

EARTHWORKS

MAY 15, 2018 11:00-12:00

MR. BRUCE BAIZEL: Hello, honorable judges of the Tribunal. I'm Bruce Baizel from Earthworks. I'm legal counsel for our organization and I'm also the director of our Energy Program. We have about -- well, I think we're up to about 24 staff on both energy and mining issues and with all of us based in the US but we work in many countries. And I'll come back to that in a moment.

I was admitted to the Bar in the US about 32 years ago and have been working full-time on oil and gas issues for the last 15 years.

With me today is Nathalie Eddy. She was admitted to the Bar in the United States 11-years ago. She's worked on air law, climate change, indigenous rights issues and transparency for the last 20 years. And that included a stretch with the Colorado Attorney Generals Office. We're both based in Colorado in the US.

Our organization has worked in many countries, both on mining and on energy issues and we usually do that in partnership with community partners. We are a civil society organization.
TREMAINE & CLEMENS, INC. EUGENE, OREGON (541)343-8833

1 Our oil and gas work began in the 1990s so we
2 have a couple of decades of experience with the impacts
3 all across the production chain, from exploration
4 through even some on the refining side and then export.

5 So that's the basis from which we submitted
6 our brief to you as the Tribunal. It was based upon
7 that experience.

8 In my remarks I want to give you a little bit
9 more context of why we arrived at the conclusions we did
10 in our Brief and then Nathalie will give you some of the
11 specifics for the exact reasoning and the evidence upon
12 which we reach those conclusions. That will be the
13 structure of the presentation here.

14 Certainly we welcome any questions that you
15 might have during the presentation or at the end.

16 So we began our work in the US due to
17 inquiries from communities saying they came and started
18 drilling next to my house. My well went bad. The
19 water turned black. Those kinds of issues. That's what
20 got us started.

21 And then about 10 years in we would start to
22 get some questions from people that would go along the
23 lines, they started drilling next to us and these
24 emissions came off the drilling rig, came across our

25 house and I started experiencing skin rashes, nose
TREMAINE & CLEMENS, INC. EUGENE, OREGON (541)343-8833

1 bleeds, sometimes loss of hair. Why is that happening?
2 So that brought us into the health impacts and that's
3 been nearly 16-years of that.

4 So we began looking asking the companies and
5 states regulators about information on chemicals that
6 might be used, what was in the drilling fluid but at
7 that time fracking originally was just vertical. There
8 was no horizontal fracking. And we got no information
9 back and the state regulators that we went to said we
10 don't think there's any problem there. We don't have
11 anything to offer you. No information.

12 So we had nothing to give to community
13 members, complete lack of what was in that fracking
14 fluid. Rule making hearings and so on.

15 Then the intensive shale development began in
16 Texas about 10 years, 11 years ago and now it's spread
17 in the US to the Marcellus, it's out here in Colorado,
18 it's down in New Mexico, it's up in North Dakota, it's
19 up in Alberta. And as you'll hear now down -- we've had
20 requests and been down to Mexico and Argentina as well.

21 And with that shale development we had
22 increased health complaints always and they seemed to be
23 very similar across shale basins which concerned us. So
24 about four years ago we were kind of running up against
25 a brick wall on getting good chemical information,
TREMINE & CLEMENS, INC. EUGENE, OREGON (541)343-8833

1 trying to reform practices. And a technology put out by
2 a specific company, infrared technology, came on the
3 market and we knew we couldn't cover 100,000 different
4 oil and gas sites that are there on the North American
5 continent, let alone across the world.

6 And we also knew we couldn't be everywhere
7 that community members were. So we said let's try to
8 form some partnerships and we have this technology.
9 Let's see if we can't document some things.

10 So we started what we call Community
11 Empowerment Projects. We've done 97 trips, 15 states,
12 three countries, Canada, Mexico, Argentina, the US.
13 More than a thousand sites visited, 560 videos and so
14 on. And those numbers continue to grow.

15 So that's the basis on which we prepared the
16 Brief that we submitted to you. That's what you see
17 with the naked eye when you go to a site these days for
18 the most part. You don't see a black cloud usually,
19 although that's not always the case unfortunately.

20 So we take a photo with a regular camera and
21 then when you switch and go to the infrared here's what
22 you see at the same site. And what these cameras are
23 designed to do is capture a range of volatile organic
24 compounds, including methane, so it has relevance to
25 climate. And they are designed specifically for about
TREMINE & CLEMENS, INC. EUGENE, OREGON (541)343-8833

1 24 of these VOCs.

2 And these are the cameras that the industry
3 uses when they're looking to find leaks. They're also
4 the cameras that state regulators use if they're looking
5 to do inspections. And we get the same training with
6 our operators.

7 I think at this point probably the best thing
8 to do is then to transition. That's what got us to the
9 point of saying everywhere we go we see these emissions
10 without exception. And so in terms of the queries of
11 the Tribunal I think at least, in my experience, and I
12 think as an organization, the question of what do you do
13 about this?

14 We have not seen a safe, from a human health
15 standpoint certainly and from a climate standpoint, we
16 have not seen a safe site in the shale places we've been
17 there. There are always emissions. There are always
18 leaks and spills.

19 So for us the question, the operative question
20 becomes what kind of remedy can you fashion them if you
21 can't do it safely. And that's our view.

22 Nathalie joined us to work with the
23 communities and with our camera operators and now she'll
24 continue with our presentation.

25 MS. NATHALIE EDDY: Great. Thanks Bruce
TREMAINE & CLEMENS, INC. EUGENE, OREGON (541)343-8833

1 and thank everybody for this opportunity to be here and
2 share with the Tribunal what we found.

3 I'm going to go ahead and open with a sort of
4 dramatic video. This is something we took with our
5 camera just a few months ago in the eastern US. We
6 weren't even looking to take a look at this facility and
7 stumbled across it.

8 And I share it because we think that if we
9 hadn't documented it we doubt that either the operator
10 or the state staff would have informed adjacent
11 communities of what was going on in terms of the volume
12 and type of emissions released.

13 So this first video is indicative, as Bruce
14 was saying, of the risks that fracking poses to a
15 healthy environment, to safe drinking water and to
16 timely information, plenty and accurate information to
17 impacted communities.

18 So what we have found and what we'll present
19 to you today is that fracking breaches three fundamental
20 human rights that are protected under international law;

21 The right to a healthy environment;

22 The right to safe drinking water;

23 And the right to know and to participate.

24 We're framing it in these terms and with these

25 three fundamental human rights that encompass many more
TREMAINE & CLEMENS, INC. EUGENE, OREGON (541)343-8833

1 human rights because this is how we hear from impacted
2 community members that their families or their homes or
3 their water is being impacted.

4 They're not articulating their impacts in the
5 express language of the international human rights that
6 are implicated by fracking.

7 So we have found that the right to a healthy
8 environment is breached by fracking. And first I think
9 it's important to remind ourselves of what this means or
10 what types of provisions we have to protect these rights
11 in international law. So under the International
12 Covenant On Civil And Political Rights the UN
13 Declaration On The Rights Of Indigenous Peoples we
14 recognize the right of everyone to the enjoyment of the
15 highest attainable standards of physical and mental
16 health.

17 So our evidence shows that is not what
18 fracking provides. And is not possible, as Bruce said,
19 to achieve that highest attainable standard of physical
20 and mental health in life as a result of fracking.

21 There are two pieces that we want to talk
22 about. The first is this growing body of peer reviewed
23 scientific research linking adverse health impacts to
24 the proximity of fracking. And then the 13plus years of
25 Earthworks field work, and this includes hundreds of
TREMINE & CLEMENS, INC. EUGENE, OREGON (541)343-8833

1 community testimonials, many health impact assessments
2 in different parts of the United States. And then
3 documentation of emissions, including the FLIR videos,
4 some of which we've already shared with you.

5 So more than a decade after shale development
6 with this intensive fracking has really accelerated it's
7 still left to us as a civil society to respond to these
8 community health complaints and to try to understand
9 what is going on with these fracking activities, what
10 are the risks and what are communities being exposed
11 to.

12 The industry denied its use of chemicals or
13 responsibility and the state deferred to these
14 industries' denial and so we've been working with
15 academic researchers and health experts to develop this
16 research.

17 And the summary that we're sharing with you is
18 the work of Ph.D. scientists who we are working with
19 right now to litigate over additional future proposed
20 shale development.

21 So looking at the summary of the health expert
22 research we see that study after study is finding that
23 fracking impacts, respiratory issues, wheezing,
24 shortness of breath, neurological issues such as
25 headache and dizziness as well as skin, sensory, organ
TREMAINE & CLEMENS, INC. EUGENE, OREGON (541)343-8833

1 irritation and other affects.

2 There's also been some recent studies on the
3 impact on birth weights as well as infant health and
4 significantly the closer that families were located to
5 the fracking activities the greater the impacts. So
6 more impacted was the birth weight or the more impacted
7 was the infant's health. Specifically when they were
8 within one kilometer was the most extreme of the
9 impacts.

10 So moving from the scientific peer reviewed
11 research into some of the field work of Earthworks this
12 is what we see when we go into people's homes impacted
13 by fracking. We can see rashes and bloody noses. This
14 is what community members are sharing with us.

15 And in addition to these first hand
16 experiences and testimonials we're also conducting
17 health impact assessments in different areas in the US.

18 The first one we conducted in 2012 in the
19 Marcellus shale in Pennsylvania had three key results.
20 We found that contaminants that are associated with oil
21 and gas development are present in air and water in
22 areas where residents are experiencing health symptoms.

23 Consistent with such exposures we found there
24 is a strong likelihood that residents who are

25 experiencing a range of health problems would not be if
TREMINE & CLEMENS, INC. EUGENE, OREGON (541)343-8833

1 widespread gas development were not occurring. And by
2 permitting this widespread gas development without fully
3 understanding its impacts to public health and using
4 that knowledge to justify regulatory inaction
5 Pennsylvania, in the state of Pennsylvania and other
6 states, are risking the public's health.

7 And then one of the key findings in that
8 impact assessment was that quote that you see at the top
9 that "When many people in many places where gas
10 developments are occurring have similar health
11 complaints something is clearly wrong." And we see that
12 consistency in the scientific research as well, that
13 peer reviewed research that we took a look at.

14 So a quick contrast to what we're seeing in
15 homes and the lives of community members are trying to
16 lead next to fracking.

17 And then we go from the home and we go to the
18 facility site. And this is a snapshot of the types of
19 disrepair, visible dirty emissions, spills and general
20 contamination that we encounter all the time at these
21 facilities. Often, you can see, in that upper left
22 photo right next door to someone's home.

23 So here is a testimonial from one of our
24 partners that I'll go ahead and play.

25

1 MS. JANE WORTHINGTON: I have custody of
2 my 12-year old granddaughter. Her name is Alexis and
3 Alexis has been benzene exposed. It has impacted our
4 entire life.

5 It happened, we believe, in 2011 she started
6 with asthmatic conditions and from there it went into
7 bloody noses. She has unusual and uncontrolled
8 bruising. She's had bull's eyes. She has joint
9 swelling. She has joint pain.

10 And in April of 2015 she was diagnosed with
11 damaged growth plates. And at that point the
12 pediatrician and the family doctor began to listen to
13 our concerns of benzene.

14 MS. NATHALIE EDDY: And so then jumping
15 to more recent health impact assessment we conducted in
16 Texas I'll run through some of the results we find and
17 the problems of impacts on community members living
18 close to fracking.

19 We found that 75% of the interviewees with
20 health issues reported neurological problems, such as
21 migraines, memory loss, forgetfulness, confusion or
22 lack of focus, silliness, numbness in extremities. 50%
23 reported respiratory problems and 89 expressed some
24 concern for their environmental impacts on their health.

25 And another testimonial from one of our dear
TREMAINE & CLEMENS, INC. EUGENE, OREGON (541)343-8833

1 friends of Earthworks who just passed away this year.

2 MS. HARRIET IRBY: At the commencement of
3 drilling operations in my area I had pneumonia. I had
4 to commence taking oxygen at night. Then, ever since
5 then, I have been hospitalized once a year with what's
6 called an exacerbation of COPD.

7 I've been breathing that for years and it's
8 literally killing me. My pulmonologist has told me I
9 will never get better. I will only get worse.

10 And at the present date he has dropped me as a
11 patient because he can't do anything more for me.

12 MS. NATHALIE EDDY: So this kind of
13 frustration from community members and searching for
14 ways to take action and not sure of next steps is
15 unfortunately common in our work.

16 Also last year we conducted air samples in
17 Texas and found a mixture of compounds all of which are
18 known to cause neurological, respiratory and
19 immunological problems.

20 They were benzene, which is a known carcinogen,
21 also classified as hazardous air pollutants. Hydrogen
22 sulfide, a neurotoxic gas and can be fatal.

23 Cyclohexane, that is an eye, skin and respiratory
24 irritant. And that can also affect the nervous system.

25 Napthalene which is hazardous to the liver, eyes and
TREMAINE & CLEMENS, INC. EUGENE, OREGON (541)343-8833

1 nervous system and n-hexane as well as mixed xylenes. So
2 a fairly incredibly toxic mix.

3 So in given that this -- and recognizing what
4 this growing body of knowledge as well as testimonials
5 and community experience we see that the fracking
6 activities are very clearly impacting communities.

7 They are denying them and breaching their
8 right to a healthy environment. And certainly making it
9 impossible for that standard of the enjoyment of the
10 highest attainable standard of physical and mental
11 health as recognized under international law is very
12 clearly breached.

13 And here are a few more snapshots of other
14 case studies conducted in Texas. This is a finding of
15 16 chemicals above the states' screening levels and 61%
16 of the residents are experiencing effects that match
17 those as to those associated with chemicals detected in
18 the air.

19 And another hot spot in Texas where 65
20 chemicals were detected on a high school band field.
21 And 501 emission events in one year from a single
22 facility. So more than one a day at this point.

23 So the compilation of what we're presenting,
24 the peer reviewed research, our field work that is
25 comprised of community testimonials, FLIR video and
TREMINE & CLEMENS, INC. EUGENE, OREGON (541)343-8833

1 health impact assessments we see this breach again and
2 again of the right to a healthy environment.

3 And now I would like to address the next
4 fundamental right, which is the right to safe drinking
5 water. This is a right that is protected under several
6 international human rights instruments recognizing that
7 water is fundamental for all of our survival. We can
8 not live without water.

9 In 2005 Earthworks conducted a study to look
10 at the risks that fracking poses to drinking water and,
11 unfortunately, the findings and recommendations from 13
12 years ago still hold true. And drinking water, safe
13 drinking water remains threatened by fracking.

14 The two key findings were that fracking fluids
15 contain toxic chemicals linked to adverse human health
16 impacts such as cancer, kidney, brain, respiratory and
17 skin disorders, birth defects and other health
18 problems. And that fracking chemicals are directly
19 injected into drinking water aquifer.

20 So here is a testimonial from one of our
21 partners speaking about water quality issues.

22 MS. TERRI SHOEMAKER: We have a pipeline
23 running behind our property. We got a lot of run off
24 that came down into our pond and filled our pond with a
25 lot of sludge and oily powdery matter. We find residue
TREMINE & CLEMENS, INC. EUGENE, OREGON (541)343-8833

1 on our vehicles. We do have a good bit of run off and
2 intestinal issues, shortness of breath and different
3 things.

4 MS. NATHALIE EDDY: And then finally I'd
5 like to look at this third broad category of human
6 rights which is the right to know and participate.

7 So we're coming full circle to where we
8 started and the situation first described in which
9 Earthworks was looking for that information and we
10 didn't have the research and we weren't yet connected to
11 the communities.

12 And industry refused to admit the depth and
13 scope of these dangers and also government failed to
14 control this industry to limit these impacts and these
15 damages.

16 This right includes a right to know, a right
17 to participate and a right to free prior informed
18 consent.

19 So this just in the last year communities in
20 Mexico and Argentina have reached out to Earthworks in
21 an effort to learn more about the fracking activities in
22 their communities.

23 So this photo here is a picture of the civil
24 society members who joined Earthworks in Veracruz,
25 Mexico. And then I would like to show the video, or a
TREMINE & CLEMENS, INC. EUGENE, OREGON (541)343-8833

1 piece of the video, of what they found.

2 [Video presentation].

3 And this sort of template that you see here is
4 how we compile all of our videos in advance of
5 submitting our complaints so it's clear where the
6 facility is. The signage so we know which facility
7 we're talking about. Standard camera photos.

8 And then this is as we see zoom in we see this
9 community in Mexico discovered about the fracking
10 activities in their area. And you can see the extent of
11 the emissions, some of the exposed toxic fluids.

12 So why the camera is moving around is to
13 actually track just how far that trail of emissions is
14 coming out, what that plume looks like and that
15 indicates the volume and strength of those emissions.

16 I'll go ahead and pause that.

17 And then finally I want to close with another
18 testimonial of one of our partners just reminding us of
19 the significant repercussions of drilling and fracking
20 and how impossible it is to go back once it's happened.

21 MR. TIMOTHY CHITO: What has happened
22 isn't fixable, okay. You can't unfrack a well.

23 They've put these things in 800-feet, 300-
24 feet, 500-feet from peoples houses. How is the user
25 going to [indiscernible].

TREMAINE & CLEMENS, INC. EUGENE, OREGON (541)343-8833

1 Air quality, water quality, all this it's a
2 reality. It's here. It can't be fixed. These
3 regulators they don't have gas wells in their backyards.
4 If they did they would understand the point of people
5 like me.

6 MS. NATHALIE EDDY: So what we've seen in
7 this field is not the highest attainable standard of
8 physical and mental health, not safe drinking water and
9 a lack of information about the many risks of fracking
10 and the dangers to communities living in proximity.

11 So drawing on these findings and this growing
12 body of peer reviewed scientific research we find that
13 fracking denies communities their right to a healthy
14 environment, their right to safe drinking water and the
15 right to information and to participate.

16 Thank you.

17 Are there questions or discussions from
18 judges?

19 MR. FRANCESCO MARTONE: I have just a
20 quick question because these -- you also mentioned the
21 right to free prior informed consent, right, as one of
22 the potential international standards that you found
23 being violated.

24 My understanding is that that actually applies
25 mostly to indigenous peoples communities. So is there
TREMINE & CLEMENS, INC. EUGENE, OREGON (541)343-8833

1 any case that you have been working on that involves
2 indigenous organic peoples communities, native or first
3 nations or whatever they call them, in different
4 countries and if so have you been noticing also the
5 capacity of those organizations and communities to
6 mobilize themselves or, you know, was there a difficulty
7 for them to -- further difficulty for them to access
8 information and access procedural rights?

9 MS. NATHALIE EDDY: Great. Thank you.

10 Bruce, are you able to unmute yourself? Do
11 you have some --

12 MR. BRUCE BAIZEL: I've worked on, with
13 Navaho communities in the US for many, many years and
14 currently we are -- in fact Nathalie was just out last
15 week with some communities in northeast Arizona where
16 it's both oil and helium that is being extracted from
17 the same field essentially.

18 And one of the things -- so this is the
19 second time we've had the camera out there and they
20 initially had signs warning that there was hydrogen
21 sulfide gas, one of the air toxins that Nathalie
22 mentioned that if you breathe a sufficient amount of it,
23 it will kill you.

24 The company took those signs down and has
25 refused to put them back up. And yet when we went out
TREMINE & CLEMENS, INC. EUGENE, OREGON (541)343-8833

1 with both the camera and a meter in it the gas is still
2 there.

3 So the communities have not been able to get
4 tribal government to intervene and the companies
5 actually try to block access, even though it's
6 traditional usage grounds for livestock, grazing and
7 home sites for the Navahos living. This is sort of on
8 the side of a mountain, I guess would you say, and they
9 live -- in the winter they live down in the valley.
10 But their summer camps are up in this area. So that's
11 one instance.

12 And then in Argentina part of the invitation
13 came from a Mapuche community down there and they have
14 some existing oil and gas development in the area but
15 with the push to go to shale there is considerable
16 discussion among the federal government in Argentina
17 about expanding, even though that might put Argentina at
18 risk of not meeting it's Paris climate goals.

19 But specific to the impacts there the Mapuche
20 were given no information about the emissions coming off
21 those sites. And we haven't finished processing all the
22 videos or we could have included one here, but it's at
23 least as bad as we saw in Mexico.

24 And there's no -- no fencing around those
25 sites. You know, anybody can go right onto the sites so
TREMAINE & CLEMENS, INC. EUGENE, OREGON (541)343-8833

1 that you're right in the emissions. So we see the same
2 thing in both of those indigenous, sets of indigenous
3 communities where information is not provided, risks are
4 not communicated and to be honest the practice is,
5 unfortunately, no different than any other oil and gas
6 sites we've seen whether it's near indigenous
7 communities, whether it's near Spanish speaking
8 communities, whether it's near English speaking
9 communities.

10 MR. GILL BOEHRINGER: Bruce, I just
11 didn't get who originally put up those signs that were
12 taken down by the company?

13 MR. BRUCE BAIZEL: I believe the lease
14 rights were recently transferred. So now it's a new
15 company to the area but not the companies that
16 originally drilled those wells to produce and they're
17 building a processing plant for the helium actually.
18 They don't care that much about the oil these days.

19 So it's a new company that took the signs
20 down, new to the area, but they hold the leases.

21 MR. GILL BOEHRINGER: The previous company
22 had put up the sign?

23 MR. BRUCE BAIZEL: Yes. We have some
24 photographs of -- it's a white sign with red lettering
25 you know. Danger. Hydrogen sulfide gas.

TREMAINE & CLEMENS, INC. EUGENE, OREGON (541)343-8833

1 And we went back this time, Nathalie and Pete,
2 our operator, the community people said they've taken
3 those signs down. And they put berms across -- dirt
4 berms across the roads to try to keep people out because
5 a Navaho nation reporter had written a story about our
6 first trip out there and they got upset.

7 MR. GILL BOEHRINGER: Thanks.

8 DR. THOMAS KERNS: I have a question,
9 Bruce.

10 To me the deployment of this FLIR technology
11 where you're basically making the invisible visible I
12 would have guessed that it would have enormous impact,
13 or at least the potential for real impacts, on policy
14 making and bringing cases and so on. So I am curious
15 about what your experience has been.

16 You've been doing this for a few years now and
17 quite a few different communities and what kind of
18 effects has it had?

19 MR. BRUCE BAIZEL: Well, it's still new
20 to the regulatory agencies. Nathalie has a number of
21 stories where she has gone and dialogued with inspectors
22 for the agencies and they say well, we don't have those
23 cameras. Or can you show us your video because we can't
24 get out in the field because of budget reductions,
25 resistance from the companies.

1 So it's been a very uneven entry into trying
2 to reduce emissions. I would say Colorado, as a state,
3 has a rule now in place for four years that if you see
4 emissions you fix them. It doesn't matter what level of
5 emission. If you see them you have to fix them.

6 We're still finding out whether they will
7 respond to the videos we submit but certainly if their
8 staff see emissions they require the company to fix
9 them. So we do think it is reducing emissions somewhat.

10 I would note that Colorado is still -- that
11 area of Colorado is still in non-attainment for ozone
12 and greenhouse gas emissions have not -- they're not
13 increasing as much but they are not decreasing from 1990
14 levels, 2005 levels.

15 So I would say it's at the margin that we're
16 seeing it make a difference in the aggregate. For
17 specific facilities it can make a huge difference,
18 absolutely.

19 You know, those -- the video from Mexico
20 those are tanks that the community members say they
21 bicycle by there. That's an easy fix. You can replace
22 those pressure valves.

23 And then people going by there on a daily
24 basis would not be subjected to those emissions. It
25 wouldn't get rid of all emissions but it could help with
TREMINE & CLEMENS, INC. EUGENE, OREGON (541)343-8833

1 the acute short-term impacts. But that's very
2 localized.

3 You know, the US has close to a million oil
4 and gas sites. We've got three cameras. It is
5 spreading but it's slow and if you're looking at it from
6 a climate standpoint we don't have that time.

7 MS. NATHALIE EDDY: I would just add at
8 the community level in Red Valley we're working with
9 some of the Navaho members it has had a significant
10 impact. So we went there in January and those videos
11 were shown at chapter meetings and as a result two
12 different chapter houses passed resolutions calling for
13 more information about the impacts on health from the
14 oil and gas extraction going on.

15 And so I think you're right that seeing is
16 believing made a big difference in galvanizing that
17 community to take action.

18 One other piece of it is that the cameras are
19 costly. So they cost \$100,000.00 and they require very
20 specific training. And so we've also been in meetings
21 with the BLM field office last Friday, and this is true
22 of other regulatory agencies, they might have a camera
23 but no one left in the office who is certified to use it
24 now and so it's very underdeployed for various reasons.

25 And those are some examples.

1 DR. THOMAS KERNS: Thank you.

2 [youtube.com/watch?v=GkUALkbdmgQ]

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25