C shares	100		
	AUD Ordinary shares	100	100	37 Belmont Avenue, Belmont WA 6104, Australia
Rio Tinto Exploration Zambia Limited; Zambia	ZMW1.00 Ordinary shares	100	100	Plot 3827, Parliament Road, Olympia, Lusaka, Zambia

Notes to the 2017 financial statements

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46 Related undertakings continued

Wholly owned subsidiary undertakings

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Rio Tinto Fer et Titane Inc.; Canada	CAD Class B preference shares	100		
	CAD Common shares	100	100	1625 Route Marie-Victorin, Sorel-Tracy QC J3R 1M6, Canada
	CAD\$0.01 Preferred shares	100		
Rio Tinto FH Limited; United Kingdom ^(d)	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Finance (USA) Limited; Australia ^(a)	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Finance (USA) plc; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto PACE Canada Inc./Gestion Rio Tinto PACE Canada Inc.; Canada	CAD Ordinary shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
Rio Tinto Finance Limited; Australia ^(a)	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Finance plc; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
	US\$1.00 Ordinary shares	100		
Rio Tinto France S.A.S.; France	€15.25 Ordinary shares	100	100	17 Place des Reflets, La Defense 2, 92400, Courbevoie, France
Rio Tinto Global Employment Company Pte. Ltd.; Singapore	US\$1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, Singapore, 018982, Singapore
Rio Tinto Guinée S.A.; Guinea	GNF100,000.00 Ordinary shares	100	100	Route de la Corniche Nord, Cité Ministérielle—Rue DI 256 Quartier Landréah, Commune de Dixinn—BP 99, Conakry, Guinea
Rio Tinto Holdings LLC; Mongolia	MNT20,000.00 Ordinary shares	100	100	Monnis Tower 13th floor, Chinggis Avenue-15, SBD, Ulaanbaatar-14240, Mongolia
Rio Tinto Hydrogen Energy Australia Pty Limited; Australia ^(a)	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Hydrogen Energy LLC; United States ^(c)	—	—	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Rio Tinto Iceland Ltd.; Iceland	ISK1.00 Registered shares	100	100	P.O. Box 244, IS-222, Hafnarfjörður, Iceland
Rio Tinto India Private Limited; India	INR10.00 Ordinary shares	100	100	Apartment No.100 A/5, Ground Floor, The Capital Court, Olof Palme Marg, Munirka, NEW DELHI 110067, India
Rio Tinto Indonesian Holdings Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
	US\$1.00 Ordinary shares	100		
Rio Tinto International Holdings Limited; United Kingdom ^(b)	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto International Trading (Shanghai) Co Ltd; China ^(d)	US\$1.00 Ordinary shares	100	100	Room 1615-3, No. 1 Jilong Road, China (Shanghai) Pilot Free Trade Zone, Shanghai, 200031, China
Rio Tinto Investments One Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Rio Tinto Investments Two Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Rio Tinto Iron & Titanium (Suzhou) Co., Ltd; China	US\$1.00 Ordinary shares	100	100	418 Nanshi Street, Suzhou Industrial Park, Suzhou, 215021, China
Rio Tinto Iron & Titanium GmbH; Germany ^(c)	—	—	100	Mergenthalerallee 77, D-65760, Eschborn, (Frankfurt am Main), Germany
Rio Tinto Iron & Titanium Holdings GmbH; Germany ^(c)	—	—	100	Mergenthalerallee 77, D-65760, Eschborn, (Frankfurt am Main), Germany
Rio Tinto Iron & Titanium Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Iron and Titanium Canada Inc./Rio Tinto Fer et Titane Canada Inc.; Canada	CAD Common shares	100	100	1625 Route Marie-Victorin, Sorel-Tracy QC J3R 1M6, Canada
Rio Tinto Iron Ore Asia Pte Ltd; Singapore	US\$1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, Singapore, 018982, Singapore
Rio Tinto Iron Ore Atlantic Limited; United Kingdom	US\$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Iron Ore Europe S.A.S.; France	€100.00 Ordinary shares	100	100	17 Place des Reflets, La Defense 2, 92400, Courbevoie, France

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Wholly owned subsidiary undertakings

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Rio Tinto Iron Ore Trading China Limited; United Kingdom	US\$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Japan Ltd; Japan	JPY500 Ordinary shares	100	100	8th Floor, Kojimachi Diamond Building, 1 Kojimachi 4-chome, Chiyoda-ku, Tokyo 102-0083, Japan
Rio Tinto Jersey Holdings 2010 Limited; Jersey	US\$ Ordinary shares	100	100	22 Grenville Street, St Helier, JE4 8PX, Jersey
Rio Tinto Korea Ltd; Republic of Korea	KRW10,000.00 Ordinary shares	100	100	2nd Floor, JS Tower, 6 Teheran-ro 79-gil, Gangnam-Gu, Seoul, 135-877, Republic of Korea
Rio Tinto Logistic Services Pty Ltd; Australia ^{(a)(g)}	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto London Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Management Services South Africa (Proprietary) Ltd; South Africa	ZAR2.00 Ordinary shares	100	100	1 Harries Road, Illovo, Sandton, 2196, Sandton, South Africa, 2196, South Africa
Rio Tinto Marketing Pte. Ltd.; Singapore	SGD\$1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, Singapore, 018982, Singapore
Rio Tinto Marketing Services Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Medical Plan Trustees Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Metals Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Minera Peru Limitada SAC; Peru	US\$1.00 Ordinary shares	100	100	Av. La Paz 1049, Oficina 501, Lima 18, Peru
Rio Tinto Mineracao do Brasil Ltda; Brazil	PEN100.00 Ordinary shares	100	100	SIG Quadra 04, Lote 175, Torre A, Salas 106 a 109, Edificio Capital Financial Center, Brasilia, Brasilia, CEP 70610-440, Brazil
Rio Tinto Minerals Asia Pte Ltd; Singapore	BRL1 Quotas shares	100	100	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, Singapore, 018982, Singapore
Rio Tinto Minerals Development Limited; United Kingdom	SGD\$1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, Singapore, 018982, Singapore
Rio Tinto Minerals Exploration (Beijing) Co., Ltd; China	US\$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Minerals Inc.; United States	£0.25 Ordinary shares	100	100	Units 15 - 16, 18/F, China World Office Building 2, No. 1 Jianguomenwai Dajie, Chaoyang District, Beijing, China
Rio Tinto Mining and Exploration Inc.; United States	US\$0.01 Common shares	100	100	CSC, 15 West South Temple, Suite 1701, Salt Lake City UT 84101, United States
Rio Tinto Mining and Exploration Limited; United Kingdom	US\$1.00 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Rio Tinto Mining and Exploration S.A.C.; Peru	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Namibian Holdings Limited; United Kingdom	US\$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Nickel Company; United States	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Nominees Limited; United Kingdom	US\$0.01 Common shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto OT Management Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Overseas Holdings Limited; United Kingdom	US\$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Pension Investments Limited; United Kingdom ^(b)	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Peru Limited; United Kingdom	US\$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Potash Management Inc./Rio Tinto Potasse Management Inc.; Canada	CAD Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
Rio Tinto Procurement (Singapore) Pte Ltd; Singapore	US\$1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, Singapore, 018982, Singapore

Notes to the 2017 financial statements

continued

46 Related undertakings continued

Wholly owned subsidiary undertakings

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Rio Tinto Pte Ltd; Singapore	SGD\$1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, Singapore, 018982, Singapore
	SGD\$1.00 Preference shares	100		
Rio Tinto Saskatchewan Management Inc.; Canada	CAD Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
Rio Tinto Saskatchewan Potash Holdings General Partner Inc.; Canada	CAD Common shares	100	100	McCarthy Tetrault LLP, Suite 5300, TD Bank Tower 66 Wellington Street West, Toronto ON M5K 1E6, Canada
Rio Tinto Saskatchewan Potash Holdings Limited Partnership; Canada ^(a)	—	—	100	McCarthy Tetrault LLP, Suite 5300, TD Bank Tower 66 Wellington Street West, Toronto ON M5K Canada 1E6, Canada
Rio Tinto Secretariat Limited	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Services Inc.; United States	US\$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Rio Tinto Services Limited; Australia ^(a)	AUD Class Z shares	100		Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
	AUD Ordinary shares	100	100	
Rio Tinto Shared Services Pty Limited; Australia	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Shipping (Asia) Pte. Ltd.; Singapore	US\$1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, Singapore, 018982, Singapore
Rio Tinto Shipping Pty. Limited.; Australia ^(a)	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Simfer UK Limited; United Kingdom	US\$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Singapore Holdings Pte Ltd; Singapore	SGD\$1.00 Ordinary shares	100		12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, Singapore, 018982, Singapore
	US\$ Ordinary shares	100	100	
Rio Tinto South East Asia Limited; United Kingdom	£1.00 Ordinary shares	100		6 St James's Square, London, SW1Y 4AD, United Kingdom
	US\$1.00 Ordinary shares	100	100	
Rio Tinto Staff Fund Pty Limited; Australia ^(a)	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Sulawesi Holdings Limited; United Kingdom	US\$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Technological Resources Inc.; United States	US\$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Rio Tinto Technological Resources UK Limited; United Kingdom	US\$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Trading (Shanghai) Co., Ltd.; China	US\$1.00 Ordinary shares	100	100	41/F Wheelock Square, No. 1717 West Nanjing Road, Jing' an District, Shanghai, 200040, China
Rio Tinto Uranium Limited; United Kingdom	US\$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Vostok Limited; United Kingdom	US\$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Western Holdings Limited; United Kingdom	£1.00 Ordinary shares	100		6 St James's Square, London, SW1Y 4AD, United Kingdom
	US\$1.00 Ordinary shares	100	100	
Riversdale Connections (Proprietary) Ltd; South Africa	ZAR1.00 Ordinary shares	100	100	Ground Floor – Cypress Place North, Woodmead Business Park140/142 Western Service Road, Woodmead, 2191, South Africa
Robe River Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Rocklea Station Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
RTA AAL Australia Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
RTA Boyne Limited; Australia	AUD Ordinary shares	100	100	Pacific Aluminium, Level 3, 500 Queen Street, Brisbane QLD 4000, Australia
RTA Holdco 1 Limited; United Kingdom	US\$ 0.0001 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom

Wholly owned subsidiary undertakings				
Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
RTA Holdco 4 Limited; United Kingdom	US\$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
	US\$0.73 Ordinary shares	100		
	US\$1.00 Ordinary shares	100		
RTA Holdco 7 Limited; United Kingdom	US\$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
	US\$ Class A preference shares	100		
	US\$1.00 Ordinary shares	100		
RTA Holdco 8 Limited; United Kingdom	US\$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
	US\$ Class A preference shares	100		
	US\$1.00 Ordinary shares	100		
RTA Holdco Australia 1 Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
RTA Holdco Australia 3 Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
RTA Holdco Australia 5 Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
RTA Holdco Australia 6 Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
RTA Holdco France 2017 S.A.S.; France	€ 10.00 Ordinary shares	100	100	17 Place des Reflets, La Defense 2, 92400, Courbevoie, France
RTA Pacific Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
RTA Sales Pty Ltd; Australia	AUD Class A shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
	AUD Class B shares	100		
RTA Smelter Development Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
RTA Weipa Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
RTA Yarwun Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
RTAlcan 1 LLC; United States	US\$ Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
	US\$ Class A preferred shares	100		
	US\$ Common shares	100		
RTAlcan 2 LLC; United States	US\$ Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
RTAlcan 3 LLC; United States	US\$ Common shares	100	100	CSC, 2711 Centerville Road, Suite 400, Wilmington DE 19808
RTLDS Aus Pty. Ltd; Australia ^(a)	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
RTLDS UK Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
RTMDC LLC; Mongolia	MNT1,240.00 Common shares	100	100	7 floor, Seoul Business Centre, Zaluuchud avenue – 26, 1st khoroo, Bayanzurkh district, Ulaanbaatar, 13381, Mongolia
RTPDS Aus Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Savoie Services Y.K.; Japan	JPY50,000 Ordinary shares	100	100	Harumi, 3 Nagahama-cho, Ozu-city, Ehime-ken, 799-3412, Japan
Scheuch Unterstuetzungskasse GmbH; Germany	€51.13 Ordinary shares	100	100	Alusingenplatz 1, D-78221, Singen, Germany
Skeleton Coast Diamonds Limited; Namibia	NAD2.00 Ordinary shares	100	100	360 Sam Nujoma Drive, Klein Windhoek, Windhoek, Namibia
Skymont Corporation; United States	US\$ Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Société De Financement Des Risques Industriels; Luxembourg	€ Ordinary shares	100	100	534, rue de Neudorf, B.P. 593, Luxembourg, L-2015, Luxembourg
Société D'entreprises, Carrières Et Mines De L'Estere; France	€9.33 Ordinary shares	100	100	17 Place des Reflets, La Defense 2, 92400, Courbevoie, France
Société Générale de Recherches et d'exploitations Minières; France	€0.22 Ordinary shares	100	100	17 Place des Reflets, La Defense 2, 92400, Courbevoie, France
Société Immobilière Alpes Provence; France	€15.00 Ordinary shares	100	100	17 Place des Reflets, La Defense 2, 92400, Courbevoie, France
Sohio Western Mining Company; United States	US\$100.00 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA

Notes to the 2017 financial statements

continued

46 Related undertakings continued

Wholly owned subsidiary undertakings				
Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Southern Copper Pty. Limited; Australia	AUD A shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
	AUD B shares	100		
	AUD Non cumulative redeemable preference shares	100		
	AUD Ordinary shares	100		
Swift Current Land & Cattle LLC; United States ^(c)	—	—	100	CSC, 2338 W. Royal Palm Road, Suite J, Phoenix AZ 85021
Swiss Aluminium Australia Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
	AUD Stock Unit A shares	100		
	AUD Stock Unit B shares	100		
	AUD Stock Unit C shares	100		
TBAC Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Technological Resources Pty. Limited; Australia ^(a)	AUD A Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
	AUD B Ordinary shares	100		
The Barrier Corporation (Vic.) Pty. Limited; Australia ^(a)	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
The Kelian Community and Forest Protection Trust; Singapore ^(c)	—	—	100	10 Collyer Quay, #10-01 Ocean Financial Centre, 049315, Singapore
The Pyrites Company, Inc.; United States	US\$1.00 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
The Roberval and Saguenay Railway Company/La Compagnie du Chemin de Fer Roberval Saguenay; Canada	CAD\$100.00 Ordinary shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
	CAD\$100.00 Preference shares 6% non-cumulative	100		
The Zinc Corporation Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
	AUD Z Class ordinary shares	100		
Thos. W. Ward Limited; United Kingdom	£0.25 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Three Crowns Insurance Company Limited; Bermuda	£1.00 Common shares	100	100	Canon's Court, 22 Victoria Street, Hamilton, HM 12, Bermuda
Tinto Holdings Australia Pty. Limited; Australia	AUD A shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
	AUD Ordinary shares	100		
Trans Territory Pipeline Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
U.S. Borax Inc.; United States	US\$0.10 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Union Générale Industrielle Africaine; Morocco	MAD100.00 Ordinary shares	100	100	52 bld Zerkouni – 1er étage – Appartement N° 3–, Espace Erreda—Casablanca—Maroc, Maroc, Morocco
Victoria Technology Inc.; United States ^(a)	US\$1.00 Ordinary shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
	—	—		
Waste Solutions and Recycling LLC; United States	US\$ Units shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
West Kutai Foundation Limited; Singapore ^(c)	—	—	100	10 Collyer Quay, #10-01 Ocean Financial Centre, 049315, Singapore
Wimmera Industrial Minerals Pty. Limited; Australia ^(a)	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Winchester South Development Company Proprietary Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Wyoming Coal Resources Company; United States	US\$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
201 Logistics Center, LLC; United States ^(c)	—	—	50	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
AGM Holding Company Pte Ltd; Singapore	US\$ Ordinary shares	100	50.8	77 Robinson Road, #13-00, Robinson 77, 068896, Singapore

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Rio Tinto/ Kennecott (Totally Owned Subsidiary)

Kennecott Land

- Daybreak Development, LLC
- Daybreak Property Holdings, LLC
- Daybreak Secondary Water Distribution
- Daybreak Water Holding, LLC

Master Planned Community (former mine land) Developed by Kennecott Land

- Master Planned Community – over 13,500 Residential Units on 4,126 acres
- 9.1 million Sq.ft. Retail/Commercial space
- Sustainable design; ¼ site-open space; 100% storm water retained on site; all homes energy star certified; “green”, sustainable development...

Kennecott then sells to Värde Partners* 2016

- After only 500 homes are finished
- Sale includes 2,500 undeveloped acres, Information Center, Retail District, Lake, and all Secondary Water Assets

*Värde Partners is a private firm founded in 1993

*Värde Partners early focus was Distressed Assets.

*Värde is "value" in Swedish. They pursue assets at a discount to benefit from their potential value.

ULI DEVELOPMENT CASE STUDIES



Daybreak

South Jordan, Utah

Project Type: **Master-Planned Community**

Volume **37** Number **24**

October–December 2007

Case Number: **C037024**



PROJECT TYPE

Located in South Jordan, Utah, a suburb of Salt Lake City, Daybreak is the largest master-planned community in the state's history. Developed by Kennecott Land, a subsidiary of mining company Rio Tinto, the project will consist of over 13,500 residential units and 9.1 million square feet (845,418 square meters) of retail and commercial space upon completion in 2017. The developer employed a number of sustainable design features and strategies, such as preserving over one-quarter of the site as open space, retaining 100 percent of the stormwater runoff on site, and requiring that all homes be Energy Star® certified.



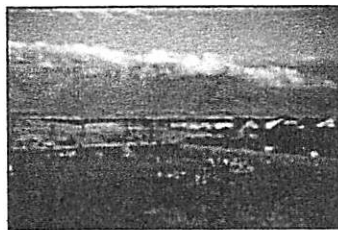
LOCATION
Outer Suburb

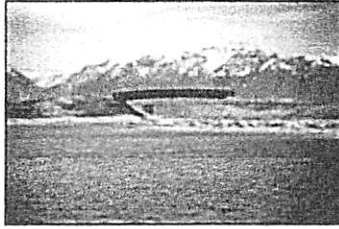
SITE SIZE
4,126 acres/1,670 hectares

LAND USES
Single-Family Homes, Apartments, Office, Retail, Open Space

KEY FEATURES

- Traditional Neighborhood Development
- Master-Planned Community
- Green Building
- Sustainable Development





- Pedestrian-Friendly Design

WEB SITE

www.daybreakutah.com

ADDRESS

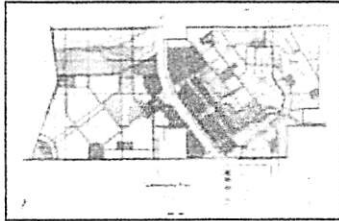
11400th South and Bangerter Highway
South Jordan, Utah

DEVELOPER

Kennecott Land Company
Murray, Utah
801-743-4624
www.kennecottland.com

LAND PLANNER

Calthorpe Associates
Berkeley, California
510-548-6800
www.calthorpe.com



GENERAL DESCRIPTION

Daybreak, at 4,126 acres (1,670 hectares), is the largest master-planned community in Utah history and the state's first large-scale project guided by new urbanist principles. Developed by London-based mining company Rio Tinto through Kennecott Land, its subsidiary, the project is located 20 miles (32 kilometers) south of Salt Lake City. Groundbreaking took place in early 2004. When finished in 2017, Daybreak will comprise a mix of uses, at least 13,500 residential units, and a commercial core (9.1 million square feet/845,418 square meters of retail/commercial space) oriented around transit systems. The development incorporates about 1,250 acres (506 hectares) of open space, which in turn facilitates 100 percent stormwater retention. All homes are Energy Star® certified. Phase I includes an elementary school and a community center that are LEED-Silver certified, deriving their heating and cooling needs from ground-source heat pumps.

THE SITE

In 1989, Rio Tinto, one of the world's largest mining companies, bought Kennecott Utah Copper and took ownership of 93,000 acres (37,636 hectares) on the western side of the Oquirrh Mountains. More than half of the land is in the mountains and is still actively mined for copper. Another 40,000 acres (16,187 hectares) lie in the western foothills in an undeveloped area that for over 100 years has served as a buffer between development and mining operations. In 2001, Kennecott Land was created to manage and develop the nonmining land owned by Rio Tinto.

The 4,126-acre (1,670-hectare) Daybreak site is located on the eastern edge of the buffer area at the foot of the mountains and within the city limits of South Jordan (population 41,000). Historically, much of the site has been used for farming. However, a small portion of the tract (13 percent) sits on the former site of evaporation ponds used in conjunction with mining operations in Bingham Canyon. The ponds were used for evaporation until 1965 and for periodic storage of runoff water until 1987. Studies conducted in the early 1990s concluded that there were

WIKIPEDIA

Daybreak (community)

Daybreak is a master-planned community over 4,000 acres (16 km²) in size that began construction in 2004 under the direction of land development company Kennecott Land (a subsidiary of Rio Tinto Group) in South Jordan, Utah. In 2016, the balance of the land holding was sold to Minneapolis based investment firm Värde Partners, and a new development company called Daybreak Communities (<http://www.daybreakcommunities.com/>) was formed to continue development of the project.^[1] The community is expected to continue building for the next 18 to 20 years. When completed, it could contain more than 20,000 residential units and approximately 9.1 million square feet (850,000 m²) of commercial space.^[2]



Examples of homes in Daybreak

Contents

Description

Amenities

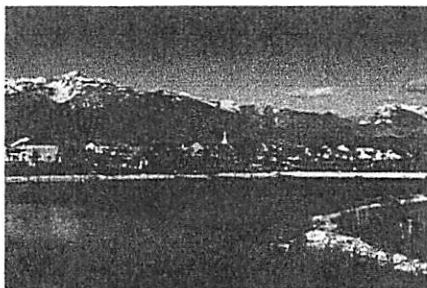
References

External links

Description

Daybreak is designed using a traditional neighborhood development model (TND), which means that all homes are within a five-minute walk or bike ride of a major amenity such as a park, the lake, or a shopping area, reducing dependence on automobile travel. The home designs were inspired by Salt Lake City's historical neighborhoods such as Sugar House, The Avenues, and Harvard-Yale areas, and include large front porches and alley-loaded garages. Exterior styles include Colonial Revival, Craftsman and Victorian. The homes along each street also have brighter colors than are found in most suburban neighborhoods. Recently, homes with a more modern style have been added.

The community is currently divided into several sub-neighborhoods called villages: Founder's Park was the original village opened in 2004. Eastlake Village which opened in 2006 features several parks. North Shore Village is likely the community's most diverse neighborhood architecturally and Garden Park Village, which opened in 2009, is a fully maintained neighborhood designed with the 55+ empty nester in mind. Garden Park features its own private clubhouse, fitness area and easy beach access. Lake Village which currently holds the largest and most expensive homes opened in 2013. Creekside Village opened in 2013 with features such as the largest park in Daybreak, a zip line and more. In SoDa Row Village you will find the main shopping area within Daybreak (<http://www.daybreakutah.com>) along with apartments and townhomes. In 2016, the developer opened its first village on the West side of Mountain View Corridor (<https://www.udot.utah.gov/mountainview/>), the major state highway that essentially divides the community in half. South Station Village is the first neighborhood in Daybreak that follows a transit oriented development pattern. The extension of the Red Line on UTA's TRAX light rail system which connects Daybreak to downtown Salt Lake City and the University of Utah was completed in 2011,^[3] and currently terminates at the University of Utah medical center.



Daybreak Community Living

All homes in the community are Energy Star certified. Daybreak was the first community of its size in the region to adhere to Energy Star standards, and the entire community has been designed and built with sustainability in mind. Many of the home builders in the community offer different options that promote green building, including solar and thermal panels, renewable building materials and high performance appliances.^[4] Many homes in Daybreak also have fiber-optic connections.^[5] Though there is not currently a company in the area that can make use of it.

Daybreak was the 6th Best Selling Master Planned Community in the Nation for 2009.^[6] Daybreak sold 375 new homes in 2009, which was a 7 percent increase over 2008, an unusual achievement in the down housing market. Nearly 1 in every 5 homes sold in Salt Lake County were in Daybreak.

Amenities

SoDa Row (http://www.daybreakutah.com/newsroom/view/First_SoDa_ROW_Tenants_Announced/#), is Daybreak's first retail area. It includes several restaurants and retail shops, a day spa, barber shop and a dry cleaner. The Rio Tinto Regional Center is also located in SoDa Row. This is the area headquarters for international mining giant Rio Tinto, which is also the parent company of Kennecott Land, the developer of Daybreak. The University of Utah (<http://healthcare.utah.edu>) built a 225,000-square-foot multi-specialty clinic (<http://healthcare.utah.edu/primarycare/southjordan>) in Daybreak and features a 24-hr. Emergency Room as well as many of the University's name brand specialty clinics such as Moran Eye Center and Huntsman Cancer. Future plans include a medical campus that could expand to 50 acres.

The most current addition to local shopping is the Trail Crossing Shopping Center (<http://www.daybreakutah.com/whats-happening/shopping-dining/trail-crossing-shopping-center>). The main shopping feature is Smith's Marketplace, along with restaurants, salon services, medical and banking.

The Red Line of the Utah Transit Authority's (UTA) light rail system now gives the residents of Daybreak and the southwest Salt Lake Valley access to Downtown Salt Lake City and the University of Utah, as well as connections to the Salt Lake City International Airport. The Mountain View Corridor also provide access to Daybreak, and Bangerter Highway lies along the eastern edge. Daybreak is also located adjacent to a shopping center known as "The District", which contains 1,200,000 square feet (110,000 m²) of retail space.^[7]

On October 1, 2005, The Church of Jesus Christ of Latter-day Saints announced the construction of the Oquirrh Mountain Utah Temple, which was built in a prominent location in the Daybreak development. Ground was broken for the temple on December 16, 2006, and the temple was dedicated on August 23, 2009.

The development currently contains three schools: Daybreak and Eastlake Elementaries, and a charter school, Early Light Academy.

Daybreak has a community center, with a full gym and exercise area, as well as a swimming pool and two splash pads/wading pools. Along with the 22 miles (35 km) of trails and over a dozen community parks, a man-made lake, Oquirrh Lake, was developed for non-motorized boating, fishing, and other recreational activities. The lake began construction in 2005 and is now fully developed.^[8]

References

1. "Kennecott sells Daybreak community to Värde" (<http://archive.sltrib.com/article.php?id=4019288&itype=CMSID>). *The Salt Lake Tribune*. Retrieved 2018-03-14.

Daybreak's Environmental History



Introduction

Kennecott Utah Copper's Daybreak Community Development Team is dedicated to building an enduring community in the Salt Lake Valley. We manage our land holdings and are building Daybreak in ways that will ensure future generations have the opportunity to enjoy a great neighborhood, beautiful land, abundant water, and clean air.

As part of Rio Tinto, a global mining company, Kennecott is well-versed in the reclamation needs of mining operations and is sensitive to the public's questions and concerns about past mining activities. We hope the information contained in this report will help you understand our significant work and commitment to ensure clean and safe soil and water in Daybreak.

History

Utah's first mining district was born in the early 1860s when reports of significant mineral deposits in the Oquirrh Mountains were confirmed. Over the next 150 years, the industry went through enormous changes in prosperity and modernization. In 1989, one of the world's largest mining companies, Rio Tinto, purchased Kennecott Utah Copper (KUC). In 2001, Kennecott began planning the Daybreak community as a sustainable use of post mining land and as a showcase of the progressive thinking that embodies Rio Tinto.

Soil Conditions at Daybreak

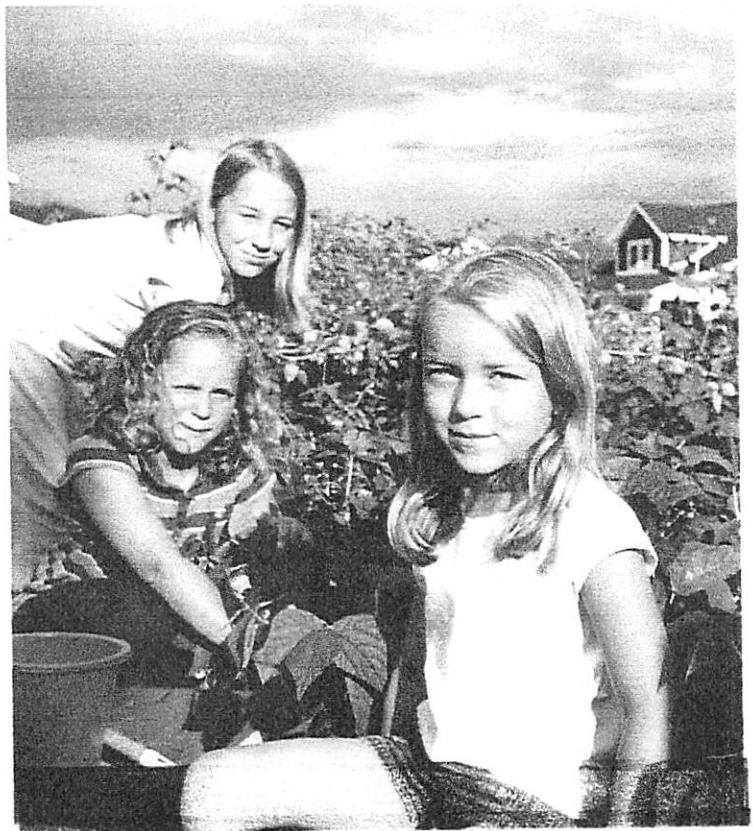
Kennecott has met and in some cases exceeded the U.S. Environmental Protection Agency (EPA) and the Utah Department of Environmental Quality's (UDEQ) standards for soil conditions for development at Daybreak. A small part (around 13%) of the community sits on the former site of evaporation ponds used in conjunction with mining operations in Bingham Canyon. The following chronicles the development and removal of soil beneath those holding ponds.

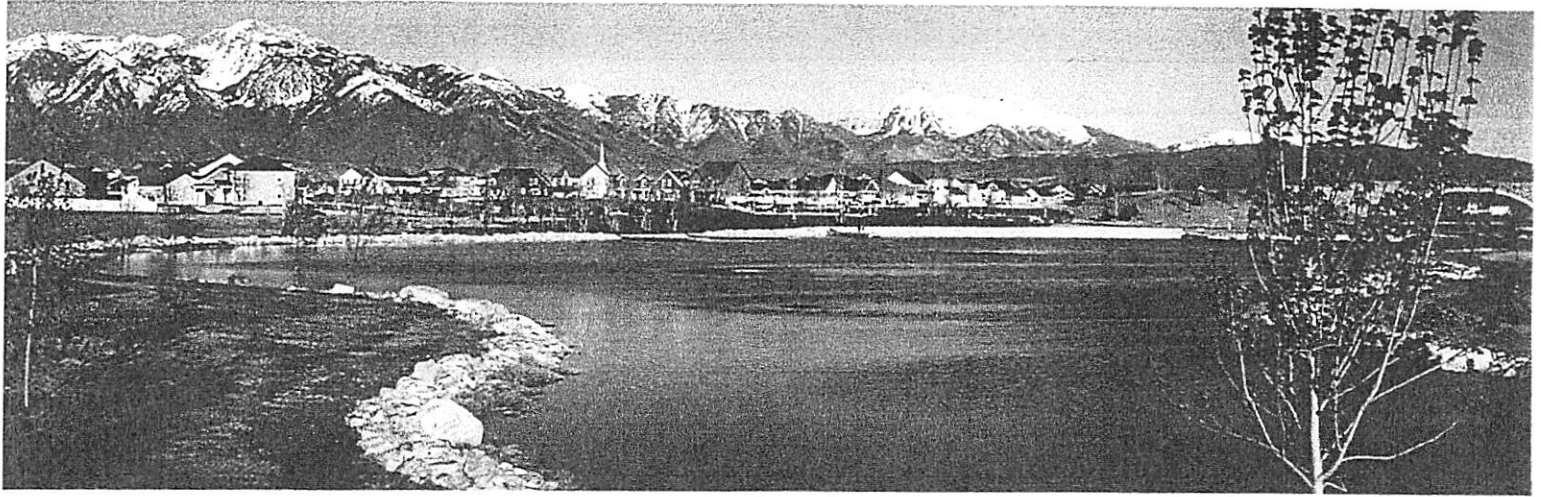
- In 1936, Kennecott constructed evaporation ponds to store and evaporate mine water originating from the Bingham Canyon watershed.
- Over time, additional ponds were constructed to increase capacity, and the area became known as the South Jordan Evaporation Ponds (SJEP).
- The ponds were used for mine water until 1965 and for periodic storage of runoff water until 1987. SJEP use was discontinued in 1987.
- Studies in the early 1990s concluded that there were elevated levels of heavy metals in the soil where the holding ponds had been located. Kennecott took responsibility for the impacts and agreed to reclaim and remediate the SJEP area. The removal work was undertaken pursuant to an EPA Administrative Order on Consent (AOC).
- A massive clean-up operation began in 1994 involving the removal of pond sediment and six additional inches of underlying native soil. The material removed from Daybreak was permanently relocated to the Kennecott Blue Water Repository as part of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) clean up. At this time, some sediment, with a low concentration of lead and arsenic but an elevated sulfate concentration were consolidated onsite and capped with topsoil and re-vegetated. In 2001, the EPA issued a Record of Decision stating that the removal action adequately satisfied the remedial objectives and EPA determined that no further action was required. An Operation and Maintenance Plan (O&M Plan) was established to address further management of the consolidation site.
- > Pursuant to agreements between the EPA, UDEQ and Kennecott, Kennecott began removing the remaining sediments at the consolidation site under the guideline of the O&M Plan.
- > In 2006, Kennecott, the EPA and the UDEQ entered into an agreement solidifying the unrestricted residential and commercial use clean-up standards for the entire site.
- > In early 2007, the consolidated pond sediment removal project was completed.
- > In 2008, - the EPA and UDEQ issued a Consent Decree for the ground water cleanup efforts.

Growing Conditions at Daybreak

Daybreak integrates sustainable landscape practices into the community in a number of ways. We are committed to planting over 100,000 trees along all of the streets and in parks, which will diminish the urban heat island effect. Storm water runoff is collected in a variety of ways and filters down to recharge the aquifer beneath Daybreak. Residents are encouraged to plant a water wise landscape, limit turf areas that require a lot of supplemental water, and improve soil to better absorb water and encourage deeper roots. A list of plants that grow well at Daybreak is available through the Daybreak Community Association.

Gardening is encouraged at Daybreak as a means of producing sustainable food supplies. Gardening opportunities are available to Daybreak residents at their home or at one of the "Community Gardens," which have been constructed throughout Daybreak.





Water at Daybreak

Daybreak and other southwest valley residents get their drinking and household water from the Jordan Valley Water Conservancy District (JVWCD). Parks and open spaces at Daybreak are irrigated through the use of an innovative secondary water collection and distribution system. Secondary water (originating from Utah Lake) is piped in through existing pipelines and treated at a holding pond on the northern edge of the property. The water is distributed for irrigation to parks and open spaces.

Southwest Valley Groundwater

Groundwater in the southwest valley (including portions of South Jordan, West Jordan, Riverton and Herriman), has been impacted by early mining operations in the Oquirrh Mountains. This water was found to contain higher than normal levels of sulfate. Sulfate (SO₄) occurs naturally in most groundwater, with higher levels associated with historic mining districts. As water moves through soil and rock formations that contain sulfate or sulfide bearing minerals, some of the sulfate dissolves into the groundwater. At high levels, sulfate can give water a bitter taste and can have a laxative effect. The presence of the groundwater plume, which is approximately 250 to 450 feet beneath Daybreak, does not constitute a health or safety risk, or concern to individuals who live, work, or recreate at Daybreak, due to its depth below the surface. However, Kennecott is working with the UDEQ and the JVWCD and have implemented a clean-up plan that will have long-term environmental benefits.

Here are the facts:

- *The groundwater plume is approximately 250 to 450 feet beneath the surface of Daybreak.*
- *No groundwater containing sulfate in quantities greater than the drinking water standards is extracted and directly supplied as drinking water by the Jordan Valley Water Conservancy District*
- *In August 2004, Kennecott signed an agreement to perform a groundwater clean-up in conjunction with the UDEQ and the JVWCD. The agreement outlines a plan to pump and treat groundwater.*
- *Two Reverse Osmosis (RO) plants have been built and treat the sulfate contaminated water and provide drinking water to the JVWCD. The western RO plant operated by Kennecott, also known as Bingham Canyon Water Treatment Plant located southeast of Copperton, began providing drinking water in June 2006. The eastern RO plant operated by JVWCD, located along 1300 West and 8200 South, is projected to be in full operation in the second quarter of 2012. The plant will treat groundwater extracted from wells located in the South Jordan area.*
- *The groundwater treatment project has a 40-year timeline that Kennecott will be financing. At the end of this period, the size of the plumes should have decreased substantially.*
- *The two RO plants will provide at least 7,000 acre feet of water conforming to drinking water standards per year to the JVWCD.*

The Salt Lake Tribune

Kennecott sells Daybreak community to Värde

Transaction for undisclosed price includes 500 finished homes, 2,500 undeveloped acres.



By Mike Gorrell The Salt Lake Tribune

• June 17, 2016 8:48 pm

This is an archived article that was published on sltrib.com in 2016, and information in the article may be outdated. It is provided only for personal research purposes and may not be reprinted.

Rio Tinto Kennecott is getting out of Daybreak.

The mining company said Friday it is selling its massive real-estate development beneath the Bingham Canyon Mine to Värde Partners, an alternative investment firm with roots in Minneapolis.

The price was not disclosed.

Included in the sale are 500 finished home sites, 2,500 acres of undeveloped land, the Glass House Information Center, the SoDa Row retail district, Oquirrh Lake and associated secondary water assets, the companies said in a news release. The sale is likely to be completed this summer.

Nigel Steward, Rio Tinto Kennecott's managing director, said the divestment will generate "cash flow and flexibility as we streamline our business and focus on mining."

The mining industry has been in turmoil for months, with tough times likely to continue for a while. Industry giants such as Arch Coal and Peabody have been driven into bankruptcy by plunging commodity prices, and Rio Tinto Kennecott has been reeling as well.

In March, the company laid off 200 employees, leaving it with about 1,620 workers in Utah.

City officials in South Jordan, where Daybreak is located, do not expect the sale to cause many changes on the ground, said city spokeswoman Tina Brown.

"Essentially, the only thing that's changed here is the name," she said, noting that city officials knew for some time of sales talks with unknown suitors. "As far as Daybreak is concerned, it will be business as usual. The same people will be running it. They'll have the same rights and obligations that Kennecott had."

Founded in Minneapolis in 1993 by three investors who initially focused on distressed assets, Värde now has primary offices in the Twin Cities, London and Singapore, plus secondary offices in New York, Tokyo, Sydney, and five European cities.

Värde's website said it has diversified its holdings through 15 funds that have invested more than \$40 billion.

The Daybreak news release said "certain funds" managed by Värde will take control of the development and its assets.

A new company, Daybreak Communities, will be created to carry out plans to develop the remaining 2,500 acres and operate the community.

With key members of Daybreak's current management team retaining their positions in this new company, Rio Tinto Kennecott spokesman Kyle Bennett said, the transition "will continue the delivery of the community vision in future villages, a town center and the land west of Mountain View Corridor."

Ali Haroon, Värde's global head of real estate, called Daybreak an "attractive property" whose purchase "aligns with our vision of owning top-quality real-estate assets. It's a great fit in [our] overall real estate strategy."

Added Brendan Bosman, Värde's managing director on this investment: "We are focused on ensuring that Daybreak will remain a thriving master-planned community."

Rio Tinto Kennecott still has about 96,000 acres along the eastern foothills of the Oquirrh Mountains, Bennett said.

mikeg@sltrib.com



VILLAGES WHAT'S HAPPENING

DAYBREAK

LOCATION DAYBREAK STORY

What's Happening

JUNE 17, 2016

Rio Tinto Kennecott to sell Daybreak Community to Värde Partners



NEWS RELEASE

Rio Tinto Kennecott to sell Salt Lake City area Daybreak Community to Värde Partners

Daybreak to complement real estate portfolio of global alternative investment adviser Värde Partners

June 17, 2016

JUNE 16, 2016

Ladybug Festival Welcomes 225,000 Ladybugs

This past weekend Daybreak residents gathered to kick-off the Summer gardening season at the ninth annual Ladybug Festival. During the festival 225,000 ladybugs were released into the community gardens in an effort to promote organic gardening and the use of ladybugs to control pesky aphids that feed on plants. LiveDAYBREAK, the community council, added another [...]

[Community Gardens](#), [Daybreak Honey](#)

VILLAGES **WHAT'S HAPPENING** **Partners**, a leading investment firm, to sell its land and associated assets in the Daybreak Community. The sale includes approximately 500 finished home sites, 2,500 acres of undeveloped land, the Glass House Information Center, the SoDa Row Retail District, Oquirrh Lake and associated secondary water assets. Terms of the transaction were not disclosed.

"This divestment will facilitate fresh capital to fund Daybreak's continued growth and expansion, and contribute to Kennecott's cash flow and flexibility as we streamline our business and focus on mining," said Nigel Steward, Rio Tinto Kennecott Managing Director. "Daybreak is an exceptional community with tremendous value, and we are confident Värde Partners will continue to move the Daybreak vision forward."

"Daybreak is an attractive property for Värde Partners. The acquisition of Daybreak directly aligns with our vision for owning top-quality real estate assets," said Ali Haroon, Partner and Global Head of Real Estate at Värde. "It is a great fit in Värde's overall real estate strategy, which includes extensive real estate holdings around the globe."

"We believe in the future of this community and are focused on ensuring that Daybreak will remain a thriving master-planned community. We are excited about growing the community responsibly working alongside the management team," said Brendan Bosman, Varde's lead Managing Director on the investment.

LOCATION **Rei** **DAYBREAK STORY**

JUNE 15, 2016

Destination Homes Introduces Providence Series

New single-family home floor plans are available with Destination Homes in the Providence Series. Think gabled roofs, large porches or patios and spacious kitchens—simply put the features in these floor plans are simply stunning. What you'll love about Destination Homes Providence Series: Abundance of Windows: Each home has an abundance of windows that bring in [...]

Read More

VILLAGES	WHAT'S HAPPENING	<p>The deal is scheduled to close in early summer 2016, ds managed by Värde Partners will assume ownership of Daybreak and its associated assets, forming a new company that will continue development and operations of the community. Key members of Daybreak's current management team will continue with the new venture.</p>	LOCATION	DAYBREAK STORY
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Kennecott was represented by Land Advisors Organization in the transaction.

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About Rio Tinto Kennecott

As the second largest copper producer in the United States, Rio Tinto Kennecott comprises nearly 7 percent of U.S. copper production. Kennecott's Bingham Canyon Mine is one of the top producing copper mines in the world with production at more than 19 million tons. Rio Tinto purchased Kennecott and related facilities in 1989 and has invested more than \$2 billion in modernization since that time. Kennecott has also spent more than \$350 million on the cleanup of historic mining waste and \$100 million on groundwater cleanup. Take a closer look at riotintokennecott.com.

About Rio Tinto

Rio Tinto is a leading international mining group headquartered in the United Kingdom, combining Rio Tinto plc, a London and NYSE listed company, and Rio Tinto Limited, which is listed on the Australian Securities Exchange.

Rio Tinto's business is finding, mining, and processing mineral resources. Major products are aluminum,

copper, diamonds, energy (coal and uranium), gold, VILLAGES WHAT'S HAPPENING tax, titanium dioxide, salt, talc) and iron ore. Activities span the world but are strongly represented in Australia and North America with significant businesses in South America, Asia, Europe and Southern Africa. www.riotinto.com

LOCATION DAYBREAK STORY

About Värde Partners

Värde Partners is a global alternative investment adviser focused on investing capital and resources across multiple segments and markets that includes corporate assets and sovereign debt, residential mortgages, real estate, specialty finance, transportation, infrastructure and logistics. Värde sponsors and manages a family of private investment funds with a global investor base that includes foundations and endowments, pension plans, insurance companies, other institutional investors, and private clients. www.varde.com

Media Contacts

Kyle Bennett, Rio Tinto Kennecott

Principal Advisor, Communications

801-204-2915

Paula Prah, Värde Partners

Global Head of Communications & Public Affairs

952-715-5525

Daybreak Transition Frequently Asked Questions



Värde Partners story

Värde Partners is a global investment adviser focused on credit and value investing strategies. The firm was founded in 1993 in Minnesota by a group of three investment professionals. Each brought broad experience in financial markets, and the trio believed there were significant opportunities in credit markets. They launched Värde's inaugural fund to explore their thesis.

Värde's early focus was on distressed assets, and over time, Värde's experience has extended to a broader set of strategies and asset types arrayed across liquidity profiles and the globe. At a fundamental level, the firm focuses on unlocking value – Värde means value in Swedish – seeking opportunities in less efficient markets and pursuing assets at a discount to their potential value. These opportunities are often accompanied by a complexity that expands the scope of the opportunity as well as the potential return to investors. The Värde team thrives on complexity and seeks to delve deeply to identify undervalued investment opportunities.

Värde's approach is centered on an integrated platform with a unified focus on the generation of attractive risk adjusted returns. A key tenet of Värde's strategy is a flexible investment approach – investing and allocating capital and resources across multiple segments and markets. An important aspect of the firm is that investment professionals are not confined to "silos." They often work across asset types in cross functioning teams, allowing them to combine their expertise to pursue enhanced returns.

for the good by finding innovative ways to make money for the investors it serves. Värde relies on deliberate hiring practices – which involve a careful screening of candidates not just for skills and expertise but also for “fit” – in order to preserve this valuable asset.

Today, Värde is over 290 people strong with offices around the globe serving a diverse group of institutional investors including trusts, endowments, foundations, pension funds, corporations, and funds-of-funds. The firm has invested over \$55 billion since inception and has over 90 investment professionals currently managing investments world-wide. Värde continues to have a significant presence in its city of origin – Minneapolis – but has established equally strategic offices in London, serving as our European headquarters and in Singapore, serving as our Asia Pacific headquarters. Additional offices exist to support key activities in those regions.

The Värde name

VÄRDE

Värde, whose name is the Swedish word for “value,” seeks to create value through every investment, partnership and relationship. The fact that our name is both a noun and a verb is purposeful and powerful. We value value.

Global reach

Värde maintains offices around the globe. Headquarter offices are located in Minneapolis for the U.S., London for Europe, and Singapore for the Asia-Pacific region.

Search

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Daybreak development llc united states us001 common

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Daybreak Development LLC; United States	US\$0.01 Common shares	100	CSC, 2711 Centerville Road, Suite 4C DE 19808
Daybreak Property Holdings LLC; United States ^(c)	–	–	CSC, 15 West South Temple, Suite 1 City UT 84101, United States
Daybreak Secondary Water Distribution Company; United States	US\$0.01 Common shares	100	CSC, 2711 Centerville Road, Suite 4C DE 19808
Daybreak Water Holding LLC; United States	US\$0.01 Common shares	100	CSC, 2711 Centerville Road, Suite 4C DE 19808
DB Medical I LLC; United States	USD Units shares	100	CSC, 15 West South Temple, Suite 1 City UT 84101, United States
DBVC1 LLC; United States ^(c)	–	–	CSC, 15 West South Temple, Suite 1 City UT 84101, United States
Diavik Diamond Mines (2012) Inc.; Canada	CAD Common shares	100	300-5201 50th Avenue, PO Box 249 NT X1A 2P8, Canada
Dolphin Properties Pty. Ltd.; Australia	AUD Ordinary shares	100	123 Albert Street, Brisbane QLD 400
East Kalimantan Coal Pte. Ltd; Singapore ^(a)	SGD1.00 Ordinary shares	100	12 Marina Boulevard, #20-01 Marine Centre Tower 3, Singapore, 018982,
Eastland Management Inc.; United States	US\$1.00 Common shares	100	CSC, 2711 Centerville Road, Suite 4C DE 19808
Electric Power Generation Limited; New Zealand ^(a)	NZD1 Ordinary shares	100	Level 6, 109 Featherston Street, Wel New Zealand
Emirates Energy Limited; United Kingdom ^(a)	US\$1.00 Ordinary shares	100	6 St James's Square, London, SW1Y Kingdom
Energy Resources of Australia Ltd; Australia	AUD A Class ordinary shares	68.4	C/- Mallesons Stephen Jacques, 60 N Street, Canberra ACT, Australia
Falcon Insurance Ltd; Malta ^(a)	US\$1.00 Class "A" ordinary shares	100	No 7, 4th Floor, Block C, Skyway Offi Marina Street, Pieta , PTA 9042, Mal
Flambeau Mining Company; United States	US\$1.00 Class "B" shares	100	
	US\$0.01 Common shares	100	CSC, 2711 Centerville Road, Suite 4C DE 19808
Fundsprops Pty. Limited; Australia ^(a)	AUD A Class ordinary shares	100	Level 33, 120 Collins Street, Melbou Australia
Gladstone Infrastructure Pty Ltd; Australia	AUD Class G Redeemable Preference shares	100	123 Albert Street, Brisbane QLD 400

	AUD A Class ordinary shares 100	
	preference shares	123 Albert Street, Brisbane QLD 400
	AUD A Class ordinary shares 100	123 Albert Street, Brisbane QLD 400
GPS Energy Pty Limited; Australia	AUD A Class ordinary shares 100	Pacific Aluminium, Level 3, 500 Quee
		Brisbane QLD 4000, Australia
GPS Nominee Pty Limited; Australia	AUD A Class ordinary shares 100	Pacific Aluminium, Level 3, 500 Quee
		Brisbane QLD 4000, Australia
GPS Power Pty. Limited; Australia	AUD A Class ordinary shares 100	Pacific Aluminium, Level 3, 500 Quee
		Brisbane QLD 4000, Australia
Gulf Power Company/La Compagnie Gulf Power; Canada	CAD\$100.00 Ordinary 100 shares	400-1190 Avenue des Canadiens-de
Gumata Advisory Company Pty Ltd; Australia ^(a)	AUD A Class ordinary shares 51	Montreal Québec H3B 0E3, Canada
		Level 22 Central Park, 152-158 St. G

Rio Tinto

- Undertakings
- Countries of Incorporation
- Total: 92 (6 in USA)

Other Group entities including subsidiaries where the effective ownership is less than 100%, associated undertakings and significant holdings in undertakings other than subsidiary companies

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Alufluor AB; Sweden	SEK1,000.00 Ordinary shares	50	50	Industrigatan 70, Box 902, S-25109, Helsingborg, Sweden
Aluminerie Alouette Inc; Canada	CAD Ordinary shares	40	40	400, Chemin de la Pointe-Noire, C.P. 1650, Sept-Îles Québec G4R 5M9, Canada
Aluminerie De Bécancour, Inc.; Canada	CAD1.00 Ordinary shares	50.1	25.2	5555 Pierre Thibault Street, PO 30, Bécancour, Québec G0X 1B, Canada
Aluminium & Chemie Rotterdam B.V.; Netherlands	€4,555 Ordinary shares	65.8	65.8	Oude Maasweg 80, NL-3197 KJ, Botlek, Rotterdam, The Netherlands
Asia Gold Mongolia LLC; Mongolia	MNT1,250.00 Common shares	100	50.7	Suite 1302, F13, Monnis Tower, Chingis Avenue-15, 1st Khoroo, Sukhbaatar district, Ulaanbaatar, 14240, Mongolia
Asia Naran Bulag LLC; Mongolia	MNT1,000.00 Common shares	100	50.7	Suite 1302, F13, Monnis Tower, Chingis Avenue-15, 1st Khoroo, Sukhbaatar district, Ulaanbaatar, 14240, Mongolia
Balkhash Saryshagan LLP; Kazakhstan ^(c)	—	—	75	Dostyk 310/G, Almaty, 050020, Kazakhstan
Beasley River Marketing Pty Ltd; Australia	AUD A Class Shares	100	53	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
	AUS B Shares	100		
Bektau B.V.; Netherlands	€200.00 Ordinary shares	75	75	Welplaatweg 104, 3197 KS, Botlek-Rotterdam, The Netherlands, Netherlands
Blair Athol Coal Pty. Ltd.; Australia	AUD Ordinary shares	57.2	71.2	123 Albert Street, Brisbane QLD 4000, Australia
Boyne Smelters Limited; Australia	AUD A1 Class shares	100		
	AUD A2 Class shares	100	59.4	123 Albert Street, Brisbane QLD 4000, Australia
	AUD B1 Class shares	100		
CanPacific Potash Inc.; Canada ^(c)	—	—	32	c/o McKercher LLP, 374 Third Avenue South, Saskatoon SK S7K1M5, Canada
Carol Lake Company Ltd.; Canada	CAD\$100.00 Ordinary shares	100	58.7	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
Chinalco Rio Tinto Exploration Co. Ltd (in liquidation); China ^(d)	CNY1.00 Capital Contribution (Ordinary shares)	49	49	Unit 402, China Resources Building, No. 8 Jianguomenbei Avenue, Dong Cheng District, Beijing, 100005 P.R., China
Chlor Alkali Unit Pte Ltd; Singapore	SGD\$1.00 Ordinary (SGD) shares	100		
	US\$1.00 Ordinary (USD) shares	68.4	68.4	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, Singapore, 018982, Singapore
Corporation De Pêche Ste-Marguerite Inc.; Canada	CAD\$10.00 Ordinary shares	96.8	96.8	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
Dalrymple Bay Coal Terminal Pty Ltd; Australia	AUD Ordinary shares	32.1	22.8	Martin Armstrong Drive, Hay Point via Mackay QLD 4740, Australia
Dampier Salt Limited; Australia	AUD Ordinary (\$1.00257) shares	68.4		
	AUD Ordinary (\$1.88 on 31/01/2013) shares	68.4	68.4	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Enarotali Gold Project Limited; Jersey	£0.001 Ordinary shares	25	25	13 Castle Street, St Helier, Jersey JE4 5UT, Jersey
Energy Resources of Australia Ltd; Australia	AUD A Class ordinary shares	68.4	68.4	C/- Mallesons Stephen Jacques, 60 Marcus Clarke Street, Canberra ACT, Australia
Fabrica De Plasticos Mycsa, S.A.; Bolivarian Republic of Venezuela ^(d)	VEF1.00 Common shares	49	49	Urbanización Industrial San Ignacio, parcela 2-A, vía San Pedro, Los Teques, Estado Miranda, Venezuela
Global Hubco BV; Netherlands	€1.00 Ordinary shares	33.3	33.3	c/o TMF Netherlands B.V., Luna Arena, Herikerbergweg 238, 1101, CM Amsterdam Zuidooost, Netherlands
Gulf Power Company/La Compagnie Gulf Power; Canada	CAD\$100.00 Ordinary shares	100	58.7	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
Hail Creek Marketing Pty Ltd; Australia	AUD Ordinary shares	82	82	123 Albert Street, Brisbane QLD 4000, Australia
Halco (Mining) Inc.; United States	US\$100.00 Ordinary shares	45	45	The Prentice-Hall Corporation System, Inc., 2711 Centerville Road, Suite 400, Wilmington DE 19808, United States
Half-Tide Marine Pty Ltd; Australia	AUD Ordinary shares	48.6	34.6	DBCT MS F283, Martin Armstrong Drive, Hay Point, QLD 4740, Australia
Heruga Exploration LLC; Mongolia	MNT 12,500 Common Shares	100	50.8	Suite 1302, F13, Monnis Tower, Chingis Avenue-15, 1st Khoroo, Sukhbaatar district, Ulaanbaatar, 14240, Mongolia
Hope Downs Marketing Company Pty Ltd; Australia	AUD A Class shares	100	50	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Hydrogen Energy International LLC; United States ^(c)	—	—	50	1209 Orange Street, Wilmington, New Castle, Delaware, U.S.A.
IAL Holdings Singapore Pte Ltd; Singapore	US\$ Ordinary shares	100	57.8	77 Robinson Road, #13-00, Robinson 77, 068896, Singapore
Iron Ore Company of Canada; United States	US\$1,000.00 Series B shares	91.4		
	US\$1,000.00 Series G shares	100	58.7	1209 Orange Street, Wilmington, Delaware 19801, U.S.A.
	US\$1,000.00 Series F shares	100		

Notes to the 2017 financial statements

continued

46 Related undertakings continued

Other Group entities including subsidiaries where the effective ownership is less than 100%, associated undertakings and significant holdings in undertakings other than subsidiary companies

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Korgantas LLP; Kazakhstan ^(c)	—	—	75	Dostyk 310/G, Almaty, 050020, Kazakhstan
Lao Sanxai Minerals Company Limited; Lao People's Democratic Republic	US\$1.00 Ordinary shares	70	70	5th Floor, ANZ Bank Building, 33 Lane Xang Avenue, Hatsady Village, Chanthaboury District, Vientiane Capital, Lao People's Democratic Republic
Leichhardt Coal Pty Limited; Australia	AUD Ordinary shares	44.7	44.7	123 Albert Street, Brisbane QLD 4000, Australia
Magma Arizona Railroad Company; United States	US\$100.00 Common shares	99.9	54.9	CSC, 2338 W. Royal Palm Road, Suite J, Phoenix AZ 85021
Minera Escondida Ltda; Chile ^(c)	—	—	30	Av.Cerro Plomo, Piso 18,Las Condes, Santiago, 7580154, Chile
Movele; Luxembourg	US\$ Ordinary shares	100	50.8	22 rue Jean-Pierre Brasseur, L-1258, Luxembourg
New Zealand Aluminium Smelters Ltd; New Zealand	US\$ Preference shares	100		
	NZD1.00 Class A Ordinary shares	79.4	79.4	Tiwai Road , Southland via Intercargill, New Zealand
Northern Land Company Ltd; Canada	CAD1.00 Ordinary shares	50	58.7	235 Water Street, Ste 1000 Scotia Ctr, St-John's Newfoundland A1C 1B6
Nozalela Mineral Sands (Pty) Ltd; South Africa	ZAR 1.00 Ordinary shares	100	74	The Farm RBM, Number 16317, KwaZulu-Natal, South Africa
NZAS Retirement Fund Trustee Limited; New Zealand	NZD Ordinary shares	100	79.4	Mercer (NZ) Limited, Level 8, 113-119 The Terrace, Wellington, 6140, New Zealand
Orian Holding Corp; British Virgin Islands ^(c)	US\$ Common shares	100	50.8	Midocean Cambers-Management and Trust Services (BVI) Limited, PO Box 805, Pelican Drive, Road Town, Tortola,VG 110, British Virgin Islands
Oyu Tolgoi LLC; Mongolia ^(f)	MNT10,000.00 Common shares	66	33.5	Level 12 Monnis Tower, Chinggis Avenue-15, 1st khoroo, Sukhbaatar District, Ulaanbaatar, 14240, Mongolia
Oyu Tolgoi Netherlands BV; Netherlands	€100.00 Ordinary shares	100	50.8	Prins Bernhardplein 200 , Amsterdam, 1097 JB, The Netherlands
Pechiney Philippines Inc.; Philippines	PHP10.00 Ordinary shares	99.9	99.9	Room 306, ITC Building, 337 Sen Gil Puyat Avenue, Markati, Metro Manila, Philippines
Pechiney Reynolds Quebec, Inc.; United States	US\$10.00 Common shares	50	50.2	CSC, 233 South 13th Street, Suite 1900, Lincoln NE 68508, U.S.A.
	US\$100.00 Preferred shares	100		
Procivis Savoie; France	€19.00 Ordinary shares	22.1	22.1	116 Quai Charles Roissard, 73000, Chambéry, France
PT Hutan Lindung Kelian Lestari; Indonesia	IDR9,803.00 Ordinary shares	99	99	Kelian Mine Site, West Kutai, East Kalimantan, Indonesia
PT Kelian Equatorial Mining; Indonesia	IDR1,080.00 Ordinary shares	90	90	31st Floor, Menara BTPN, Jl. Dr. Ide Anak Agung Gde Agung Lot 5.5-5.6, Mega Kuningan, Jakarta, 12950, Indonesia
PT Mitra Sumbawa Minerals; Indonesia	US\$1.00 Ordinary shares	90	90	15th Floor, Menara Anugrah, Kantor Taman E3.3, Jalan DR. Ide Anak Agung Gde Agung Lot 8.6-8.7, Jakarta, 12950, Indonesia
PT Rikit Alas Minerals; Indonesia	US\$1.00 Ordinary shares	90	90	15th Floor, Menara Anugrah, Kantor Taman E3.3, Jalan DR. Ide Anak Agung Gde Agung Lot 8.6-8.7, Jakarta, 12950, Indonesia
QIT Madagascar Minerals SA; Madagascar	US\$10.00 Certificats d'investissement	100	80	Immeuble ASSIST, Ivandry , Lot N°35, 5ème étage, 101 Antananarivo , Antananarivo, Madagascar
	US\$10.00 Common shares	80		
Quebec North Shore and Labrador Railway Company/ Compagnie de Chemin de Fer du Littoral Nord de Quebec et du Labrador Inc.; Canada	CAD\$27.59 Ordinary shares	100	58.7	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
Queensland Alumina Limited; Australia	AUD Class B shares	100	80	Plant Operations Building, Parsons Point, Gladstone QLD 4680, Australia
	AUD Class C shares	100		
	AUD CLASS D shares	100		
Resolution Copper Mining LLC; United States ^(c)	—	—	55	CSC, 251 Little Falls Drive, Wilmington DE 19808, U.S.A.

Other Group entities including subsidiaries where the effective ownership is less than 100%, associated undertakings and significant holdings in undertakings other than subsidiary companies

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Richards Bay Mining (Proprietary) Limited; South Africa	ZAR0.01 B Ordinary shares	99.9		
	ZAR0.01 B Preference shares	100	73.9	The Farm RBM, Number 16317, KwaZulu-Natal, South Africa
	ZAR 0.01 BHP Billiton Preference share	100		
Richards Bay Prefco (Pty) Ltd; South Africa	ZAR0.01 Preference shares	100	99.9	The Farm RBM, Number 16317, KwaZulu-Natal, South Africa
Richards Bay Titanium (Proprietary) Limited; South Africa	ZAR0.01 B Preference shares	100		
	ZAR0.01 BHP Billiton Preference shares	100	73.9	The Farm RBM, Number 16317, KwaZulu-Natal, South Africa
	ZAR0.01 B Ordinary shares	100		
Rightship Pty Ltd; Australia	AUD Ordinary shares	33.3	33.3	Level 20, 500 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Orissa Mining Private Ltd; India	INR100.00 Ordinary shares	51	51	N-3 / 356, IRC Village, Nayapalli, Bhubaneswar, Orissa, 751015, India
Rio Tinto Sohar Logistics LLC; Oman	OMR1.00 Ordinary shares	70	70	P.O. Box 686, Ruwi, 112, Oman
Riversdale Anthracite Colliery (Proprietary) Ltd; South Africa	ZAR2.00 Ordinary shares	74	74	Ground Floor – Cypress Place North, Woodmead Business Park, 140-142 Western Service Road, Woodmead, 2151, South Africa
Robe River Mining Co. Pty. Ltd.; Australia	AUD Class A shares	40	73.6	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
	AUD Class B shares	76.4		
Robe River Ore Sales Pty. Ltd.; Australia	AUD Ordinary	65	57.1	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Rössing Uranium Limited; Namibia ^(f)	NAD1 "B" Shares shares	71.2	35.6	360 Sam Nujoma Drive, Klein Windhoek, Windhoek, Namibia
	NAD0.1 "C" Shares	70.6		
Saryarka B.V.; Netherlands	€200.00 Ordinary shares	75	75	Welplaatweg 104, 3197 KS, Botlek-Rotterdam, The Netherlands, Netherlands
SGLS LLC; Mongolia	MNT10,000 Common shares	100	50.8	Suite 1302, F13, Monnis Tower, Chingis Avenue-15, 1st Khoroo, Sukhbaatar district, Ulaanbaatar, 14240, Mongolia
Simfer Jersey Finance 1 Ltd; Jersey	US\$ Ordinary shares	100	53	22 Grenville Street, St Helier, JE4 8PX, Jersey
Simfer Jersey Finance 2 Ltd; Jersey	US\$ Ordinary shares	53	53	22 Grenville Street, St Helier, JE4 8PX, Jersey
Simfer Jersey Limited; Jersey	US\$ Ordinary shares	53	53	22 Grenville Street, St Helier, JE4 8PX, Jersey
Simfer Jersey Nominee Limited; United Kingdom	£1.00 Ordinary shares	100	53	6 St James's Square, London, SW1Y 4AD, United Kingdom
SIMFER S.A.; Guinea ^(f)	GNF100,000 Ordinary shares	85	45	Résidence Dolphine1 – Coleah Corniche Sud, Commune de Matam, BP 848, Conakry, BP 848, Guinea
Singapore Metals Pte. Ltd.; Singapore	US\$ Ordinary shares	100	50.8	77 Robinson Road, #13-00, Robinson 77, 068896, Singapore
Société Minière Et De Participations Guinée-Alusuisse; Guinea ^(c)	—	—	50	Tougue, Guinea
Sohar Aluminium Co. L.L.C.; Oman	OMR1.00 Ordinary shares	20	20	Sohar Industrial Estate, P.O. Box 80, PC 327, Sohar, Sultanate of Oman
THR Aruba Holdings LLC A.V.V.; Aruba	US\$1.00 Common shares	100	50.8	IMC International Management Trust Company N.V., L.G. Smith Blvd. 62, Miramar Building, Oranjestad, Aruba
THR Delaware Holdings, LLC; United States ^(c)	—	—	50.8	National Corporate Research, Ltd., 850 New Burton Road, Suite 201, Dover DE 19904, United States
THR Kharmagtai Pte Ltd.; Singapore	US\$ Ordinary shares	100	50.8	77 Robinson Road, #13-00, Robinson 77, 068896, Singapore
THR MINES (BC) LTD.; Canada	CAD Common shares	100	50.8	354-200 Granville Street, Vancouver BC V6C 1S4, Canada
	US\$ Common shares	100		

Notes to the 2017 financial statements

continued

46 Related undertakings continued

Other Group entities including subsidiaries where the effective ownership is less than 100%, associated undertakings and significant holdings in undertakings other than subsidiary companies

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
THR Mines Services Co. Ltd.; Canada	CAD Common shares	100	50.8	Lackowicz Shier & Hoffman Barristers & Solicitors, 300-204 Black Street, Whitehorse YT Y1A 2M9, Canada
THR OYU TOLGOI LTD.; British Virgin Islands	US\$1.00 Ordinary shares	100	50.8	Midocean Chambers, Road Town, Tortola, Virgin Islands, British
THR Ulaan Pte. Ltd.; Singapore	US\$ Ordinary shares	100	50.8	77 Robinson Road, #13-00, Robinson 77, 068896, Singapore
Tisand (Proprietary) Limited; South Africa	ZAR1.00 A Ordinary shares	100	74	The Farm RBM, Number 16317, KwaZulu-Natal, South Africa
	ZAR1.00 B Ordinary shares	100		
	ZAR1,000.00 Cumulative preference shares	100		
Tomago Aluminium Company Pty Limited; Australia	AUD Ordinary shares	100	51.6	638 Tomago Road, Tomago, NSW 2322, Australia
Turquoise Hill (Beijing) Services Company Ltd; China ^(c)	—	—	50.8	Room 2913, Cameo Center, No.16 GuangShun South Street, WangJing ChaoYang District, Beijing China. 100102
Turquoise Hill Netherlands Cooperatief U.A.; Netherlands	US\$ COOP shares	100	50.8	Prins Bernhardplein 200, 1097 JB Amsterdam, The Netherlands
Turquoise Hill Resources Ltd.; Canada	CAD Common shares	50.8	50.8	300-204 Black Street, Whitehorse Yukon Territories Y1A 2M9, Canada
Turquoise Hill Resources Philippines Inc.; Philippines ^(d)	PHP100.00 Common shares	99.9	50.8	Romulo Mabanta Buenaventura Sayoc & De Los Angeles, 21st Floor, Philamlife Tower, 8767 Paswode Roxas, Makati City, 1226, Philippines
Turquoise Hill Resources Singapore Pte Ltd.; Singapore	SGD1.00 Common shares	100	50.8	1A International Business Park, 609933, Singapore
Twin Falls Power Corporation Ltd; Canada	CAD Class B shares	74.4	34.253	Hydro Place, P.O. Box 12500, St-John's Newfoundland and Labrador A1B 3T5, Canada
Yalleen Pastoral Co Pty Ltd; Australia	AUD Ordinary shares	63.7	56	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Zululand Titanium (Pty) Ltd; South Africa	ZAR1.00 Ordinary shares	100	74	The Farm RBM, Number 16317, KwaZulu-Natal, South Africa

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First, I would like to thank Gary and Staff for pulling the documents which I requested for review for this meeting on such short notice. I appreciate your efforts in complying with my request.

I have already made public my initial concerns with this proposed Agreement at the May 5th Council Workshop. They have been included in the packet for this meeting and incorporated by reference into my comments tonight.

I wish to address several lingering concerns of mine:

- 1. Chetco River Flow and Capacity.** My primary concern is that we still don't know the long-term effect of the Chetco Bar Fire on the Chetco River Watershed (80% of which is within the City's source watershed upstream of the Ranney Collector). A recent study, commissioned by the City, tested a mere two water samples from each of 3 different locations sampled two months apart in January and March 2018 during this year's moderate, not heavy, rainy season. A Professional Engineer at GSI Water Solutions (Ronan Igloria) and a Geomorphologist/Geologist (Glen Leverich) from Stillwater Sciences have recommended that additional samples need to be tested over the next 2 to 4 years for a more accurate impact assessment. My major concern is the low water flow during the dry season during which samples have not yet been taken. Why the sudden rush to vote for the proposed amendment without a definitive, science-based answer to the question: "Can the Chetco River provide sufficient water for the Borax Lone Ranch Development? The Burned Area Emergency Response report issued by the US Forest Service states that the intensity of the burn can cause increased risk of turbidity, dissolved organic compounds, nutrients and metals which could reduce the filtering capacity of the Ranney Collector. Poorer water quality may make it difficult for the City to adequately treat the water. Our current disinfection procedure using chlorine may also elevate the level of disinfection by-products, since the water being treated has elevated levels of dissolved organics.

2. **True Cost of Signing This Agreement.** Secondly, before voting on this matter, the Council as well as the general public MUST be made aware of the ACTUAL cost (or at least a reasonably accurate, detailed estimate) of the additional improvements to existing City infrastructure that will be necessitated by this extension of water and sewer lines and the construction of a new Taylor Creek pump station. The Council has been provided with relatively limited data on which we are expected to make a critical decision tonight. Have City Staff calculated the additional costs in providing road and infrastructure maintenance, fire, police and emergency services? Will the City be responsible for the right-of-way along Hwy 101 which was used as a "cherry stem" in order to annex the property so that it wouldn't violate the provisions of **ORS 222.111(1)** which states "the boundaries of any city may be extended by the annexation of territory that is not within a city and that is contiguous to the city or separated from it only by a public right of way or a stream, bay, lake or other body of water."? In the current Lone Ranch Infrastructure Agreement (2009), it states (Item #6) that "the total costs of constructing the required infrastructure improvements are unknown at this time but will be based upon the actual cost of construction."

Why should the City choose to subsidize a huge, profitable corporation with the SDC fees of local residents and/or **Federal** tax dollars from the Department of Agriculture loan and grant? How much would be LOAN and how much in matching funds is required by the grant should such funding be approved? The City should NOT be applying for grant monies which would be used, in large part, to subsidize a landowner's "pipe dream" in a fairly distant area at the expense of Brookings' taxpayers. If this project is not buildable with the developer paying the costs, then the project is simply not marketable.

3. **Affordable Housing.** I fully understand the need in our community for more affordable housing. With respect to the "Affordable Housing" aspect of this proposed Agreement, I wonder what it will ultimately cost the City for the added responsibility of finding a developer of "affordable housing." Instead of subsidizing Borax, perhaps the Council should consider using the public's money (that is, SDC's) to

subsidize either (a) local residents in need of discounted fees or (b) other small developers who would agree to include affordable housing much closer to the downtown area? Further discussion of the scarcity of affordable housing in Brookings in general is warranted.

4. Time Extensions Given to Borax's Master Plan of Development.

The City Council has granted Borax extremely generous extensions of time to their Master Plan of Development. The Final Opinion and Order for the 2008 LUBA Appeal made it clear that extensions of the Master Plan of Development are OK "only if no facts on which the City relied in granting the initial approval have changed." The longer the term of the extension, the greater the opportunity that a significant condition or conditions will change. In my opinion, the effect of the Chetco Bar Fire on the Chetco Watershed may indeed constitute a clear, albeit unanticipated, "change to the conditions" since the initial submission of the Master Plan of Development and, as such, any further time extension should be denied by the City until the fire's effect becomes more fully known within the next 2 to 4 years. And, just to remind those of us who may not remember, in April 2008, the Brookings Planning Commission, following the specific criteria defined in the Brookings Municipal Code section **17.70.120** ("Effective period of master plan of development [MPoD] approval"), denied a time extension to Borax for their Master Plan of Development. Borax appealed the decision to the City Council who granted the extension and a couple of other extensions since then.

5. Current property taxes being paid on the Borax property.

According to the Curry County Tax Roles, the total RMV of the 537.44 acres is \$1,892,540 and their annual tax bill is only \$2,316 based upon a discounted assessed value of only \$228,730 due to a favorable zoning designation. For comparison, my 2018 personal property tax burden on a very modest home in the Dawson Tract on 0.17 acre was \$410 more than Borax paid in taxes for 537 acres. By the way, my 0.17 acre of land only was assessed at a whopping \$128,880 by the County. I guess life is just unfair for the little guy!

6. **Comprehensive plan.** ORS 197.829(1)(a) states that “The Land Use Board of Appeals shall affirm a local government’s interpretation of its comprehensive plan and land use regulations, unless the board determines that the local government’s interpretation is inconsistent with the express language of the comprehensive plan or land use regulation.”

For those in the audience who may be unaware, a Comprehensive Plan is defined in **ORS 197.015(5)** as “a generalized, coordinated land use map and policy statement of the governing body of a local government that interrelates all functional and natural systems and activities relating to the use of lands, including but not limited to sewer and water systems, transportation systems, educational facilities, recreational facilities, and natural resources and air and water quality management programs.”

We Councilors have sworn an Oath of Office to support the constitutions of the United States and Oregon as well as the charter and ordinances of the city of Brookings. The Comprehensive Plan has been revised by 11 separate Ordinances since it was adopted in 2000.

In the Comprehensive Plan as it stands today in the section addressing Oregon Statewide Goal 13 (Public Facilities and Services) in the POLICIES section #1 Public Works subsections B and F, it clearly states:

B. Water distribution, pumping and storage. New development requiring extension of water mains, pumping and storage facilities will be paid for and constructed by the developer pursuant to the provisions of the current City of Brookings Engineering Requirements and Standard Specifications for Public Works Infrastructure document.

F. Wastewater collection facilities. New development requiring extension of sewer mains and new pumping stations will be paid for and constructed by the developer pursuant to the provisions of the current City of Brookings Engineering Requirements and Standard Specifications for Public Works Infrastructure document.

So, I ask my fellow Councilors, are you really prepared for possible future legal action against us and the City if we vote in favor of this agreement amendment tonight when (a) it appears that we may be violating our oaths of office as specified in the City Charter to uphold city ordinances and (b) we could be voting against **ORS 197.829(1)(a)**'s provision which could possibly trigger yet another costly and time-consuming LUBA appeal if "the local government's interpretation is inconsistent with the express language of the comprehensive plan or land use regulation"?

If I fail to convince my fellow Councilors to vote against this agreement amendment, so be it, as I simply have stated my personal opinions tonight. However, at the very least, I would request the Council's consideration to grant a continuance of this matter to a future Council Meeting and to give an opportunity for additional written testimony from the public, City Staff, and stakeholders including Borax and the Board of the Rainbow Rock Service Association.